PROGRAM & ABSTRACT BOOK OF CIC 2025

INTERNATIONAL COMNEWS 2025

CONFERENCE ON COMMUNCATION & NEW MEDIA STUDIES

ICON-SONICS 2025

CONMEDIA 2025

Oct. 14-17, 2025 | Malacca, Malaysia

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General Chairs' Message

The General Chairs are delighted to welcome you to the joint conference of CONMEDIA, ICON-SONICS, and COMNEWS (CIC 2025), held as a hybrid event from October 14 to 17, 2025, at Multimedia University, Malacca, Malaysia.

CIC 2025 celebrates the 8th CONMEDIA (Conference on New Media Studies), 4th ICON-SONICS (Conference on Smart Cities, Automation, & Intelligent Computing Systems), and 5th COMNEWS (Conference on Communication & New Media Studies), hosted by Universitas Multimedia Nusantara (Indonesia) in collaboration with Multimedia University (Malaysia).

The CIC 2025 tagline, "Empowering a Sustainable Future Through AI & Human-Machine Communication," reflects its role as a platform for presenting the latest research findings, innovations, regulations, standards, industry practices, and policies in the dynamic and rapidly evolving field of sustainable development within the domains of artificial intelligence and human-machine communication. The TPC Chairs have curated a robust technical program showcasing high-quality papers from researchers across the globe.

The review process for CIC 2025 consists of two phases, conducted by the Technical Program Committee, which includes 85 members. Each paper underwent a Phase 1 pre-screening to check its relevance to the conference scope, formatting compliance, and similarity score. Papers that passed this stage proceeded to Phase 2, where they were reviewed expert reviewers for technical quality, originality, and significance.

Through this rigorous review process, we have been able to compile a high-quality technical program for the conference. A total of 36 papers have been selected for CONMEDIA, 31 papers for ICON-SONICS, and 35 papers for COMNEWS.

CIC 2025 features keynote addresses from six distinguished speakers: Andrey Andoko (Universitas Multimedia Nusantara, Indonesia), Mazliham Mohd Su'ud (Multimedia University, Malaysia), Edson C. Tandoc Jr. (Wee Kim Wee School of Communication and Information, NTU, Singapore), Mardeni Roslee (Multimedia University, Malaysia), Chee Yen (Bruce) Leow (Universiti Teknologi Malaysia), and Lai Weng Kin (Tunku Abdul Rahman University of Management and Technology, Malaysia).

We wish to convey our heartfelt and sincere appreciation to all our volunteers, Organizing Committee members, Technical Program Committee members, and Steering Committee members for their kind efforts, unwavering dedication, and valuable support. We would also like to thank Bernard Lim (IEEE Malaysia Section), Bruce Leow (IEEE ComSoc/VTS Joint Chapter), and Goh Kam Meng (IEEE CIS Chapter) for their technical co-sponsorship.

Finally, we sincerely thank our patrons, Universitas Ciputra, President University, OPPO, Hawk Teknologi Solusi, PT. Jaya Indo Mandiri, Tarzan Photo, JKTGO, and Hollyland, for their generous support and contribution. This event would not have been possible without their invaluable help.

We extend our best wishes for an engaging, insightful, and enjoyable CIC 2025!

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Irene Putri Larasati, S. Psi.
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Conference Sponsors and Partners

CIC 2025 gratefully acknowledges the following sponsors:

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IEEE Technically Sponsors

IEEE Computational Intelligence Society
MALAYSIA CHAPTER

IEEE ComSoc VTS
IEEE Malaysia COMSOC and VTS Joint Chapter

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General Information

Registration Desk

Registration is required only once to confirm your attendance at the conference. Participants may complete registration onsite or online, as outlined below.

Day	Date	Time	Building
Tuesday	14th October 2025	08.00 – 09.00	Main Hall
Wednesday	15th October 2025	09.30 - 09.45	Central Lecture Center (CLC)
Thursday	16th October 2025	08.30 – 09.00	Central Lecture Center (CLC)

Online participants can register through the Zoom platform according to their respective conference:
COMNEWS : https://zoom.us/my/fikomumn
ICON-SONICS and CONMEDIA : https://zoom.us/my/ftiumn

For participants outside the Asia zone, the Zoom platform will open according to the schedule above and remain accessible until 05:30PM (GMT+8) each day.

Help Desk

If you need any assistance during registration or throughout the conference, please contact the Help Desk through the following channels:

- Onsite: Approach any committee member wearing a “Committee” badge, or visit the Registration Desk located near the main entrance of the venue.
- Online: Use the Zoom Breakout Room. Help Desk is available throughout the conference session hours.

The committee will be happy to assist you with registration, technical support, or general inquiries.

Oral Presenters

All onsite oral presenters are requested to:

- Arrive at the assigned presentation room at least 10 minutes before the session begins.
- Ensure your presentation adheres to the allocated time and session guidelines provided in the conference program
- Presenters may test their presentation materials or equipment outside the parallel session schedule, depending on room availability. Please coordinate with the session assistant in advance.

Virtual Presenters

All virtual presenters are requested to:

- Log in at least 15 minutes prior to your presentation time to ensure connection stability.
- Rename your Zoom display name using the format: [Session Code] – [Your Name] – [Institution]
- Virtual presenters are required to use the official conference background provided by the committee
- Virtual presenters may test their audio, video, and screen-sharing functions outside the parallel session schedule, depending on Zoom room availability. Please coordinate with the online host or help desk in advance.

Conference Policies

Code of Conduct

The organizing committee is committed to providing a safe, respectful, and inclusive environment for all participants regardless of gender, race, nationality, religion, age, or professional background. All participants, including speakers, organizers, and attendees, are expected to:

- Act with integrity, respect, and professionalism.
- Value open academic discussion while maintaining courtesy and empathy.
- Treat all participants equally, including those joining from Malaysia and other partner countries.
- Avoid any disruptive, discriminatory, or politically motivated behavior.

Unacceptable Behaviors

The following actions are strictly prohibited:

- Bullying, harassment, or intimidation in any form.
- Racist, sexist, or discriminatory language or behavior.
- Political campaigning, propaganda, or promotional activities not related to the conference themes.
- Disrespect toward presenters, session chairs, or other participants (onsite or online).
- Unauthorized recording, distribution, or misuse of presentation materials.

Any violations may result in removal from the session or revocation of participation privileges.

Social Media/Photo/Video Policy

Participants are encouraged to share insights and experiences on social media using the official conference hashtag **#cic2025**, provided that:

- Speakers' permission is obtained before posting any photos, videos, or presentation content.
- Conference materials, including slides or recordings, are not to be reproduced or distributed without explicit consent from the author and the organizing committee.
- Maintain a respectful tone when referencing sessions, speakers, or institutions online.

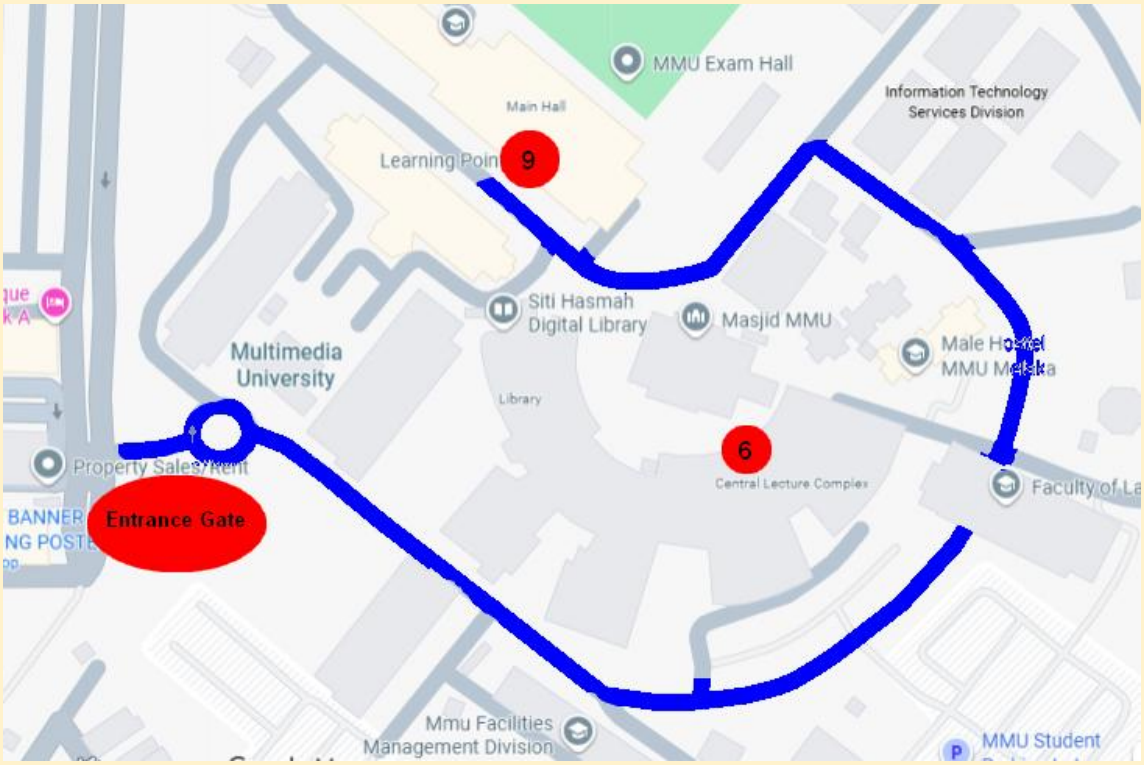
General Safety Tips for Attending Meetings

To ensure a safe and enjoyable conference experience:

- Always wear your participant or committee badge while inside the venue.
- Follow directions from staff and adhere to building safety instructions.
- Keep personal belongings secure at all times.
- In case of emergency, contact any nearby committee member or security staff immediately.
- For online participants, ensure your Zoom name and credentials are accurate and do not share meeting links publicly.

Venue Map


MMU
MULTIMEDIA UNIVERSITY
FACULTIES
1 Faculty of Information Science & Technology (FIST)
2 Faculty of Engineering & Technology (FET)
3 Faculty of Business (FOB)
4 Faculty of Law (FOL) & Faculty of Applied Communication (FAC)
BUILDING
5 Plaza Siswa
6 Main Hall
7 Exam Hall
8 Talent Excellence Centre (TEC)
9 Central Lecture Complex (CLC)
10 Ar Inyad Mosque
11 MMU Studios
DIVISION / CENTRE
Finance
Network & Intelligent Campus Ecosystems (NICE)
Facilities Management Department (FMD) / Security
Admin / Institute for Postgraduate Studies (IPS)
OPEN
MMULAND
MELAKA
Non-Executive Quarters
Exam Hall
Football Field
Volleyball Court
Plaza Siswa
MAIN HALL
TEC
TMONE
NICE
Executive Semi-D
ZTE
Finance
E-Mootcourt
I-BIZ Lab
FOB
FET
Main Entrance
RoboSpace
Dataran Permata
Basketball Court
Student Hostel
MOSQUE
WELCOME
FIST B
FIST A
CLC
FIST C
SMART Lab
President Square
Admin / IPS
FMD / Security
FOL / FAC
Sports Complex
ACCOMMODATION
Hostel
Executive Semi-D
Non-Executive Quarters
FACILITIES
Siti Hasmah Digital Library (SHDL)
Football Field
Basketball Court
ZTE Lab
SMART Lab
e-Mootcourt
I-biz Lab
RoboSpace
Squash Court
CIMB ATM
Gym
FOOD & DRINK
The Food Station
The Cafe Mini


MMU Exam Hall
Main Hall
Information Technology Services Division
Learning Point
9
Siti Hasmah Digital Library
Masjid MMU
Multimedia University
Library
6
Central Lecture Complex
Property Sales/Rent
Entrance Gate
Mmu Facilities Management Division
MMU Student

The conference will be held at Multimedia University (MMU) Melaka Campus, Malaysia. All venues are located within the MMU Melaka area, as shown on the official venue map above.

- Main Hall is located at number 6 on the venue map.
- Central Lecture Center (CLC) is located at number 9 on the venue map. Keynote Session & Paper Parallel Session will be held in 2nd Floor.

Conference activities will take place according to the following schedule:

- **Day 1 (Tuesday, 14 October 2025):**
  All sessions will be held in the Main Hall until 15:00 (3:00 PM). After 15:00, sessions and parallel discussions will continue in the Central Lecture Center (CLC).
- **Day 2 and Day 3 (Wednesday–Thursday, 15–16 October 2025):**
  All sessions will be conducted in the Central Lecture Center (CLC).

Directional signs and floor maps will be displayed throughout the MMU Melaka campus to help participants locate the session rooms easily. Committee members wearing "Committee" badges will also be available to assist you with directions and venue information.

Main Hall, Multimedia University, Malaysia

Central Lecture Center (CLC), Multimedia University, Malaysia

Schedule-at-a-Glance

Tuesday, 14th October 2025

Time	Agenda	Room
08.00 – 09.00	Registration	Main Hall
09.00 – 09.07	Opening Ceremony	Main Hall
09.07 – 09.45	1. Welcome Speech: ▪ Assoc. Prof. Arya Wicaksana, S.Kom., M.Eng.Sc. (General Chair of CIC 2025) ▪ Assoc. Prof. Dr. Leow Chee Yen (Bruce) CEng, MIET, MIEEE (Chairman of IEEE Malaysia Chapter ComSoc/VT) ▪ Assoc. Prof. Ir. Dr. Goh Kam Meng. Ph.D (Chairman of IEEE Malaysia Chapter CIS) 2. Reciting a Poem 3. Gimmick & Photo Session	Main Hall
09.45 – 10.00	Coffee break	Pre Function
10.00 – 12.00	Keynote Session 1	Main Hall
	Session Chair: Maria Advenita Gita Elmada, S.I.Kom., M.Si.	
	1. Dr. Ir. Andrey Andoko Rector of Universitas Multimedia Nusantara, Indonesia 2. Prof. Dato Mazliham Mohd Su'ud President / CEO of Multimedia University Malaysia	
12.00 – 13.00	Lunch	Pre Function
13.00 – 15.00	Keynote Session 2	Main Hall
	Session Chair: Dr. Henilia Yulita SE.,MM.,M.I.Kom	
	Prof. Edson C. Tandoc Jr. Nanyang Technological University Singapore	
15.00 – 15.15	Coffee break	CLC G Floor
15.15 – 17.15	Paper Parallel Session **COMNEWS 2025**	CLC 2nd Floor
	Session A Track: Digital Media, Ethics, and Inclusion Chair: Dr. Rony & Taufan M.A.	Breakout room COMNEWS A
	Session B Track: AI Disruption and Crisis Communication Chair: Dr. Hendar Putranto	Breakout room COMNEWS B
	Session C Track: Digital Platforms, Influencer Economy, and User Behavior Chair: Prof. Dr. Kamarulzaman Bin Ab Aziz	Breakout room COMNEWS C

Wednesday, 15th October 2025

<table>
<tr><th>Time</th><th colspan="3">Agenda</th><th>Room</th></tr>
<tr><td>09.30 - 09.45</td><td colspan="3">Registration</td><td>CLC 2nd Floor</td></tr>
<tr><td>09.45 - 10.00</td><td colspan="3">Coffee break</td><td>CLC G Floor</td></tr>
<tr><td rowspan="5">10.00 – 12.00</td><td colspan="4">Paper Parallel Session</td></tr>
<tr><td>COMNEWS 2025</td><td colspan="2">ICON-SONICS 2025</td><td>CONMEDIA 2025</td></tr>
<tr><td>Breakout room COMNEWS A
Session A
Track: Digital Culture, Identity, and Communication Practices
Chair: Dr. Kavitha Balakrishnan & Dr. Henilia Yulita</td><td colspan="2">Breakout room ICON-SONICS
Session I
Track: Emerging Technologies for System Monitoring and Security
Chair: Ir. Ts. Dr. Azlan Bin Abd. Aziz</td><td>Breakout room CONMEDIA
Session I
Track: Predictive Modeling & FinTech
Chair: Dr. Niki Prastomo, S.T., M.Sc</td></tr>
<tr><td>Breakout room COMNEWS B
Session B
Track: Sustainability Communication and Public Engagement
Chair: Dr. Hendar & Mr. Taufan M.A.</td><td colspan="2" rowspan="2">Breakout room ICON-SONICS
Session II
Track: Signal & Language Processing
Chair: Ts. Thines Ganesan</td><td rowspan="2">Breakout room CONMEDIA
Session II
Track: Computer Vision in Medicine & Security
Chair: Ms. Sharifah Noor Masidayu Binti Sayed Ismail</td></tr>
<tr><td>Session Online
Track: Digital Storytelling, Civic Engagement, and Sustainability Communication
Chair: Mujiono M.Si & Nona Evita, B.A., M.A</td></tr>
<tr><td>12.00 – 13.00</td><td colspan="3">Lunch</td><td>CLC G Floor</td></tr>
<tr><td rowspan="3">13.00 – 15.00</td><td colspan="3">Keynote Session 3</td><td rowspan="3">CLC 2nd Floor</td></tr>
<tr><td colspan="3">Session Chair: Dr. Niki Prastomo, S.T., M.Sc.</td></tr>
<tr><td colspan="3">Prof.Ts.Dr.Mardeni Bin Roslee FASc
Multimedia University, Malaysia
Keynote Title: Smart 5G IoT Palm Oil Soil Properties Monitoring System

Assoc. Prof. Ts. Dr. Chee Yen (Bruce) Leow
Universiti Teknologi Malaysia (UTM)
Keynote Title: 6G: Enabling Ubiquitous Connectivity for a Fully Connected World</td></tr>
<tr><td>15.00 – 15.15</td><td colspan="3">Coffee Break</td><td>CLC G Floor</td></tr>
<tr><td>15.15 – 17.15</td><td colspan="3">Paper Parallel Session</td><td>CLC 2nd Floor</td></tr>
<tr><td rowspan="3"></td><td colspan="2">ICON-SONICS 2025</td><td colspan="2">CONMEDIA 2025</td></tr>
<tr><td colspan="2">Breakout room ICON-SONICS
Session III
Track: Neural Networks in Biomed & Vision
Chair: Dr. Syabeela Bt Syahali</td><td colspan="2">Breakout room CONMEDIA
Session III
Track: Data Analytics & Business Intelligence
Chair: Dr. Aziah Binti Ali</td></tr>
<tr><td colspan="2">Breakout room ICON-SONICS
Session IV
Track: Communication Systems and Network Optimization
Chair: Dr. Khair Razlan Bin Othman</td><td colspan="2">Breakout room CONMEDIA
Session IV
Track: ERP & Enterprise Systems
Chair: Dr. Irmawati, S.Kom., M.M.S.I.</td></tr>
</table>

Thursday, 16th October 2025

Time	Agenda		Room
08.30 – 09.00	Registration		CLC 2nd Floor
09.00 – 10.45	Keynote Session 4		CLC 2nd Floor
	Session Chair: Assoc. Prof. Dr. Nor Azlina Binti Ab Aziz		
	Prof. Lai Weng Kin Tunku Abdul Rahman University of Management and Technology, Malaysia Keynote Title: **The Trident of AI: Hope, Havoc and Hype**		
10.45 - 11.00	Coffee break		CLC G Floor
11.00 – 12.00	Paper Parallel Session		CLC 2nd Floor
	ICON-SONICS 2025		
	Breakout room ICON-SONICS Session V Track: Industrial & Smart Systems Chair: Ir. Ts. Dr. Azlan Bin Abd. Aziz	Breakout room CONMEDIA Session V Track: Healthcare & Biotechnology AI Chair: Wella, S.Kom., M.MSI., COBIT5	
12.00 – 13.00	Lunch		CLC G Floor
13.00 – 15.00	Paper Parallel Session		CLC 2nd Floor
	ICON-SONICS 2025	**CONMEDIA 2025**	
	Breakout room ICON-SONICS Session VI Track: Computer Vision & Applications Chair: Dr. Syabeela Bt Syahali	Breakout room CONMEDIA Session VI Track: Real-World Machine Learning Systems Chair: Samuel Ady Sanjaya, S.T., M.T.	
	Session VII Track: Modeling & Optimization Chair: Ts. Thines Ganesan	Session VII Track: Sustainability & Social Applications Chair: Dr. Aziah Binti Ali	
15.00 – 15.15	Coffee Break		CLC G Floor
15.15 – 17.30	Paper Parallel Session		CLC 2nd Floor
	Breakout room ICON-SONICS Session VIII Track: AI in Industry & Learning SystemChair: Dr. Khair Razlan Bin Othman	Breakout room CONMEDIA Session VIII Track: Web Technology & Digital Platforms Chair: Ms. Sharifah Noor Masidayu Binti Sayed Ismail	
		Breakout room CONMEDIA Session IX Track: AI & Machine Learning Applications Chair: Ririn Ikana Desanti, S.Kom., M.Kom.	
18.00 – 19.30	Gala Dinner Best Paper Award & Best Presenter Award		The Moon Bar @ Rooftop AMES Hotel

Friday, 17th October 2025

Time	Agenda	Meeting Point
08.00 - 11.00	Melaka City Tour	Tan Beng Swee Clock Tower, in front of The Red Christ Church Melaka

List of Keynote Speakers

Prof. Ts. Dr. Mardeni Bin Roslee FASc
Multimedia University, Malaysia

Keynote Title: Smart 5G IoT Palm Oil Soil Properties Monitoring System

Mardeni Roslee is a Professor at Faculty of Artificial Intelligent and Engineering, Multimedia University, served since 2008. Currently, he serves as Chairman of Centre of Wireless Technology, Centre of Excellence (CoE) for Intelligent Network, Multimedia University since 2017. His current research interests are 5G/6G, UAV, AI, IoT and Radar. In professional association, he has been elected as Chairman of Institute of Electrical and Electronics (IEEE) Communication Society/Vehicular Technology Society in 2019. He is a registered Chartered Engineer with Engineering Council United Kingdom, and Member with The Institution of Engineering and Technology (IET), UK and a Senior Member IEEE. He appointed as a Guest and Visiting Professor at various abroad Universities such as at United Kingdom, Canada, Australia, Japan, India, Turkey, Pakistan, New Zealand and many more. He was invited as Keynote Speaker for 40 International conferences at 20 different countries worldwide since 2008 and served as General Chair of International conference for 25 conferences worldwide. He is the recipient of more than 100 research Awards locally and internationally including Top Research Scientist in Malaysia 2020 from Academy of Science Malaysia (ASM), Malaysia, and National Fellows of ASM award from Government of Malaysia. Fellow of the Malaysian Academy of Sciences is the highest recognition given Malaysian Government to the best scientific minds which made outstanding contributions in fields globally.

Assoc. Prof. Ts. Dr. Chee Yen (Bruce) Leow
Universiti Teknologi Malaysia (UTM)

Keynote Title: 6G: Enabling Ubiquitous Connectivity for a Fully Connected World

Dr. Chee Yen (Bruce) Leow is currently an Associate Professor with the Faculty of Electrical Engineering, Faculty of Engineering and a Research Fellow with the Wireless Communication Centre, Universiti Teknologi Malaysia (UTM). He obtained a PhD degree in Wireless Communications from Imperial College London in September 2011 and a B.Eng. degree in Computer Engineering from UTM in June 2007. Dr. Leow is a registered Chartered Engineer

(CEng) of the Engineering Council UK and a Professional Technologist of the Malaysia Board of Technologists.

Dr. Leow's current research interest includes beyond 5G topics such as reconfigurable intelligent surfaces, non-orthogonal multiple access, UAV communication, vehicular to everything (V2X) communications, non-terrestrial network and prototype development using software defined radio, for beyond 5G and Internet of Things applications. He has published over 115 scientific articles related to 4G, 5G and beyond. His IEEE journal papers won the IEEE Malaysia Comsoc/VTS Joint Chapter's Best Paper Awards 2016, 2017, 2021,2022 and IEEE Malaysia AP/MTT/EMC Joint Chapter's Best Paper Awards 2017, 2018, 2020, 2022 and 2024. He serves as the Editor for the IEEE Wireless Communications Letters and recently recognised as the Exemplary Editor for 2025.

Dr. Leow was among the pioneers for 5G initiatives in Malaysia to promote 5G R&D collaboration between industry and academia since 2014. He serves as the Secretary for IMT and Future Networks Working Group under the Malaysian Technical Standards Forum Berhad since 2018 to develop technical codes and to accelerate the adoption of 5G IMT-2020 in Malaysia. He recently represented Malaysia to participate in the ITU-R Working Party 5D meetings. He is currently the chair of the IEEE Malaysia Communications Society and Vehicular Technology Society Joint Chapter. In addition, he regularly conducts short courses on 5G and IoT and offers consultation services for the telecommunication industry.

Prof. Lai Weng Kin
Tunku Abdul Rahman University of Management and Technology

Keynote Title: The Trident of AI: Hope, Havoc and Hype

Weng Kin LAI is a researcher and academic with over 28 years of experience in advanced ICT research, specializing in computer vision, artificial intelligence, and their wide-ranging applications. His professional journey began at Malaysia's premier ICT research institution, where he contributed to national research and development projects that bridged the gap between research and industry needs, culminating in several patented innovations in the domain of computer vision and artificial intelligence.

He is currently a Full Professor of Intelligent Systems at the Faculty of Engineering & Technology (FOET), Tunku Abdul Rahman University of Management and Technology, where he also serves on the leadership team overseeing research and development strategy for the faculty. In addition to his administrative role, he shares his expertise by teaching Artificial Intelligence to engineering students. In May this year, he led a team of undergraduate students who advanced through a competitive first-round selection from a global pool of entries to reach the finals of Taiwan's prestigious Best AI Awards Competition in Taipei, where they competed alongside seasoned startups and postgraduate teams from around the world.

Weng Kin has served as a Governing Board Member of the Asia Pacific Neural Network Assembly (APNNA)—the predecessor of the Asia Pacific Neural Network Society (APNNS)—from 2005 to 2021. He is a Fellow of the Institution of Engineering and Technology (IET), an Associate Fellow of the ASEAN Association of Engineering & Technology, and a Senior Life Member of IEEE. He also held various leadership roles within the IET Malaysia (and IEE) Network between 2003 and 2018. He continues to support the engineering profession as an IET Interviewer for Chartered Engineer assessments—one of the UK's most prestigious professional qualifications, awarded by the Engineering Council of UK and recognized globally.

Professor Edson C. Tandoc Jr.
Nanyang Technological University, Singapore
Journalism and AI: The Good, the Bad, and the Ambiguities

Drawing from recent research in Singapore and across Asia, this presentation unpacks the complex relationship between journalism and generative AI. It highlights the contrasting views of journalists and news organizations—where journalists worry about quality and ethics, while media companies focus on efficiency and cost. The talk also explores how AI logics often clash with journalistic values, and concludes with insights into audience perceptions, showing that while readers accept AI-generated news, it remains unclear whether this reflects genuine receptiveness or mere indifference. The talk invites reflection on what journalism gains—or loses—in the age of artificial intelligence.

Plenary Sessions: COMNEWS 2025

Wednesday, October 15th, 2025

Session Track	Digital Media, Ethics, and Inclusion				
Session Chair	Dr. Rony & Taufan M.A.				
Schedule	Tuesday, 14th October 2025				
	15.30-17.15 Malaysia Time				
	Day 01 - Session A - Room A - COMNEWS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation
CN-D1-SESA-1	15:30	15:45	1571180572	Sentiment Analysis of Tiktok and Instagram Comments Using a Context-Aware, Multilingual Web Tool	Rosalina Rosalina, Abdurrahman Khairi, Filbert Sembiring Meliala, Jason Anthony Wibowo, Sarah Kimberly Fischer and Williem Williem (President University, Indonesia)
CN-D1-SESA-2	15:45	16:00	1571191635	Journalism Beyond the Mainstream: YouTube Talk Shows and the Practice of Independent News Interviews in Indonesia	Zinggara Hidayat (University of Ciputra, Surabaya, Indonesia); Ignatius Ismoyo Herdono, Imanuel Deny Krisna Aji and Louisa Christine Hartanto (Universitas Ciputra, Indonesia)
CN-D1-SESA-3	16:00	16:15	1571200826	Ethics and Innovation in Practice: Indonesian Photojournalists' Responses to Generative AI	Brenda Aurelia Zefanya and Taufan Wijaya (Universitas Multimedia Nusantara, Indonesia)
CN-D1-SESA-4	16:15	16:30	1571192276	Tracing Oppenheimer's Subjective Morality: John Fiske's Semiotic Study of Perspective and Symbol	Cosmas Gatot Haryono, Gatot Hary, Adryenne Sefrida Pondaag and Ignasius Liliek Senaharjanta (Universitas Ciputra, Indonesia)
CN-D1-SESA-5	16:30	16:45	1571162195	From Inclusion to Interaction: Exploring the Engagement Power of Inclusive Content in MSMEs for People with Disabilities	Kurniawan Prasetyo (Universitas Mercu Buana Jakarta, Indonesia); Andi Pajolloi Bate (Universitas Mercu Buana, Indonesia); Raditya Pratama Putra (Science Communication Universitas Islam Bandung, Indonesia)
CN-D1-SESA-6	16:45	17:00	1571192333	Participatory Communication for Social Change of Banda Neira Intergenerational Collective Memory Learning	Zinggara Hidayat (University of Ciputra, Surabaya, Indonesia); Burhan Bungin and Andi Budi Sulistijanto (Universitas Ciputra, Indonesia)
CN-D1-SESA-7	17:00	17:15	1571195847	The Role of Women Journalists in Surabaya in the Era of Media Transformation (Dialectics Between Artificial Intelligence and Gender Reality)	Merry Fridha Tripalupi and A. A. I. Prihandari Satvika Dewi (Universitas 17 Agustus 1945 Surabaya, Indonesia); Rahmat Edi Irawan (Binus University, Indonesia)

Session Track	AI Disruption and Crisis Communication				
Session Chair	Dr. Hendar Putranto				
Schedule	Tuesday, 14th October 2025				
	15.30-16.45 Malaysia Time				
	Day 01 - Session B - Room B - COMNEWS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation
CN-D1-SESB-1	15:30	15:45	1571179860	Crisis Communication Management in the Digital Era: An Analysis of Kompas' Daily Response Strategy to the 'Lorem Ipsum' Headline Case Through SMCC's Perspective	Tarrence Karmelia Kontessa (Multimedia Nusantara University, Indonesia); Carly Stiana Sumampouw, Scheffer-S (Universitas Pelita Harapan, Indonesia)
CN-D1-SESB-2	15:45	16:00	1571188280	Human PR is Irreplaceable: Exploring Indonesian Practitioners' Attitudes and Understandings of AI	Silvanus Alvin (Universitas Multimedia Nusantara, Indonesia)
CN-D1-SESB-3	16:00	16:15	1571194534	Autopoiesis and Creativity: Understanding Artificial Intelligence's Disruption in Advertising Communication	Clifford Aaron Darmawan and Inco Hary Perdana (Multimedia Nusantara University, Indonesia)
CN-D1-SESB-4	16:15	16:30	1571195798	Searching the Horizon of AI Regulation	Mufti Nurlatifah (Universitas Gadjah Mada, Indonesia)
CN-D1-SESB-5	16:30	16:45	1571204255	Reconstructing Communication Ethics in Academic Knowledge Production: A Phenomenology of Practice Approach	Hendar Putranto (Universitas Multimedia Nusantara, Indonesia); Rony Agustino Siahaan (UMN, Indonesia)

Session Track	Digital Platforms, Influencer Economy, and User Behavior				
Session Chair	Prof. Dr. Kamarulzaman Bin Ab Aziz & Dr. Henilia Yulita				
Schedule	Tuesday, 14th October 2025				
	15.30-16.30 Malaysia Time				
	Day 01 - Session C - Room C - COMNEWS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation
CN-D1-SESC-1	15:30	15:45	1571194028	Platformization: Multi-Sided Market Dimension in the 4 Mainstream UGC Video and Livestreaming Platforms	Stefan Yudana Jatiperwira and Bernard Realino Danu Kristianto (Universitas Ciputra Surabaya, Indonesia)
CN-D1-SESC-2	15:45	16:00	1571205149	Perceived Quality as Mediator of Social Media Influences on Purchase Intention	Henilia Yulita (Universitas Multimedia Nusantara, Indonesia)
CN-D1-SESC-3	16:00	16:15	1571205220	The Relationship Between UTAUT Factors and Digital Literacy with Digital Communication Skills Among Secondary School Students in Malaysia	Mokhtarrudin Ahmad (Multimedia University, Malaysia); Mohamad Sirajuddin Jalil (Malaysia Cyber Consumer Association, Malaysia); Kavitha Balakrishnan (Multimedia University, Malaysia); Maria A. G. Elmada (Universitas Multimedia Nusantara, Indonesia)
CN-D1-SESC-4	16:15	16:30	1571192880	Gender Differences in Trust and Purchase Behavior Towards Influencer-Endorsed Products in Indonesia	Alfa Taufan Latif and Alfi Rahmawati (IPB University, Indonesia); Resti Ernawati (Muhammadiyah Bandung University, Indonesia)

Wednesday, October 15th, 2025

Session Track	Digital Culture, Identity, and Communication Practices				
Session Chair	Dr. Kavitha Balakrishnan & Dr. Rony				
Schedule	Wednesday, 15th October 2025				
	10.00-11.45 Malaysia Time				
	Day 02 - Session A - Room A - COMNEWS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation
CN-D2-SESA-1	10:00	10:15	1571179097	Cyberthanatology in Southeast Asia: a Phenomenological Study of Digital Memory, Digital Assets and Digital Legacy Before Death	Anuar Bin Ali (Universiti Teknologi MARA, Malaysia); Fitria Ayuningtyas (National Research and Innovation Agency, Republic of Indonesia, Indonesia); Mohd Azul Mohamad Bin Mohamad Salleh and Normah Binti Mustaffa (Universiti Kebangsaan Malaysia, Malaysia)
CN-D2-SESA-2	10:15	10:30	1571195687	Fear, Finance, and Festivity: Satirical Storytelling in Integrated Marketing Communication of Danamon's 'Financial Fears' Campaign	Fredericko Zein Kurniawan (Universitas Multimedia Nusantara, Indonesia); Arsa Widitiarsa Utoyo (Universitas Multimedia Nusantara & Communication Science, Indonesia)
CN-D2-SESA-3	10:30	10:45	1571195971	User Experiences of Ai Real Time Translation in Intercultural Communication in Indonesia	Kristina Nurhayati (Universitas Multimedia Nusantara, Indonesia); Fitri Sarasati (Universitas Satya Negara Indonesia, Indonesia)
CN-D2-SESA-4	10:45	11:00	1571200455	Taste, Stories, and Culture: How Foreigner Represent Indonesian Cuisine on YouTube Channel Abroad and Hungry	Mila Falma Masful (Paramadina University, Indonesia)
CN-D2-SESA-5	11:00	11:15	1571204506	Crafting Digital Identities: A Case Study of Gen Z Personal Branding on TikTok	Yessica Permata Sari and Theresia Lavietha Vivrie (Universitas Multimedia Nusantara, Indonesia)
CN-D2-SESA-6	11:15	11:30	1571205011	Digitalization of Education in the Banten Coastal Region: A Case Study of the Diffusion of Digital Technology Innovation at Bayah Raya High School	Chininta Rizka Angelia (Universitas Multimedia Nusantara, Indonesia); Asep Sutresna (UMN, Indonesia); Khairul Syafuddin (Universitas Multimedia Nusantara, Indonesia)
CN-D2-SESA-7	11:30	11:45	1571189673	Mumpreneur, Identified!: Digital Social Practices and the Networking Capacity of Stay-at-Home Mothers	Rony Agustino Siahaan (UMN, Indonesia)

Session Track	Sustainability Communication and Public Engagement				
Session Chair	Dr. Hendar & Mr. Taufan M.A.				
Schedule	Wednesday, 15th October 2025				
	10.00-11.30 Malaysia Time				
	Day 02 - Session B - Room B - COMNEWS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation
CN-D2-SESB-1	10:00	10:15	1571192300	Constructing Public Engagement Through Environmental Communication: Corporate Narratives on Plastic-Free Shopping in Indonesia	Zinggara Hidayat (University of Ciputra, Surabaya, Indonesia); Hilda Yunita Wono, Patricia Amanda Pascarina, Ms and Monika Teguh (Universitas Ciputra, Indonesia)
CN-D2-SESB-2	10:15	10:30	1571195698	Exploring Stakeholder Engagement and Social License to Operate in Mining Industry	Zulfatun Mahmudah (Indonesia); Rismi Juliadi (Universitas Multimedia Nusantara, Indonesia)
CN-D2-SESB-3	10:30	10:45	1571195965	Sustainable Fashion Intentions: A TPB-Based Study on the Shift from Fast Fashion to Thrift Shopping Among Indonesian University Students	Maria Widyarini, Syayu Zhukhruffa and Kevin Grahadian (Parahyangan Catholic University, Indonesia)
CN-D2-SESB-4	10:45	11:00	1571202170	Brand Visiting Jogja in the Digital Age (Case Study of the Integrated Marketing Communication Program Management Strategy of the Special Region of Yogyakarta Provincial Tourism Office for 2023-2024)	Astried Herawati Basala and Rajiyem Rajiyem (Gadjah Mada University, Indonesia)
CN-D2-SESB-5	11:00	11:15	1571202587	Community-Based Approaches to Sustainable Health Campaigns in Malaria Prevention and Control in Jayapura, Papua	Veronika Veronika and Bertha Sri Eko Murtiningsih (Universitas Multimedia Nusantara, Indonesia)
CN-D2-SESB-6	11:15	11:30	1571202864	Raising Community Participation in Sustainability Project: A Study on Communication Strategy of Permayouth in Action Program in Timor-Leste	Ernesto Guevara Carceres and Maria A. G. Elmada (Universitas Multimedia Nusantara, Indonesia)

Session Track	Digital Storytelling, Civic Engagement, and Sustainability Communication				
Session Chair	Mujiono M.Si & Nona Evita, B.A., M.A				
Schedule	Wednesday, 15th October 2025				
	10.00-11.30 Malaysia Time				
	Day 02 - ONLINE – https://zoom.us/my/fikomumn - COMNEWS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation
CN-D2-SESO-1	10:00	10:15	1571196065	Digital Communication Strategy for Environmental Education Through Social Media (Analysis of the Instagram Account @sayapilihbumi)	Daniel Indra Prakoso, Bertha Sri Eko Murtiningsih and Nuria Astagini (Universitas Multimedia Nusantara, Indonesia)
CN-D2-SESO-2	10:15	10:30	1571166129	Voice or Vote? The Battle for Indonesia's Democratic Future	Bagus Muhamad Adam and Agustinus Rusdianto Berto (Universitas Multimedia Nusantara, Indonesia)
CN-D2-SESO-3	10:30	10:45	1571204103	Traditional Storytelling Based on Local Wisdom as a Sustainability Communication Strategy for Sustainable Ecotourism in Wae Lolos Village, West Manggarai Regency - Indonesia	Bertha Sri Eko Murtiningsih and Veronika Veronika (Universitas Multimedia Nusantara, Indonesia)
CN-D2-SESO-4	10:45	11:00	1571196217	MyTelkomsel Super App and Improving Customer Experience Digital Lifestyle: A Qualitative Perspective Based on TAM and Omnichannel Service Culture	Husnita Husnita, Hst (Indonesia)
CN-D2-SESO-5	11:00	11:15	1571202313	Word of Mouth in Storytelling Rintik Sedu on Instagram Audience Interaction	Audrey Vania Alodia Hulu and Lelita Azaria Rahmadiva (Universitas Muhammadiyah Surakarta, Indonesia)
CN-D2-SESO-6	11:15	11:30	1571204697	Strategic Road Mapping in Intellectual Property Development: Animated Content as a Medium for Climate Change Communication	Arsa Widitiarsa Utoyo (Universitas Multimedia Nusantara & Communication Science, Indonesia); Kadek Satria Adidharma and Siti Rahmadini (Politeknik Multimedia Nusantara, Indonesia); Yohanes Widiastomo (Universitas Multimedia Nusantara, Indonesia)

Plenary Sessions: ICON-SONICS 2025

Wednesday, October 15th, 2025

Session Track	Emerging Technologies for System Monitoring and Security				
Session Chair	Ir. Ts. Dr. Azlan Bin Abd. Aziz				
Schedule	Wednesday, October 15, 2025				
	10:00				
	Day 01 Session 01 Room ICON-SONICS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation and country
IS-D1-SES01-1	10:00	10:15	1571179938	Covert Data Exfiltration via Electromagnetic Side-Channel Emissions from Computer Memory	Oladapo A. Ajike (Prairie View A & M University, USA); Toya Acharya, Mohamed Chouikha, Annamalai Annamalai and Sheikh Tareq Ahmed (Prairie View A&M University, USA); Akshay Raghavendra Kulkarni (Prairie View A & M University, USA)
IS-D1-SES01-2	10:15	10:30	1571163403	Analysis of Industrial Noise from Machinery: A Case Study of Noise Exposure at Cable Factory, Indonesia	Sesilia Audina Sujana, Fahmy Rinanda Saputri and Nicholas Pranata (Universitas Multimedia Nusantara, Indonesia)
IS-D1-SES01-3	10:30	10:45	1571202759	Noise level analysis using I-SIMPA Simulation: A case study in the Hotel Operations Laboratory, Universitas Multimedia Nusantara, Indonesia	Fahmy Rinanda Saputri, Nicholas Robert, Vanesa Lorent and Muhammad Salehuddin (Universitas Multimedia Nusantara, Indonesia)
IS-D1-SES01-4	10:45	11:00	1571195675	IoT Based Plant Monitoring using Solar and LoRa Technology	Pravin Nair Gunasegaran and Thinesh Ganesan (Multimedia University, Malaysia); Sumendra Yogarayan (Multimedia University (MMU), Malaysia)

Session Track	Signal & Language Processing				
Session Chair	Ts. Thines Ganesan				
Schedule	Wednesday, October 15, 2025				
	11:00				
	Day 01 Session 02 Room ICON-SONICS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation and country
IS-D1-SES02-1	11:00	11:15	1571180194	Multilingual Audio-Based Depression Detection using Audio Augmentation and Data Efficient Image Transformer	Monica Pratiwi (Universitas Multimedia Nusantara, Indonesia); Nur Hayati (Universitas Muhammadiyah Yogyakarta, Indonesia)
IS-D1-SES02-2	11:15	11:30	1571195955	Gender Differences in EEG Absolute Band Power Across Alzheimer's Disease, Frontotemporal Dementia, and Healthy Controls	Shahid Iqbal and Humaira Nisar (Universiti Tunku Abdul Rahman, Malaysia); Kim Ho Yeap (UTAR, Malaysia)
IS-D1-SES02-3	11:30	11:45	1571196129	Cross-Lingual Probing and Community-Grounded Analysis of Gender Bias in Low-Resource Bengali	Md. Asgor Hossain Reaj, Rajan Das Gupta and Jui Saha Pritha (American International University-Bangladesh, Bangladesh); Abdullah Al Noman (Wilmington University, USA); Abir Ahmed (Washington University of Science & Technology, USA); Golam Md Mohiuddin (Multimedia University, Malaysia); Tze Hui Liew (Multimedia University & CICC, COE of Advanced Cloud, Malaysia)
IS-D1-SES02-4	11:45	12:00	1571204842	Adaptive tuning of the unscented Kalman Filter using particle swarm optimization for inertial-GPS sensor fusion systems	Psyche Malabo (Technological Institute of the Philippines, Philippines); Bobby D. Gerardo (Northern Iloilo State University, Philippines)

Session Track	Neural Networks in Biomed & Vision				
Session Chair	Dr. Syabeela Bt Syahali				
Schedule	Wednesday, October 15, 2025				
	15:15				
	Day 01 Session 03 Room ICON-SONICS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation and country
IS-D1-SES03-1	15:15	15:30	1571194665	Optimizing Leukemia Classification with Fine-Tuned SENet Variants: A Comparative Study on Binary and Multi-Class Tasks	Humaira Nisar and Kye Fung Lee (Universiti Tunku Abdul Rahman, Malaysia); Siti Atiyah Ali (Universiti Malaysia Sarawak, Malaysia)
IS-D1-SES03-2	15:30	15:45	1571195303	Atrous Spatial Pyramid Pooling(ASPP)-Enhanced U-Net with Squeeze-and-Excitation(SE) Channel Recalibration for Early Smoke Classification	Lola Naomi Enzelin Mangunsong and Samuel Ady Sanjaya (Universitas Multimedia Nusantara, Indonesia); Suyoto Suyoto (Universitas Atma Jaya Yogyakarta, Indonesia); Jansen Wiratama, Rudi Sutomo and Santo Fernandi Wijaya (Universitas Multimedia Nusantara, Indonesia)
IS-D1-SES03-3	15:45	16:00	1571204555	Advancing Prostate Cancer Diagnosis with DCGAN-Generated Synthetic Histopathology Images	Sayedur Rahman (American International University-Bangladesh (AIUB), Bangladesh); Touhid Alam (American International University-Bangladesh, Bangladesh & 408/1, Kuratoli, Khilkhet, Dhaka, Bangladesh); Shusmita Anjum Aziz (American International University-Bangladesh, Bangladesh); Md Arifur Rahman (Trine University, USA); B M Taslimul Haque (Central Michigan University, USA); Tze Hui Liew (Multimedia University & CICC, COE of Advanced Cloud, Malaysia)
IS-D1-SES03-4	16:00	16:15	1571204645	IntelliGrow: Image processing with IoT alert for pests and diseases classification in chili plant	Jardel Mckenzy Melvin and Danial Md Nor (Universiti Tun Hussein Onn Malaysia, Malaysia); Fahmy Rinanda Saputri (Universitas Multimedia Nusantara, Indonesia); King Lee Chua (Universiti Tun Hussein Onn, Malaysia); Abdel Rahman Al Ali Al Ali (Universiti Tun Hussein Onn Malaysia, Malaysia); Fahad Saleh M Abdallah (Government of Ajman, United Arab Emirates)

Session Track	Communication Systems and Network Optimization				
Session Chair	Dr. Khair Razlan Bin Othman				
Schedule	Wednesday, October 15, 2025				
	16:15				
	Day 01 Session 04 Room ICON-SONICS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation and country
IS-D1-SES04-1	16:15	16:30	1571195991	Multi-Agent Reinforcement Learning for Trajectory and Handover Optimization in UAV-Assisted 6G HetNets	Yasir Ullah (Multimedia University, Malaysia); Mardeni Roslee (MMU, Malaysia); Farman Ali (Multimedia University, Cyberjaya, Malaysia); Mohd Azmi Ismail (TM Research & Development, Malaysia); Idris Olalekan Adeoye and Irfan Khan (Multimedia University, Cyberjaya, Malaysia)
IS-D1-SES04-2	16:30	16:45	1571196039	Octagonal Patch Antenna with Modified SRR Width and Ground Slot for Sub-6 GHz Band	Fardin Kabir (Multimedia University Cyberjaya, Malaysia); Mardeni Roslee (MMU, Malaysia); Anas Abas (Telekom Research and Development Sdn Bhd, Malaysia); Yasir Ullah and Jun Jiat Tiang (Multimedia University, Malaysia); Fahmid Kabir (Simon Fraser University Burnaby, British Columbia, Canada)
IS-D1-SES04-3	16:45	17:00	1571196050	FSO Transmission Framework Employing F-OFDM for Error Probability and Divergence Loss Evaluation in 5G Networks	Farman Ali (Multimedia University, Cyberjaya, Malaysia); Yasir Ullah (Multimedia University, Malaysia); Mardeni Roslee (MMU, Malaysia); Irfan Khan (Multimedia University, Cyberjaya, Malaysia); Fardin Kabir (Multimedia University Cyberjaya, Malaysia)
IS-D1-SES04-4	17:00	17:15	1571165225	System-Wise Reliability Assessment in District Heating Systems: Integrating Technical and Customer-Centric Indices	Amir Rafati (Masjed-Soleiman Branch, Islamic Azad University, Iran); Maryamsadat Tahavori (Technical University of Denmark, Denmark); Hamid Reza Shaker (University of Southern Denmark, Denmark)

Thursday, October 16th, 2025

Session Track	Industrial & Smart Systems				
Session Chair	Ir. Ts. Dr. Azlan Bin Abd. Aziz				
Schedule	Thursday, October 16, 2025				
	11:00				
	Day 02 Session 05 Room ICON-SONICS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation and country
IS-D2-SES05-1	11:00	11:15	1571195063	Medium Voltage Drive with Dynamic Power Quality Compensation for High-Harmonic Industrial Environments	Naveen Garg (Cameron LNG, USA)
IS-D2-SES05-2	11:15	11:30	1571195329	AI-Driven Diagnostics and Predictive Maintenance in NPI Service Engineering: A Comprehensive Survey of Methods, Applications, and Future Directions	Makrand Godbole (Tesla Inc., USA & North Carolina State University, USA); Adwaita Janardhan Jadhav (Apple, USA)
IS-D2-SES05-3	11:30	11:45	1571195875	Design for Serviceability in Complex Electromechanical NPI Products: A Comprehensive Survey of Principles, Metrics, and Field Integration Strategies	Makrand Godbole (Tesla Inc., USA & North Carolina State University, USA)
IS-D2-SES05-4	11:45	12:00	1571194014	Design and Validation of Automated Drone Missions for Agricultural Area Scanning in Smart Farming	Winarno PM, Fenina Adline Twince Tobing and Muhammad Rizki Fadhil (Universitas Multimedia Nusantara, Indonesia)

Session Track	Computer Vision & Applications				
Session Chair	Dr. Syabeela Bt Syahali				
Schedule	Thursday, October 16, 2025				
	13:00				
	Day 02 Session 06 Room ICON-SONICS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation and country
IS-D2-SES06-1	13:00	13:15	1571172258	Comparative Evaluation of Object Detection Models for Identifying Fruit Flies in Snake Fruit Cultivation	Indah Desri Wahyuni and Nabila Husna Shabrina (Universitas Multimedia Nusantara, Indonesia); Suputa Suputa and Riya Fatma Sari (Universitas Gadjah Mada, Indonesia)
IS-D2-SES06-2	13:15	13:30	1571178738	From Pixels to Pathogens: A Review of Computer Vision in Strawberry Disease Detection	Muhammad Imran Ahmad and Tan Shie Chow (Universiti Malaysia Perlis, Malaysia); Fahmy Rinanda Saputri and David Agustriawan (Universitas Multimedia Nusantara, Indonesia); Mohd Nazri Abu Bakar, Raja Abdullah Raja Ahmad, Shafie Omar, Wan Mohd Faizal Wan Nik and Sharul Fazly Sulaiman (Universiti Malaysia Perlis, Malaysia)
IS-D2-SES06-3	13:30	13:45	1571196209	Optimized Deep Learning Models for Robust Splicing-Based Image Forgery Detection Using CASIA Mixed Dataset	Irmawati Irmawati (Universitas Multimedia Nusantara, Indonesia); Nur Hayati (Universitas Muhammadiyah Yogyakarta, Indonesia)
IS-D2-SES06-4	13:45	14:00	1571194047	Faster R-CNN and U-Net Based Image Recognition to Classify Rice Plants Health	Daffi B Firdaus, Winarno PM and Moeljono Widjaja (Universitas Multimedia Nusantara, Indonesia)

Session Track	Modeling & Optimization				
Session Chair	Ts. Thines Ganesan				
Schedule	Thursday, October 16, 2025				
	14:00				
	Day 02 Session 07 Room ICON-SONICS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation and country
IS-D2-SES07-1	14:00	14:15	1571187141	A study of the Shewhart Median Scheme with Estimated Process Parameters based on Expected Median Run Length for Sustainable Manufacturing	Zhi Lin Chong (Universiti Tunku Abdul Rahman, Malaysia); Wei Lin Teoh (Heriot-Watt University Malaysia, Malaysia); Peh Sang Ng (Universiti Tunku Abdul Rahman, Malaysia); Huay Woon You (Universiti Kebangsaan Malaysia, Malaysia); Teh Sin Yin (Universiti Sains Malaysia, Malaysia)
IS-D2-SES07-2	14:15	14:30	1571193059	Evaluate Road Depressions with Deep Learning and Mobile Application	Wei Fun Chan and Ee Mae Ang (Multimedia University, Malaysia)
IS-D2-SES07-3	14:30	14:45	1571200899	Minimizing Packaging Boxes in Online Retail Fulfillment Using Multi-Strategy Heuristics and Extreme-Point Based 3D Bin Packing	Widiq Waskito Adimukti and Samuel Ady Sanjaya (Universitas Multimedia Nusantara, Indonesia)
IS-D2-SES07-4	14:45	15:00	1571201197	Minimizing E-commerce Order Cancellation Cost Using Shap-based Explainable XGBoost	Angelin Angelin and Samuel Ady Sanjaya (Universitas Multimedia Nusantara, Indonesia)

Session Track	AI in Industry & Learning Systems				
Session Chair	Dr. Khair Razlan Bin Othman				
Schedule	Thursday, October 16, 2025				
	15:15				
	Day 02 Session 08 Room ICON-SONICS				
Session Code	Start	End	ID Paper	Title	Authors with affiliation and country
IS-D2-SES08-1	15:15	15:30	1571207156	Sentiment Analysis of Carbon Trading in Indonesia: A Machine Learning Approach Using Naïve Bayes	Kelvin Antonio (CONCISE, Indonesia); Fenina Adline Twince Tobing (Universitas Multimedia Nusantara, Indonesia); Sy Yuliani (Multimedia Nusantara University, Indonesia); Eunike Endariahna Surbakti, Wirawan Istiono and Alexander Waworuntu (Universitas Multimedia Nusantara, Indonesia)
IS-D2-SES08-2	15:30	15:45	1571201193	Cosine Similarity-Based Spectral Graph Clustering of ArchiMate Relationships and Metadata for Information System Consolidation	Jovita Tandiana and Samuel Ady Sanjaya (Universitas Multimedia Nusantara, Indonesia)
IS-D2-SES08-3	15:45	16:00	1571201195	Forecasting of Clinical Program Gross Growth over Revenue through Outcomes and Workforce Metrics using LSTM-XGBoost	Fiorenza Irene Christabelle Suryanto and Samuel Ady Sanjaya (Universitas Multimedia Nusantara, Indonesia)

Plenary Sessions: CONMEDIA 2025

Wednesday, October 15th, 2025

Session Track	Predictive Modeling & FinTech				
Session Chair	Dr. Niki Prastomo, S.T., M.Sc.				
Schedule	Wednesday, October 15, 2025				
	10.00				
	Day 01 Session 01 ROOM CONMEDIA				
Code	Start	End	ID Paper	Title	Authors with affiliation and country
CM-D1-SES01-1	10.00	10.15	1571188733	Stock Price Forecasting for Intel Using a Hybrid Long Short-Term Memory and Support Vector Machine Model	Decky Jaufari and Wella Wella (Universitas Multimedia Nusantara, Indonesia)
CM-D1-SES01-2	10.15	10.30	1571194935	Sentiment Analysis of a Private Mobile Banking Application with DISTILBERT Fine-Tuning	Christopher Darren and Raymond Sunardi Oetama (Universitas Multimedia Nusantara, Indonesia)
CM-D1-SES01-3	10.30	10.45	1571198853	Predicting Property Prices Using MLR, Gradient Boosting, and Random Forest: A Case Study in South Tangerang, Indonesia	Aditya Muhammad Saputro and Ririn Desanti (Universitas Multimedia Nusantara, Indonesia)
CM-D1-SES01-4	10.45	11.00	1571204560	METHI: An Ensemble-based Machine-Learned Exoplanetary Habitability Index	Ruthwik Dhama (Enloe High School, USA); Praveen Pratap Singh and Vishal Kumar (Young Researchers Institute, USA)

Session Track	Computer Vision in Medicine & Security				
Session Chair	Ms. Sharifah Noor Masidayu Binti Sayed Ismail				
Schedule	Wednesday, October 15, 2025				
	11.00				
	Day 01 Session 02 ROOM CONMEDIA				
Code	Start	End	ID Paper	Title	Authors with affiliation and country
CM-D1-SES02-1	11.00	11.15	1571194539	Accelerated Training of Swin Transformer V2 Models for Facial Expression Recognition using GradScaler and Autocast	Samuel Ady Sanjaya (Universitas Multimedia Nusantara, Indonesia); Nur Hayati (Universitas Muhammadiyah Yogyakarta, Indonesia); Dinar Ajeng Kristiyanti (Universitas Multimedia Nusantara, Indonesia); Dita Oktaria (Telkom University, Indonesia); Nur Fitrianti Fahrudin (Informatics System, Indonesia & Institut Teknologi Nasional, Indonesia); Angga A. Permana (Universitas Multimedia Nusantara, Indonesia)
CM-D1-SES02-2	11.15	11.30	1571204824	Comparative Analysis of Deep Learning Architectures for Brain Tumor Classification using MRI Images	Ekramul Haque Tusher and Muhammad Muhtasim Shahriar (International Islamic University Chittagong, Bangladesh); M. M. Golam Hafiz (American International University-Bangladesh, Bangladesh); Riadul Islam Rabbi (Multimedia University, Malaysia); Tze Hui Liew (Multimedia University & CICC, COE of Advanced Cloud, Malaysia); Fatema Mostafa Tarin (Chittagong University of Engineering and Technology, Bangladesh)
CM-D1-SES02-3	11.30	11.45	1571204766	Enhanced Vision Transformer and Image Inpainting for Cataract Stage Classification in Telemedicine	Muh. Ashhar Bustan and Indrabayu Indrabayu (Hasanuddin University, Indonesia)
CM-D1-SES02-4	11.45	12.00	1571204774	Classification of Deepfakes in Static Facial Images Using Deep Learning Ensemble with Weighted Averaging Approach	Arvin Winardi and Moeljono Widjaja (Universitas Multimedia Nusantara, Indonesia)

Session Track	Data Analytics & Business Intelligence				
Session Chair	Dr. Aziah Binti Ali				
Schedule	Wednesday, October 15, 2025				
	15.15				
	Day 01 Session 03 ROOM CONMEDIA				
Code	Start	End	ID Paper	Title	Authors with affiliation and country
CM-D1-SES03-1	15.15	15.30	1571189871	Combination of K-Means Clustering and Apriori Algorithm in Analysis Of Transjakarta Passenger Travel Patterns	Hotmauli Kristiani, Monika Evelin Johan, Eunike Endariahna Surbakti and David Agustriawan (Universitas Multimedia Nusantara, Indonesia)
CM-D1-SES03-2	15.30	15.45	1571185690	Implementation of Evaluation System and Pharmaceutical Product Recommendation in B2B E-Commerce Using Collaborative Filtering Method	Juandi (Multimedia Nusantara University, Indonesia); Rudi Sutomo, Mahfudz Amri, Jansen Wiratama, Santo Fernandi Wijaya and Samuel Ady Sanjaya (Universitas Multimedia Nusantara, Indonesia)
CM-D1-SES03-3	15.45	16.00	1571204813	A Comparative Study of Traditional and Machine Learning Methods in Assessing ESG Impact on Indonesian Stock Returns	Ferry Vincenttius Ferdinand, Timothy Sean Muliadiredja, Kie Van Ivanky Saputra and Ferell Aaron Wirjanto (Universitas Pelita Harapan, Indonesia)
CM-D1-SES03-4	16.00	16.15	1571184478	Business Analytic with Data Warehouse Design in Retail Company Sales	Shanreva Oktavia Andi and Erick Fernando (Universitas Multimedia Nusantara, Indonesia)

Session Track	ERP & Enterprise Systems				
Session Chair	Dr. Irmawati, S.Kom., M.M.S.I.				
Schedule	Wednesday, October 15, 2025				
	16.15				
	Day 01 Session 04 ROOM CONMEDIA				
Code	Start	End	ID Paper	Title	Authors with affiliation and country
CM-D1-SES04-1	16.15	16.30	1571194628	Enhancing ERP System through Data Integration with Agile Software Development in Retail Industry	Vincent Setiadi Kurniawan, Jansen Wiratama, Santo Fernandi Wijaya, Samuel Ady Sanjaya, Rudi Sutomo and Monika Evelin Johan (Universitas Multimedia Nusantara, Indonesia)
CM-D1-SES04-2	16.30	16.45	1571204858	An Experimental Study on SQL Query Structure Optimization Performance in MySQL, PostgreSQL, and Microsoft SQL Server Using Apache JMeter	Gladys Tanujaya and Suryasari Suryasari (Universitas Multimedia Nusantara, Indonesia)
CM-D1-SES04-3	16.45	17.00	1571195019	Improving the Accuracy of Coffee Bean Quality Detection Using Manhattan Distance Method in the Loss Function of You Only Look Once V4	Zuhal Mujaddid Samas (Hasanuddin University, Indonesia); Novy N.R.A. Mokobombang (Hasanuddin University, Indonesia & Auckland University of Technology, New Zealand)
CM-D1-SES04-4	17.00	17.15	1571196633	Integrating Balanced Scorecard and Enterprise Management for ERP Readiness Assessment	Santo Fernandi Wijaya, Jansen Wiratama and Rudi Sutomo (Universitas Multimedia Nusantara, Indonesia)

Thursday, October 16th, 2025

Session Track	Healthcare & Biotechnology AI				
Session Chair	Wella, S.Kom., M.MSI., COBIT5				
Schedule	Thursday, October 16, 2025				
	11.00				
	Day 02 Session 05 ROOM CONMEDIA				
Code	Start	End	ID Paper	Title	Authors with affiliation and country
CM-D2-SES05-1	11.00	11.15	1571195656	Identification and Classification of melanoma on Skin using the MobilenetV2	Dimas Takeda, David Agustriawan, Kanza Amanda, Raden Muhammad Rafael, Rifqi Habib, Thelissa Levana Zheng, Monika Evelin Johan and Eunike Endariahna Surbakti (Universitas Multimedia Nusantara, Indonesia); Muhammad Imran Ahmad (Universiti Malaysia Perlis, Malaysia)
CM-D2-SES05-2	11.15	11.30	1571195702	Performance Evaluation of EfficientNet-V1 and EfficientNet-V2 Variants for Kidney Disease Detection on CT Scan Images	Irmawati Irmawati (Universitas Multimedia Nusantara, Indonesia); Nur Hayati (Universitas Muhammadiyah Yogyakarta, Indonesia); Monica Pratiwi (Universitas Multimedia Nusantara, Indonesia)
CM-D2-SES05-3	11.30	11.45	1571204409	Explainability-Driven Comparison of Machine Learning Approaches for Breast Cancer Classification	Ekramul Haque Tusher and Shuvo Chakraborty (International Islamic University Chittagong, Bangladesh); Riadul Islam Rabbi (Multimedia University, Malaysia); Tze Hui Liew (Multimedia University & CICC, COE of Advanced Cloud, Malaysia); Md Hasan Shorif (International Islamic University Chittagong, Bangladesh); Mohammad Hossain (Al-Bukhary International University, Malaysia)
CM-D2-SES05-4	11.45	12.00	1571193420	Development of a Random Forest Based Classification System for Lung Cancer Therapeutic Compounds	Kenny Matthew and Angga Aditya Permana (Universitas Multimedia Nusantara, Indonesia); Sy Yuliani (Multimedia Nusantara University, Indonesia); Wirawan Istiono, Alexander Waworuntu and Samuel Ady Sanjaya (Universitas Multimedia Nusantara, Indonesia)

Session Track	Real-World Machine Learning Systems				
Session Chair	Samuel Ady Sanjaya, S.T., M.T.				
Schedule	Thursday, October 16, 2025				
	13.00				
	Day 02 Session 06 ROOM CONMEDIA				
Code	Start	End	ID Paper	Title	Authors with affiliation and country
CM-D2-SES06-1	13.00	13.15	1571204432	A Novel Three-Tier Driver Drowsiness Detection Framework Using Stress-Proxy HRV Analysis	Abu Monsur Mohammad Fahim and Md Faisal Hoque Rifat (International Islamic University Chittagong, Bangladesh); Ummay Ayman Tushe (University of Chittagong, Bangladesh); Riadul Islam Rabbi (Multimedia University, Malaysia); Ekramul Haque Tusher (International Islamic University Chittagong, Bangladesh); Tze Hui Liew (Multimedia University & CICC, COE of Advanced Cloud, Malaysia)
CM-D2-SES06-2	13.15	13.30	1571204592	Hybrid CNN-XGBoost Framework for Interpretable ECG Arrhythmia Classification with SHAP-based Analysis	Aritra Mohajan and Abu Monsur Mohammad Fahim (International Islamic University Chittagong, Bangladesh); Ummay Ayman Tushe (University of Chittagong, Bangladesh); Riadul Islam Rabbi (Multimedia University, Malaysia); Ekramul Haque Tusher (International Islamic University Chittagong, Bangladesh); Tze Hui Liew (Multimedia University & CICC, COE of Advanced Cloud, Malaysia)
CM-D2-SES06-3	13.30	13.45	1571194469	A Dual-Stage Hybrid AI Framework for Resume Screening Using CNN-Based Layout Classification and Open-Source LLM Semantic Analysis	Emilio Yanvrent and Johan Setiawan (Universitas Multimedia Nusantara, Indonesia)
CM-D2-SES06-4	13.45	14.00	1571194901	Real-Time Suspicious Activity Detection for Exam Proctoring Using YOLOv8 and Multi-Angle Datasets	Bonifasius Ariesto Adrian Finantyo, Alexander Waworuntu, Wirawan Istiono, Marlinda Vasty Overbeek and Angga A. Permana (Universitas Multimedia Nusantara, Indonesia); Sy Yuliani (Multimedia Nusantara University, Indonesia); Fenina Adline Twince Tobing (Universitas Multimedia Nusantara, Indonesia)

Session Track	Sustainability & Social Applications				
Session Chair	Dr. Aziah Binti Ali				
Schedule	Thursday, October 16, 2025				
	14.00				
	Day 02 Session 07 ROOM CONMEDIA				
Code	Start	End	ID Paper	Title	Authors with affiliation and country
CM-D2-SES07-1	14.00	14.15	1571204803	Application of Statistics and Technology in Addressing Economic Inequality Based on Social Welfare Disparities	Jesse Helison Hefni, Ferry Vincenttius Ferdinand, Nicholas Reynard Kusuma and Aaron Ng (Universitas Pelita Harapan, Indonesia)
CM-D2-SES07-2	14.15	14.30	1571204587	A Comparative Analysis of Machine Learning Algorithms for Spam Email Classification with Explainable AI Insights	Ekramul Haque Tusher, Md Saimul Hoque Sawon and Shuvo Chakraborty (International Islamic University Chittagong, Bangladesh); Tze Hui Liew (Multimedia University & CICC, COE of Advanced Cloud, Malaysia); Riadul Islam Rabbi (Multimedia University, Malaysia); Ummay Ayman Tushe (University of Chittagong, Bangladesh)
CM-D2-SES07-3	14.30	14.45	1571204500	Analysis and Visualization of Earthquake Patterns (2021-2025) in the South Lebak Region Based on the Dataset from Gugus Mitigasi Lebak Selatan	Gilbert Evan Tilung (Multimedia Nusantara University, Indonesia); Niki Prastomo (Universitas Multimedia Nusantara, Indonesia); Anis Faisal Reza (Gugus Mitigasi Lebak Selatan, Indonesia)
CM-D2-SES07-4	14.45	15.00	1571191693	The Role of Gachacom in Fostering Appreciation for Human-Created Art amid AI Advancements	Christine Then, Wirawan Istiono, Alexander Waworuntu, Marlinda Vasty Overbeek, Fenina Adline Twince Tobing and Angga A. Permana (Universitas Multimedia Nusantara, Indonesia)

Session Track	Web Technology & Digital Platforms				
Session Chair	Ms. Sharifah Noor Masidayu Binti Sayed Ismail				
Schedule	Thursday, October 16, 2025				
	15.15				
	Day 02 Session 08 ROOM CONMEDIA				
Code	Start	End	ID Paper	Title	Authors with affiliation and country
CM-D2-SES08-1	15.15	15.30	1571189262	A Web-Based Disaster Mitigation Platform Using Agile Scrum and Sphere Project Standards	Zedro Deniro Mason, Eunike Endariahna Surbakti, David Agustriawan, Monika Evelin Johan and Fenina Adline Twince Tobing (Universitas Multimedia Nusantara, Indonesia); Jantianus Jantianus (Politeknik Negeri Medan, Indonesia)
CM-D2-SES08-2	15.30	15.45	1571204797	Comparing Random Forest and XGBoost Machine Learning Models for Predicting Purchase Intention in Online Consumer Behavior: A Study in the Jabodetabek Area	Ferry Vincenttius Ferdinand, Laurence Laurence and Kezia Natalia Effendi (Universitas Pelita Harapan, Indonesia)
CM-D2-SES08-3	15.45	16.00	1571145376	Web-Based Prodeacon Scheduling System: Digitalizing Operations at Alam Sutera Parish	Farion Tekkry, Vincentius Kurniawan and Maria Irmina Prasetiyowati (Universitas Multimedia Nusantara, Indonesia)
CM-D2-SES08-4	16.00	16.15	1571185397	Interactive 360° Virtual Tour for Dark Tourism Promotion: A Digital Heritage Case Study of Makam Syekh Mubarok	Zevanaya Beverly Drew, Johan Setiawan, Erick Fernando, Ahmad Faza and Melissa Indah Fianty (Universitas Multimedia Nusantara, Indonesia); Winanti Winanti (Universitas Insan Pembangunan Indonesia, Indonesia); Dina Fitria Murad, Dfm (Bina Nusantara University, Indonesia)

Session Track	AI & Machine Learning Applications				
Session Chair	Ririn Ikana Desanti, S.Kom., M.Kom.				
Schedule	Thursday, October 16, 2025				
	16.15				
	Day 02 Session 9 ROOM CONMEDIA				
Code	Start	End	ID Paper	Title	Authors with affiliation and country
CM-D2-SES09-1	16.15	16.30	1571200624	A Comparative Study of Generative AI with CNN ResNet-18 and Transformer Models for Multimodal Sentiment Analysis in E-Commerce Product Review	Juanito Arvin William and Dinar Ajeng Kristiyanti (Universitas Multimedia Nusantara, Indonesia); Heru C Rustamaji (UPN Veteran Yogyakarta, Indonesia); Samuel Ady Sanjaya and David Agustriawan (Universitas Multimedia Nusantara, Indonesia); Sy Yuliani (Multimedia Nusantara University, Indonesia)
CM-D2-SES09-2	16.30	16.45	1571201268	Digital Calibration Certificate Level 1 Automation in BSN BRIN Indonesia	Aldrik Ciaputra and Arya Wicaksana (Universitas Multimedia Nusantara, Indonesia)
CM-D2-SES09-3	16.45	17.00	1571203747	Ter-Net: A Dual-Branch Ensemble Network for Accurate and Interpretable Terrain Type Classification	Shusmita Anjum Aziz (American International University-Bangladesh, Bangladesh); Touhid Alam (American International University-Bangladesh, Bangladesh & 408/1, Kuratoli, Khilkhet, Dhaka, Bangladesh); Sayedur Rahman (American International University-Bangladesh (AIUB), Bangladesh); Md Arifur Rahman (Trine University, USA); B M Taslimul Haque (Central Michigan University, USA); Tze Hui Liew (Multimedia University & CICC, COE of Advanced Cloud, Malaysia)
CM-D2-SES09-4	17.00	17.15	1571204828	Analyzing Hidden Sources in Soil Sensors Using Independent Component Analysis (ICA) and Principal Component Analysis (PCA) Algorithm	Cian Ramadhona Hassolthine (Universitas Siber Asia, Indonesia & IPB University, Indonesia); Fenina Adline Twince Tobing (Universitas Multimedia Nusantara, Indonesia)
CM-D2-SES09-5	17.15	17.30	1571195001	A meta-heuristic method for cumulative vehicle routing problem	Adrain Lim Jun Hong and Yit Yin Wee (Multimedia University, Malaysia)
CM-D2-SES09-6	17.30	17.45	1571203818	Diagnosis of eye diseases using Support Vector Machine with Bayesian optimization	Yit Yin Wee (Multimedia University, Malaysia); Nicole Kai Ning Loh (MMU, Malaysia)

Social Events

Gala Dinner

The Organizing Committee cordially invites all registered participants to attend the Conference Gala Dinner, which will be held as part of the official social program. The Gala Dinner serves as a platform for networking and fellowship among delegates, speakers, and distinguished guests in an elegant and relaxed setting.

📍 Venue: The Moon Bar, Rooftop AMES Hotel, Melaka

📅 Date: Thursday, 16 October 2025

🕔 Time: 18:00 onwards

During the evening, the committee will present:

- the Best Paper Award and
- the Best Presenter Award

in recognition of outstanding contributions and presentations delivered throughout the conference.

Participants are encouraged to attend in formal or smart casual attire. Transportation details will be announced during the conference sessions.

City Tour

To conclude the conference activities, participants are invited to join the Melaka Heritage City Tour, an optional cultural program organized to explore the city's historical and architectural landmarks. The tour provides an excellent opportunity for participants to experience the unique charm of Melaka, a UNESCO World Heritage City.

📍 Meeting Point: Tan Beng Swee Clock Tower, in front of The Red Christ Church Melaka

📅 Date: Friday, 17 October 2025

🕗 Time: 08:00 onwards

Participants are requested to arrive at the meeting point 15 minutes prior to departure. The tour will include visits to prominent heritage sites around the Dutch Square, Melaka River, and nearby cultural attractions.

Light clothing, comfortable walking shoes, and sun protection are recommended.

Abstract Collections: COMNEWS 2025

CN-D1-SESA-1

Sentiment Analysis of Tiktok and Instagram Comments Using a Context-Aware, Multilingual Web Tool

Rosalina Rosalina, Abdurrahman Khairi, Filbert Sembiring Meliala, Jason Anthony Wibowo, Sarah Kimberly Fischer and Williem Williem (President University, Indonesia)

This study presents a context-aware sentiment analysis system developed to address the challenges of analyzing user-generated comments on Instagram and TikTok. These platforms are major digital engagement tools in Indonesia, yet their high volume of informal, emoji-rich, and multilingual content makes manual sentiment interpretation impractical. To address this, we developed a web-based application that utilizes Gemini 2.0 Flash, a state-of-the-art natural language model, integrated with FastAPI and ReactJS, to classify sentiments in comments with contextual awareness. The system also incorporates emoji interpretation and supports Bahasa Indonesia and English. Performance evaluation on 2,000 real-world comments showed 87.2% accuracy, surpassing traditional tools such as VADER. This tool enables brands and influencers to make data-driven decisions by exporting sentiment trends in real time. Challenges include slang interpretation, API rate limitations, and short-comment ambiguity. Future enhancements include video transcription and regional dialect support.

Keywords: Sentiment analysis, TikTok, Instagram, Natural Language Processing, Social Media, Gemini 2.0

CN-D1-SESA-2

Journalism Beyond the Mainstream: YouTube Talk Shows and the Practice of Independent News Interviews in Indonesia

Zinggara Hidayat (University of Ciputra, Surabaya, Indonesia); Ignatius Ismoyo Herdono, Imanuel Deny Krisna Aji and Louisa Christine Hartanto (Universitas Ciputra, Indonesia)

Digital journalism is rapidly growing beyond mainstream media, as media consumption behavior changes. This paper aims to analyze the style of interview journalism in YouTube talk shows between journalists (podcasters) and sources as a practice of independent press in Indonesia. Several YouTube channels, such as Mata Najwa, Bocor Alus, Wisnu Nugroho, Sentana TV, DI's Way, and Kanal Alternatif were selected as samples for analysis, determined by the criteria that podcasters are journalists. These channels also reflect journalistic independence and professional news storytelling. A qualitative approach was used through content analysis, including text, verbal, and audio-visual content, across several dimensions, such as narrative construction, interview dynamics, and the assertion of press autonomy outside of traditional media institutions. The analysis reveals that journalists combine professional norms with self-image, present in-depth critical discourse from diverse perspectives, and play an agenda-setting role. On the other hand, YouTube journalists also consider the pressures of monetization measurements and strive to engage viewers with each piece of news content. The implications of this research require an in-depth study of the entrepreneurial perspective in digital journalism and the development of an independent character within the profession.

Keywords: content analysis, digital journalism, journalistic independent, news talk show, YouTube journalism

CN-D1-SESA-3

Ethics and Innovation in Practice: Indonesian Photojournalists' Responses to Generative AI

Brenda Aurelia Zefanya and Taufan Wijaya (Universitas Multimedia Nusantara, Indonesia)

The emergence of Artificial Intelligence (AI), particularly Generative Artificial Intelligence (GAI), has had significant impacts across various domains, including photojournalism. These impacts range from the news production process to the profession of photojournalists itself. In light of this phenomenon, it is essential to conduct research that explores photojournalists' perceptions, the effects of GAI, and their responses to its presence. This study adopts a qualitative approach using a case study method, which is appropriate for in-depth exploration of complex issues. The case study involves six purposively selected photojournalists affiliated with the Pewarta Foto Indonesia (Indonesian Photojournalist Association) to ensure the informants are active professionals in the field. The six informants come from different regions, have between 8 and 21 years of professional experience, and represent various media organizations. The findings reveal that GAI is generally perceived merely as a supportive tool. Furthermore, the study identifies concerns regarding the potential for increased misinformation/disinformation and changes in company policies. In response, photojournalists tend to accept the use of GAI for illustrative purposes only, while rejecting its use as a replacement for photojournalism.

Keywords: generative ai, photojournalism, photojournalist perception

CN-D1-SESA-4

Tracing Oppenheimer's Subjective Morality: John Fiske's Semiotic Study of Perspective and Symbol

Cosmas Gatot Haryono, Gatot Hary, Adryenne Sefrida Pondaag and Ignasius Liliek Senaharjanta (Universitas Ciputra, Indonesia)

This study analyzes the representation of subjective morality in Christopher Nolan's film Oppenheimer, using John Fiske's semiotic approach. The film not only presents a biographical narrative of J. Robert Oppenheimer as a central figure in the atomic bomb project, but also represents inner conflict and complex moral dilemmas within the context of power, science, and humanitarian responsibility. Through Fiske's three levels of television code—reality, representation, and ideology—this study examines how visual, symbolic, and narrative elements are used to shape audiences' perceptions of Oppenheimer's morality. Symbols such as the nuclear explosion, the interrogation room, monochromatic lighting, and sound construction play a significant role in conveying subtle yet powerful ideological meanings. The research findings indicate that the film Oppenheimer serves as a cultural text that is not neutral, but rather imbued with ideological positions that depict the tension between individual morality and the system of state power. By positioning the film as a popular cultural artifact, this study highlights how media shapes public understanding of history, scientific ethics, and personal responsibility within an increasingly complex global ethical landscape.

Keywords: Ideology, Oppenheimer, Subjective morality, Semiotics, Symbols

CN-D1-SESA-5

From Inclusion to Interaction: Exploring the Engagement Power of Inclusive Content in MSMEs for People with Disabilities

Kurniawan Prasetyo (Universitas Mercu Buana Jakarta, Indonesia); Andi Pajolloi Bate (Universitas Mercu Buana, Indonesia); Raditya Pratama Putra (Science Communication Universitas Islam Bandung, Indonesia)

This study explores the influence of inclusive content on customer engagement in Micro, Small, and Medium Enterprises (MSMEs) focusing on people with disabilities. Inclusive content refers to digital communication that is accessible, representative, and respectful of diverse audiences. Despite the potential for inclusive communication, there is limited empirical research quantifying its effect on customer engagement in disability-themed MSMEs. This research applies customer engagement and inclusive communication concept to analyze the relationship between inclusive content and five dimensions of customer engagement: enthusiasm, attention, absorption, interaction, and identification. Using a quantitative survey of audiences of Sunyi Coffee's Instagram account, the study finds a significant positive effect of inclusive content on customer engagement, explaining 95.1% of the variance. The findings confirm that strategically designed inclusive messaging fosters stronger emotional and cognitive engagement, enhances brand identification, and supports social inclusion goals aligned with Sustainable Development Goal 8. Limitations include the single-case design and self-reported data, suggesting the need for further multi-case and longitudinal studies. This study contributes both theoretically and practically by providing empirical evidence that inclusive digital communication is a valuable strategy for enhancing engagement and competitiveness in disability-focused MSMEs.

Keywords: Inclusive Content, Customer engagement, MSMEs, Disability Inclusion, Social Media Marketing, Digital Communication

CN-D1-SESA-6

Participatory Communication for Social Change of Banda Neira Intergenerational Collective Memory Learning

Zinggara Hidayat (University of Ciputra, Surabaya, Indonesia); Burhan Bungin and Andi Budi Sulistijanto (Universitas Ciputra, Indonesia)

Participatory communication involves grassroots communities in interactions and decision-making within their communities. This study examines the values of local wisdom that are collectively created and maintained to be passed down from generation to generation, serving as role models for social conversations and movements on social media in Banda Neira, Maluku. Qualitative research, ethnography, including netnography, in this study explores traditional communication practices such as pela, oral customs, and community deliberations that can strengthen cultural identity and shape intergenerational learning processes. Several findings indicate that participatory communication at the grassroots level in Banda Neira is based on local values as a social agreement to send and receive messages internally and externally to the community. Communication technology, especially through social media, functions to accelerate the transformation of traditional communities to filter and accept modern life while maintaining the continuity of ancestral values, collective memory, preserving heritage, and strengthening the identity of the Banda Neira community. Future research on the importance of communication technology in marginalized communities is recommended, alongside efforts to preserve local culture through formal and non-formal social learning education.

Keywords: Banda Neira, collective memory, indigenous peoples, intergenerational communication, local wisdom, participatory communication

CN-D1-SESA-7

The Role of Women Journalists in Surabaya in the Era of Media Transformation (Dialectics Between Artificial Intelligence and Gender Reality)

Merry Fridha Tripalupi and A. A. I. Prihandari Satvika Dewi (Universitas 17 Agustus 1945 Surabaya, Indonesia); Rahmat Edi Irawan (Binus University, Indonesia)

The main objective of this research is to examine how female journalists in Surabaya interpret and carry out their roles in the context of changes in the media industry influenced by the development of artificial intelligence (AI) technology, as well as how gender realities shape their experiences in the field. This research uses a qualitative approach with a case study method and in-depth interviews with female journalists from print and online media. The data collected was analyzed thematically to reveal patterns of experience and responses to media transformation. Up to this reporting stage, literature review, preparation of interview instruments, and preliminary data collection through interviews with four female journalists have been conducted. Preliminary results show that although AI is considered to help the efficiency of journalistic work, there are concerns related to the dehumanization of the profession and unequal access to technology. In addition, gender bias is still found in work practices, such as the division of coverage tasks and career paths.

Keywords: Women journalism, artificial intelligence, media transformation, gender

CN-D1-SESB-1

Crisis Communication Management in the Digital Era: An Analysis of Kompas' Daily Response Strategy to the 'Lorem Ipsum' Headline Case Through SMCC's Perspective

Tarrence Karmelia Kontessa (Multimedia Nusantara University, Indonesia); Carly Stiana Sumampouw, Scheffer-S (Universitas Pelita Harapan, Indonesia)

Social-Mediated Crisis Communication's lenses is used in analysing the Kompas daily response strategy to the 'lorem ipsum' headline back in 2019. The term "Lorem ipsum" has suddenly gone viral on social media and made many netizens and also other media competitors. This research uses a qualitative approach with a case study method. This approach is used to explore in depth how Kompas Daily as a media institution manages rare but significant editorial crises, especially from the perspective of digital crisis communication and reputation management. On July 10, 2019, immediately after the incident, the internal ranks of Kompas Daily held an evaluation meeting attended by managers and design teams to discuss the cause of the incident and preventive measures going forward. At the same time, a revised edition of the e-paper is being prepared for publication. Two days after the occurrence of the event, the Editorial Secretary of Kompas Daily published an article containing a comprehensive explanation of what happened, complete with an explanation of what the term "Lorem Ipsum" itself means and historical. A prompt, open, and humane response is key to mitigating reputational risks and saving public trust. Public behaviour is an indicator of reputational health that can only be maintained through strategic crisis communication.

Keywords: Crisis communication, Kompas, Risk Communications, SMCC, Stealing Thunder, Digital

CN-D1-SESB-2

Human PR is Irreplaceable: Exploring Indonesian Practitioners' Attitudes and Understandings of AI

Silvanus Alvin (Universitas Multimedia Nusantara, Indonesia)

This study aims to offer a novel contribution by examining the attitudes of artificial intelligence adoption among public relations (PR) practitioners in the Indonesian context. This topic is particularly relevant given Indonesia's high internet penetration rate and its increasing engagement with AI technologies. Employing an exploratory qualitative approach, this research is based on semi-structured interviews with 20 PR practitioners. One of the key findings reveals that, although AI is often perceived as a threat, Indonesian PR professionals generally believe their roles remain secure, as long as human relational skills are maintained.

Keywords: Public Relations; Artificial Intelligence; Indonesia; AI Usage; Attitude to AI

CN-D1-SESB-3

Autopoiesis and Creativity: Understanding Artificial Intelligence's Disruption in Advertising Communication

Clifford Aaron Darmawan and Inco Hary Perdana (Multimedia Nusantara University, Indonesia)

Advertising used to simply be a program of mass media, it was an autonomous social system. This paper—drawing from Niklas Luhmann's theory of systems and Mihaly Csikszentmihalyi's model of creativity—examines how advertising changed over time into social systems within the present age of artificial intelligence, which, with technology, is altering the creative development at advertising agencies. Through qualitative research and an interview with ten practitioners of various positions

within an advertising agency connected to artificial intelligence integrated into an agency's workflow, this paper seeks to assess the systemic changes to workflow, hierarchy, and creativity. Ultimately, this paper concludes that artificial intelligence exists as an environmental disturbance incrementally that entices the advertising agency to engage in autopoiesis—separating itself from its mass media programs of news and entertainment. Therefore, the findings indicate that artificial intelligence does not replace people; instead, it alters the definition of the creative process, which now involves a hybridized effort between computerized automation and human participation. That distinction occurs via effective/ineffective coding. Thus, this study concludes that what once was a program of mass media has become an independent social system with its own logic in the age of artificial intelligence; further studies can create a new dialectic through practical concerns of ethics, governance, and sustainability.

Keywords: advertising system, Niklas Luhmann, Csikszentmihalyi, artificial intelligence, creativity

CN-D1-SESB-4

Searching the Horizon of AI Regulation

Mufti Nurlatifah (Universitas Gadjah Mada, Indonesia)

The rapid integration of Artificial Intelligence (AI) in the media landscape has precipitated a global regulatory challenge, as traditional media laws struggle to address the complexities of algorithmic content creation, automated journalism, and AI-driven audience engagement. This comparative study examines the divergent regulatory approaches adopted by eight major jurisdictions, the European Union, the United States, the United Kingdom, Canada, China, Japan, Singapore, Australia, India, and Indonesia, in governing AI applications within media contexts. Employing a regulatory governance theoretical framework, this research analyzes how different countries balance innovation promotion with the proper protection, legal certainty with adaptive flexibility, and national sovereignty with international coordination. Conducted comparative analysis approach for the legislation framework, this study reveals three dominant regulatory paradigms: rightsbased approach emphasizing precautionary principles, market-driven model which prioritizes voluntary compliance and minimal government intervention, and statecontrolled framework which focuses on social stability and national security. This study also identifies significant challenges posed by regulatory fragmentation, including compliance complexities for multinational media organizations, potential regulatory arbitrage, and the extraterritorial effects of a comprehensive framework. The research contributes to technology governance literature by providing a diverse perspective of AI regulation’s media implications and offering practical insight to navigating the tension between fostering technological innovation and protecting democratic values in an increasingly AI-mediated information ecosystem.

Keywords: AI regulation, comparative governance, technology policy, regulatory frameworks, media freedom

CN-D1-SESB-5

Reconstructing Communication Ethics in Academic Knowledge Production: A Phenomenology of Practice Approach

Hendar Putranto (Universitas Multimedia Nusantara, Indonesia); Rony Agustino Siahaan (UMN, Indonesia)

The academic world is currently facing a systemic crisis of integrity, exacerbatedby structural pressures and the proliferation of digital tools like Generative AI. Existing discourse on academic ethics often focuses on macro-level regulationsor micro-level interpersonal relations, leaving the

meso-level—the livedexperience of collaborative knowledge production—under-examined.This paper addresses this gap by proposing a new conceptual framework for thecommunication ethics of knowledge production. Synthesizing Giddens' structuration theory, van Manen's phenomenology of practice, and Floridi'sinformation ethics, this research redefines ethical engagement as a progressive"ethical modality." Using a phenomenology of practice methodology with four Indonesian academics, the study constructs a model based on three heuristic"attitudes": the Natural Attitude (pre-reflective), the Phenomenological Attitude(critical-reflective), and the Ethical Attitude (intersubjective-intentional). Thefindings reveal a model where ethics is not merely a normative code but anembodied, reflective praxis. This framework offers a heuristic tool for academicsto navigate the tensions between institutional pressures and authenticintellectual integrity.

Keywords: communication ethics, knowledge production, phenomenologyof practice, ethical modality, academic integrity

CN-D1-SESC-1

Platformization: Multi-Sided Market Dimension in the 4 Mainstream UGC Video and Livestreaming Platforms

Stefan Yudana Jatiperwira and Bernard Realino Danu Kristianto (Universitas Ciputra Surabaya, Indonesia)

Digital platforms have become central intermediaries in cultural production, reorganizing how creators, audiences, brands, and third-party developers interact. Building on one dimension/side of platformization, i.e., multi-sided markets, this paper examines how multi-sided market dimension operates in mainstream user generated content video and livestream platforms. Using a qualitative descriptive method, the study compares mechanisms and features of platform as exchange brokers between creators, audience and sponsors across four platformsYouTube, TikTok, Instagram, and Twitch-highlighting the multi-sided market aspect amongst these platforms. The analysis shows that creators are positioned simultaneously as producers, marketers, storefront and ad-space providers within platform-built marketplaces that engineer transactions and redistribute value.

Keywords: Platformization, Digital-Media-Economy, Multi-Sided-Markets, Creator-Economy, User-Generated-Content

CN-D1-SESC-2

Perceived Quality as Mediator of Social Media Influences on Purchase Intention

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Labubu dolls became the talk of many people after Lisa Blackpink uploaded a photo of herself with her Labubu collection on her social media in 2024. Collectors and fans competed to get Labubu, even willing to pay higher prices to get rare variants. The purpose of this study is to prove that perceived quality as mediator of social media influences on purchase intention. This study used a quantitative approach by distributing questionnaires to 180 respondents, including Gen Z women aged 12-27 years living in Jakarta. The research method was a survey and explanatory in nature using the PLS-SEM method. The most respondents are aged 20– 27 (85%) and hold a high school diploma (76%). The PLS results confirm that all constructs are reliable and valid after removing items not meeting the specified criteria. The hypothesis testing results confirm all direct impact hypotheses. Influencer credibility significantly affects perceived quality, e-WoM influences perceived quality, social media marketing impacts perceived quality, and perceived quality affects purchase intention. The study also supports all mediation hypotheses: perceived quality mediates the effects of influencer credibility, e-WoM, and social media marketing on purchase intention. The popularity of Blackpink's Lisa significantly impacted Labubu doll sales.

Keywords: Influencer Credibility, E-WoM, Social Media Marketing, Perceived Quality, Purchase Intention

CN-D1-SESC-3

The Relationship Between UTAUT Factors and Digital Literacy with Digital Communication Skills Among Secondary School Students in Malaysia

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Digital literacy has become an essential skill for proficient communication in the 21st century. The Unified Theory of Acceptance and Use of Technology (UTAUT) identifies factors affecting technology

adoption, although there is less understanding of how these factors interact with digital literacy to influence students' digital communication skills. A cross-sectional survey was performed including 396 secondary school pupils in Negeri Sembilan, Malaysia, chosen via stratified random sampling. A validated questionnaire assessed UTAUT constructs, digital literacy, and digital communication competencies. Data were analysed utilising SPSS Version 30, encompassing reliability assessments, correlation analysis, and evaluations of sample adequacy. Research indicates that digital literacy is a significant predictor of digital communication abilities, affirming its function as a fundamental facilitator of efficient online communication. UTAUT categories, including performance expectancy, effort expectancy, social impact, and facilitating conditions, demonstrated a substantial positive correlation with communication skills, albeit smaller than that with digital literacy. The results indicate that although supportive circumstances and perceived utility promote adoption, digital literacy is crucial for converting adoption into significant communication outcomes. The research expands UTAUT by establishing digital literacy as a fundamental factor affecting communication abilities. The findings necessitate educational policies and initiatives that emphasise competency development in addition to access.

Keywords: Digital Media Literacy, Digital Communication Skills, Technology Adoption, Online Communication

CN-D2-SESA-1

Cyberthanatology in Southeast Asia: a Phenomenological Study of Digital Memory, Digital Assets and Digital Legacy Before Death

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Southeast Asia, particularly in emerging economies like Malaysia and Indonesia, digital assets and inheritance remain underexplored. Despite ties to religion and custom, the region sees rapid smartphone dependency and cloud use, which enable digital memorymaking that leads to the accumulation of digital assets. These assets include digital data, memories and platforms which hold privacy, sentimental and monetary values. Without proper planning or legal transfer of digital rights, these digital assets cannot be inherited. As death is inevitable, raising awareness of digital legacy particularly among young adults is crucial, as they are among the active users who rely on communication technology. Therefore, anchored in the concept of 'cyberthanatology', which explores the intersection of death and communication technology, this study investigates how young adults view, perceive, and experience their digital memories, assets, and legacy in preparation for death. Using a phenomenological study, in-depth interviews were conducted with total of 10 young adults from Malaysia and Indonesia, selected through snowball sampling. The interviews were transcribed using Interpretative Phenomenological Analysis (IPA). Findings show that communication technologies act as 'memobilia', tools that store and symbolize memories which contributing to the creation of digital assets with privacy, sentimental, and monetary value. Despite awareness of online privacy risks, planning for digital legacy is limited. The study highlights the need for clearer digital legacy management policies. It contributes to academic discourse and aligns with national digital initiatives such as Malaysia's Digital Economy Blueprint and Indonesia's Digital Transformation Roadmap, advocating for a digitally informed society prepared not only for life, but also for legacy beyond death.

Keywords: Cyberthanatology, Digital Memory, Digital Assets, Digital Legacy, Phenomenology

CN-D2-SESA-2

Fear, Finance, and Festivity: Satirical Storytelling in Integrated Marketing Communication of Danamon's 'Financial Fears' Campaign

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This study explores the role of satirical storytelling as a persuasive technique in integrated marketing communication, with a focus on Danamon's "Financial Fears" campaign. Designed around the theme of financial anxiety among millennials and Gen Z in Indonesia, the campaign used horror-inspired visuals and festive Halloween motifs to frame complex economic issues in relatable narratives. Employing a qualitative case study method, this research examines campaign executions across multiple channels, including outdoor media, digital platforms, and consumer activations, while applying the frameworks of Integrated Marketing Communications (IMC) and narrative persuasion. Results show that satire and humor, when combined with cultural symbolism, effectively captured audience attention, reduced the stigma surrounding financial struggles, and encouraged proactive financial decision-making. The campaign's cross-platform consistency, emotional resonance, and creative humor prove how financial institutions can employ unconventional approaches to foster meaningful connections with audiences. This article argues that satirical storytelling within IMC not only enhances brand engagement but also contributes to social discourse by framing financial literacy in accessible and culturally resonant ways.

Keywords: Satirical storytelling, Integrated Marketing Communications, Financial campaign, Digital advertising, Humor, and persuasion.

CN-D2-SESA-3

User Experiences of Ai Real Time Translation in Intercultural Communication in Indonesia

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Cross-cultural communication relies increasingly on instant messaging apps that can translate in real time. But the automatic translation machines often make mistakes in grammar, meaning, and culture that create conflict in relationships and misunderstanding. This study purpose to identify common translation errors in WhatsApp, analyze their impact on cross-language communication, and explore user strategies on cross-linguistic communication. Based on Intercultural Communicative Competence and Communication Accommodation Theory, this study acknowledges that technology alone cannot guarantee precise and contextually relevant interactions. Using a constructivist perspective, the study included in depth interviews with 10 individuals and observations of 119 participants from various Indonesian cultural backgrounds. Thematic research revealed that translation mistakes frequently lead to confusion, annoyance, and unintended insult. Participants performed manual adjustments, consulted dictionaries, and requested clarification from native speakers to ensure clarity and promote relational harmony. Although immediate multilingual communication has benefits, users have pointed out problems with effectively transmitting idioms, cultural intricacies, and emotional nuances. The results show that Neural Machine Translation has made progress in improving contextual accuracy, but there are still big problems with informal or culturally complex encounters. The results show that translation algorithms need to be better, that user feedback mechanisms should be added, and that more language resources should be made available to increase accuracy. To communicate well across cultures, you need to use technology along with an understanding of cultural differences and a willingness to adapt. This study offers significant insights for developers and users seeking to enhance cross-language interactions.

Keywords: Real-Time Translation, intercultural Communication, Digital Communication, AI

CN-D2-SESA-4

Taste, Stories, and Culture: How Foreigner Represent Indonesian Cuisine on YouTube Channel Abroad and Hungry

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Indonesian cuisine, as a rich and diverse cultural expression, is now increasingly recognized worldwide through digital platforms such as YouTube. This study analyses the representation of Indonesian cuisine on the YouTube channel “Abroad and Hungry,” managed by Italian creator Max Ginestra. The study focuses on three main videos featuring cuisines typical of three major cities: Surabaya, Semarang, and Medan. This study aims to (1) analyses how the narrative of “foreigners trying local food” shapes cultural understanding; (2) examine how Abroad and Hungry represents the distinctive cuisines of these three cities in the context of local culture and identity; and (3) explore how digital interactions through audience comments contribute to shaping collective cultural meaning. The method used is virtual ethnography, which combines in-depth analysis of video content (narrative, visuals, cultural symbols) and audience interaction in the comments section. The results show that Ginestra not only presents a sensory experience but also constructs a deep cultural narrative. Through

the perspective of Media Ecology, YouTube is understood as a communication environment that transforms food from mere objects of consumption into representations of digital culture.

Keywords: media ecology; digital ethnography; channel YouTube Abroad and Hungry; food and culture

CN-D2-SESA-5

Crafting Digital Identities: A Case Study of Gen Z Personal Branding on TikTok

Yessica Permata Sari and Theresia Lavietha Vivrie (Universitas Multimedia Nusantara, Indonesia)

Personal branding has emerged as a critical communication strategy for Generation Z influencers on TikTok, where digital identities directly translate into social capital and career opportunities. This study examines how emerging TikTok influencers construct and maintain personal brands within the platform's algorithm-driven environment. The research investigates Nathanael Abednego's personal branding strategy, analyzing his content design, audience engagement tactics, and adaptation to evolving platform trends. Grounded in Goffman's self-presentation theory and computer-mediated communication frameworks, this study applies Frischmann's twelve-step personal branding model, which encompasses skill set development, discoverability enhancement, identity formation, first impression management, aura creation, and brand experience cultivation. A qualitative single-case study methodology was employed, utilizing digital ethnographic approaches including semi-structured interviews with three key informants, six months of systematic content analysis across TikTok, Instagram, and YouTube platforms, and participant observation of community interactions. Data analysis followed both inductive and deductive coding procedures, organized according to Frischmann's theoretical framework. Results demonstrate that Abednego successfully operationalizes eleven of Frischmann's twelve branding principles, particularly excelling in skill demonstration, audience engagement, and adaptive evolution strategies. His approach emphasizes collaborative content production, analytics-driven decision making, and selective trend adoption while maintaining authentic self-presentation. The findings validate the relevance of established personal branding frameworks for Generation Z digital creators while highlighting the need to integrate collaborative practices and algorithmic literacy into existing theoretical models for social media contexts.

Keywords: personal branding, tiktok, generation z influencers, social media strategy, digital identity, content creation

CN-D2-SESA-6

Digitalization of Education in the Banten Coastal Region: A Case Study of the Diffusion of Digital Technology Innovation at Bayah Raya High School

Chininta Rizka Angelia (Universitas Multimedia Nusantara, Indonesia); Asep Sutresna (UMN, Indonesia); Khairul Syafuddin (Universitas Multimedia Nusantara, Indonesia)

Digital transformation is driving social and economic change in various parts of the world, including rural areas. These areas often experience limited access to resources and information, which means that the process of adopting technology does not always run smoothly. This study aims to analyze the process of digital technology innovation diffusion in rural schools, with a case study of Bayah Village, Lebak Regency, Banten, Indonesia. Using qualitative research and the Theory of Innovation Diffusion (Rogers, 2010), research data was collected through in-depth interviews with three teachers and one high school student. The results show that the process of digital technology adoption in rural schools is still in its early stages. The main factors hindering this adoption process include a lack of information and communication technology (ICT) facilities, human resource support, and adequate digital media literacy. Although some students have an innovator character that utilizes technology

for economic and creative purposes, most use technology only for entertainment. Another finding in this study is that the adoption of technology without proper supervision can have negative impacts, such as online gambling among students. This study also highlights the importance of government and private sector support in improving infrastructure, developing curricula, and providing digital literacy education for all stakeholders, not just the provision of devices. This is in order to realize an inclusive and sustainable rural digital transformation.

Keywords: banten, diffusion of innovation, digital communication, education, rural digital transformation, rural school

CN-D2-SESA-7

Mumpreneur, Identified!: Digital Social Practices and the Networking Capacity of Stay-at-Home Mothers

Rony Agustino Siahaan (UMN, Indonesia)

This article aims to explore the experiences of stay-at-home mothers (SAHMs), which are shaped by their engagement with social media and intensive parenting practices that support women's career through the performance of the "mumpreneur" identity. This performance is grounded in theoretical assumptions about the plural and dynamic construction of motherhood identity, as well as empowerment-oriented digital literacy. Using data from informal interviews with millennial first-time mothers, this study describes SAHMs' digital social practices, particularly their strategic use of Instagram to build home-based entrepreneurial ventures and craft their maternal personas on social media. The findings reveal that millennial mothers undergo a transitional phase marked by identity dilemmas as they navigate new domestic routines and the desire to engage in economically productive work. During this transition, their digital proficiency—especially their engagement with Instagram—gradually transforms the traditional maternal role into a digital social practice aligned with professional standards and achievement goals comparable to having a career. In conclusion, Instagram serves as a strategic tool for SAHMs to seek information, generate knowledge, and enhance their networking capacity, which in turn reshapes intensive parenting practices and constructs a new narrative that reconfigures the image of the "good mother" into that of the "productive mother" through entrepreneurial activity. Finally this article suggests new insights into digital motherhood, platformed entrepreneurship, and identity performance in a non Western post colonial context.

Keywords: motherhood identity, neoliberal SAHM, mumpreneur, networking capacity, digital entrepreneurship, Instagram

CN-D2-SESB-1

Constructing Public Engagement Through Environmental Communication: Corporate Narratives on Plastic-Free Shopping in Indonesia

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The retail industry has become the focus of public engagement analysis regarding the plastic waste crisis in Indonesia, launching environmental awareness campaigns such as "No Plastic Glitters Shopping" and encouraging the use of eco-friendly shopping bags. The purpose of this study is to analyze the representation of public involvement in environmental awareness. Next, to analyze the framing of environmental actions and narrative tone in corporate environmental communication in media narratives and official company releases. Qualitative analysis method of the text of 15 news articles and press releases from 2020–2024. This study found that several retailers explicitly expressed environmental awareness manifested in transactional relationships with consumers, such as Alfamart, included in product and service commitments, such as AZKO and IKEA. Consumer engagement is constructed symbolically and substantively through moral appeals and consumptive choices. Narrative tones in campaign texts vary among several corporations, some using imperative, persuasive, or ceremonial tones. However, they do not involve dialogic participation. However, corporate narratives are not persuasive in building substantive dialogic participation. These findings enrich the study of environmental communication and corporate legitimacy in sustainability issues.

Keywords: corporate narratives, environmental action, environmental communication, green retail, public engagement

CN-D2-SESB-2

Exploring Stakeholder Engagement and Social License to Operate in Mining Industry

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A social license to operate (SLO) is a crucial component of the mining industry to run smoothly. To do this, it is crucial to involve the community in the planning of social programs. The corporate has to ensure the programs implementation meet community needs and supported during execution. The research aims how the mining industry builds relationships with its stakeholders? How is the involvement of stakeholders in the preparation of corporate social programs? and what is the impact of community involvement in the preparation of social programs on mining operations? This study uses a qualitative approach with ethnography research method. The research was conducted at PT Kaltim Prima Coal (KPC), a coal mine located in Sangatta, Kalimantan Timur. The Primary data is the in-depth interviews with eight stakeholders as informants, while secondary data is obtained from sustainability report and other documents at KPC. The results show that KPC places good stakeholder engagement as an important part of good mining practice. This is demonstrated by the involvement of stakeholders in the execution of corporate social programs and is evident in a number of current policies. Through their recommendations or direct conversations with the corporation, stakeholders can communicate with the corporations about the necessary social programs. Community participation in KPC's social planning and programs has been demonstrated to positively impact corporate reputation. The social license plays a pivotal role in the KPC’s operations. This is evidenced by the absence of interference from local community that has an impact on the company's operations.

Keywords: coal mine, mining industry, social license to operate, stakeholder engagement.

CN-D2-SESB-3

Sustainable Fashion Intentions: A TPB-Based Study on the Shift from Fast Fashion to Thrift Shopping Among Indonesian University Students

Maria Widyarini, Syayu Zhukhruffa and Kevin Grahadian (Parahyangan Catholic University, Indonesia)

This study aims to investigate the sustainable fashion intention of university students towards fast fashion and thrift shopping in Indonesia. To achieve this goal, the study applied the TPB and analysed the data using the SEM approach. The study found that only three of the basic elements of the TPB model can more effectively explain sustainable fashion intention. The findings suggest that social and cultural influences, environmental awareness, and psychological factors significantly impact thrift shop practice. The results of this study have significant implications for policymakers in Indonesia who seek to promote thrift shopping as part of the sustainable fashion movement among university students. This study can help policymakers articulate strategic plans that prioritize environmental awareness of fashion waste, economic benefits, and social responsibility, starting with university students, thereby emphasizing the practical relevance of the study. However, the study acknowledges that further research is needed to explore potential limitations and areas for improvement in this field

Keywords: Sustainable Fashion, Theory Planned Behavior, PLS-SEM, Thrift Shop, University Students

CN-D2-SESB-4

Brand Visiting Jogja in the Digital Age (Case Study of the Integrated Marketing Communication Program Management Strategy of the Special Region of Yogyakarta Provincial Tourism Office for 2023-2024)

Astried Herawati Basala and Rajiyem Rajiyem (Gadjah Mada University, Indonesia)

This study aims to explore the management strategies of the Visiting Jogja brand's Integrated Marketing Communication (IMC) program in the digital era and analyze the relevance of IMC strategies to strengthening the brand equity dimensions of Visiting Jogja, which is run by the Special Region of Yogyakarta (DIY) tourism office for the 2023-2024 period. This study employs the four pillar IMC, namely stakeholders, channels, content, results, and digital marketing communication, as well as brand management, including brand loyalty, brand awareness, perceived quality and brand association in the digital era. This research employs a qualitative approach using case study method and data collection techniques through semi-structured interviews and documentary studies. The findings indicate that the Visiting Jogja marketing communication strategy has demonstrated an adaptive direction toward digital transformation, with strong cross-sectoral coordination. However, structural barriers still limit channel integration and message synergy across media. Channel and content strategies have adapted to digital audience preferences, but management remains parallel and not fully integrated. Program evaluation is also not supported by a structured data-based measurement system. From a brand management perspective, Visiting Jogja has successfully built brand awareness and perceived quality through consistent visual identity and relevant digital services. However, brand loyalty and brand association still need to be strengthened, especially in terms of narrative consistency and public engagement. This study contributes to the understanding of brand communication strategies in the public sector and opens opportunities for further studies that focus more on the perceptions and experiences of audiences as brand users.

Keywords: Integrated Marketing Communication, Brand Equity, Digital Branding, Tourism, Destination

CN-D2-SESB-5

Community-Based Approaches to Sustainable Health Campaigns in Malaria Prevention and Control in Jayapura, Papua

Veronika Veronika and Bertha Sri Eko Murtiningsih (Universitas Multimedia Nusantara, Indonesia)

This research is motivated by the importance of intercultural communication competencies based on local wisdom and cultural norms approach in health communication practices. The objectives of this research are to Identify health communication problems in handling malaria diseases in health centers in Jayapura, Papua Province. The research methodology used is a qualitative approach with a case study method. Data collection was carried out through in-depth interviews and document studies. Informants and participants in the study amounted to 6 people including medical practitioners from health centers. The findings Health communication, particularly in preventing and treating malaria in Papua, remains a significant challenge. Obstacles identified include language, cultural, and educational barriers among the diverse population.

Keywords: Health communication, sustainable development, Malaria, Papua

CN-D2-SESB-6

Raising Community Participation in Sustainability Project: A Study on Communication Strategy of Permayouth in Action Program in Timor-Leste

Ernesto Guevara Carceres and Maria A. G. Elmada (Universitas Multimedia Nusantara, Indonesia)

Timor-Leste is one of the countries affected by climate change and vulnerable to natural disasters such as droughts and soil erosion. Some areas in the country also still face limited access to water resources. This situation encourages the involvement of non-governmental organizations like PERMATIL, which implements various efforts such as water and soil conservation through the Permayouth in Action program. However, local community participation in this program is still considered low. Using an explanatory case study method, this research aims to examine the communication strategies used by PERMATIL in promoting community participation from the perspectives of the Communication for Social Development. Data collection techniques included interviews, FGDs, and field observations. The results show that the communication strategies implemented by PERMATIL to increase community participation in TimorLeste encompass information, education, and communication. The finding shows that information that is more critically related to the root problem of climate change is needed to complete the practical knowledge that the society has. Education that is more consistent and structured is needed to encourage a more sustainable effect on the society. Face-to-face communication is still the main communication model that is effective, while integrating with culture and inducing word of mouth are also the keys to creating the discussion on climate action amongst youth.

Keywords:
communication for social development, climate action, developing-countries, ecosystem restoration, youth participation

CN-D2-SESO-1

Digital Communication Strategy for Environmental Education Through Social Media (Analysis of the Instagram Account @sayapilihbumi)

Daniel Indra Prakoso, Bertha Sri Eko Murtiningsih and Nuria Astagini (Universitas Multimedia Nusantara, Indonesia)

Environmental issues such as waste management continue to pose serious challenges in Indonesia, requiring effective communication to increase awareness and encourage sustainable behavior. Social media, as a widely used digital platform, offers significant potential to communicate environmental messages in ways that are both informative and participatory. This study aims to analyze how communication strategies are employed on Instagram to promote environmental awareness and collective responsibility, with a specific focus on the account @sayapilihbumi. The research applies the concept of environmental communication as proposed by Cox (2013), which emphasizes the integration of messages, channels, and audiences to create social change. The study also employs thematic analysis following Braun and Clarke (2006) to examine Instagram content posted between January and August 2025. Data were categorized into codes, subthemes, and themes to identify patterns in communication approaches. The findings reveal four dominant strategies: global awareness integration, educational storytelling, hybrid digital–offline engagement, and community identity-building. These strategies demonstrate how Instagram's interactive and visual affordances can transform environmental discourse into relatable narratives and participatory actions. Collaborations with practitioners, campaigns tied to international awareness days, and hashtags used as identity markers further enhance message reach and audience involvement. The study concludes that Instagram can function as both an educational platform and a participatory hub for environmental advocacy. By combining informative content with interaction, @sayapilihbumi illustrates how digital communication Malacca, Malaysia, October14 th - 17 th , 2025 Co-organized by Universitas Multimedia Nusantara and Multimedia University Malaysia 1 The full manuscript should be 7 to 10 pages long (around 4000 words), including the references 2 Please note that we will remove the author's name, affiliation and email during the blind review process. strategies can promote sustainable practices and foster grassroots environmental movements.

Keywords: Environmental Communication; Digital Communication Strategy; Social Media; Sustainability; Public Awareness

CN-D2-SESO-2

Voice or Vote? The Battle for Indonesia's Democratic Future

Bagus Muhamad Adam and Agustinus Rusdianto Berto (Universitas Multimedia Nusantara, Indonesia)

This study analyzes the discourse dynamics surrounding Indonesia's regional head election (Pilkada) system using the Discourse Coalition Framework (DCF) and Discourse Network Analysis (DNA) approaches. The primary focus is to understand patterns of interaction among actors, dominant narratives, and discourse coalitions that emerge in debates over whether regional leaders should be elected directly by the people or indirectly through local parliaments (DPRD). The findings reveal three main coalitions: the Pro-Direct Democracy Coalition, the Pro-DPRD Coalition, and the Rather Neutral Coalition. The narrative "Perlu dikaji komprehensif" ("Needs to be comprehensively reviewed") emerges as a convergence point between conflicting factions, with the highest degree centrality value (6.17%) and significant betweenness centrality (15.88%). Key actors such as Titi Anggraini, Supratman Andi Agtas, and Muhaimin Iskandar play strategic roles in disseminating narratives and bridging dialogues between clusters. The study identifies polarization in the discourse between issues of efficiency and democratic representation. Limitations of the study include data restricted to online media and a

predominantly quantitative approach. Recommendations emphasize the need for a comprehensive evaluation of the Pilkada system, open dialogue among stakeholders, and further multidisciplinary and longitudinal research to gain deeper insights into policy discourse dynamics.

Keywords: discourse network analysis, discourse coalition framework, regional head election

CN-D2-SESO-3

Traditional Storytelling Based on Local Wisdom as a Sustainability Communication Strategy for Sustainable Ecotourism in Wae Lolos Village, West Manggarai Regency - Indonesia

Bertha Sri Eko Murtiningsih and Veronika Veronika (Universitas Multimedia Nusantara, Indonesia)

Traditional storytelling based on local wisdom is crucial for building awareness and increasing community participation in ecotourism management of Wae Lolos village, West Manggarai. Local wisdom contributes to sustainability communication process since the Wae Lolos community remains traditional and highly values cultural heritage. Therefore, this research aims to identify 1) the role of traditional storytelling or folklore in sustainable communication practices, 2) the sustainability communication model in ecotourism development in Wae Lolos village, and 3) local wisdom in sustainable ecotourism development. The concepts of sustainability communication, storytelling, ecotourism, and local wisdom are used through qualitative and case study methods. Meanwhile, data collection includes in-depth interviews with 20 informants, observation, and literature research. The results show that Folklore and cultural rituals as storytelling media are used to communicate issues related to cultural and nature preservation in tourist destinations. Local wisdom, exemplified by the Tiba Meka and Hising traditions, as well as folklore, contribute to sustainable ecotourism. Sustainability communication impacts the behavior of residents, tourists, and stakeholders, leading to changes in attitudes and behavior.

Keywords: ecotourism, local wisdom, storytelling, sustainability communication

CN-D2-SESO-4

MyTelkomsel Super App and Improving Customer Experience Digital Lifestyle: A Qualitative Perspective Based on TAM and Omnichannel Service Culture

Husnita Husnita, Hst (Indonesia)

The MyTelkomsel Super App has been developed as a primary channel to enhance customer experience in the digital lifestyle era. However, despite the high number of downloads, the levels of adoption, activation, and utilization of its features still face challenges. This study aims to: (1) explain how customers interpret the adoption, activation, and use of MyTelkomsel Super App features in their daily practices, (2) explore how customers and frontline employees interpret data integration and synchronization across channels and its impact on experience, and (3) analyze how Perceived Usefulness and Perceived Ease of Use interact with the quality of omnichannel integration to shape continued use. This research employs a descriptive qualitative approach with semi-structured interviews conducted with both customers and employees as informants. The analytical framework is based on the Technology Acceptance Model (Davis, 1989) and the concept of Omnichannel Service Culture (Verhoef et al., 2015). The findings reveal that adoption is understood as the initial decision to try the application, activation is perceived as the moment when the application delivers real value through successful transactions, and utilization is primarily focused on core services such as data package purchases. Integration and synchronization across channels are critical in building trust; both customers and employees agree that data inconsistency reduces credibility. Furthermore, Perceived

Usefulness and Perceived Ease of Use only foster continued use when reinforced by reliable and real-time omnichannel integration. These findings emphasize that the success of the MyTelkomsel Super App depends on the combination of functionality, ease of use, and cross-channel reliability in shaping a sustainable digital customer experience.

Keywords: MyTelkomsel Super App, customer experience, Technology Acceptance Model, Perceived Usefulness, Perceived Ease of Use, omnichannel service

CN-D2-SESO-5

Word of Mouth in Storytelling Rintik Sedu on Instagram Audience Interaction

Audrey Vania Alodia Hulu and Lelita Azaria Rahmadiva (Universitas Muhammadiyah Surakarta, Indonesia)

This study examines how storytelling on Rintik Sedu, a popular poetic and narrative emotional Instagram account, generates natural Word of Mouth (WOM) and builds trust among its audience. In today's digital era, Word of Mouth is highly influential since peer recommendations are seen as more genuine than brand-driven advertising. Using a qualitative approach, in-depth interviews were conducted with five followers aged 19–24 years old who have engaged with the account for over three years. Narrative Transportation Theory was applied to learn how emotional immersion in stories encourages sharing and behavior recommendation. The findings show that followers naturally share content by tagging friends, reposting storytelling content, recommending books, also initiating discussions on Rintik Sedu's podcasts and movie. Because these tactics are based on genuine emotional connections rather than persuasive marketing, they are trusted. The study concludes that storytelling fosters sustained engagement and turns audiences into reliable advocates who spread Rintik Sedu's message through genuine Word of Mouth. This illustrates the enduring value of narrative-driven communication in fostering influence and trust in today's online landscape. However, this research is limited to a small sample of young adult Instagram users, thus further studies could expand to larger and more diverse audiences across different platforms to deepen the understanding of narrative-driven Word of Mouth.

Keywords: Word of Mouth, Storytelling, Audience Interaction, Qualitative, Instagram.

CN-D2-SESO-6

Strategic Road Mapping in Intellectual Property Development: Animated Content as a Medium for Climate Change Communication

Arsa Widitiarsa Utoyo (Universitas Multimedia Nusantara & Communication Science, Indonesia); Kadek Satria Adidharma and Siti Rahmadini (Politeknik Multimedia Nusantara, Indonesia); Yohanes Widiastomo (Universitas Multimedia Nusantara, Indonesia)

This paper explores the role of intellectual property (IP) development in animation as a strategic tool for communicating climate change issues in Indonesia. Drawing from qualitative research involving expert interviews with creative industry leaders and surveys targeting millennial audiences, the study proposes a roadmap for designing sustainable IP. The research highlights three key elements: character design, narrative construction, and marketing strategies that enable animated IP to resonate with the public and achieve monetization potential. Findings indicate that IP not only strengthens institutional creative assets but also serves as a medium for social advocacy, particularly in fostering climate awareness. By combining creative innovation with business strategies, this research demonstrates how animated IP can bridge the gap between entertainment and environmental education, aligning with the goals of communication for social change.

Keywords: IP, Monetization, Creative, Innovation, Roadmap

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Covert Data Exfiltration via Electromagnetic Side-Channel Emissions from Computer Memory

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Due to the lack of publicly available datasets to develop a machine learning model for detecting electromagnetic data exfiltration via RAM-based Radio Frequency attack in an air-gap system, we established a lab using low-cost and readily available hardware. This paper presents a proof-of concept for a covert data transmission system that exploits electromagnetic side-channel emissions from computer memory access patterns, distinguishing it from previous CPU, SATA, or USB-based approaches. Unlike existing electromagnetic covert channels that rely on peripheral components, our RAM-based approach directly manipulates memory access patterns to generate detectable radio frequency signals at 100 MHz, offering superior stealth characteristics and broader applicability across diverse hardware configurations. We achieved successful electromagnetic signal transmission using a C++ developed transmitter program that modulates CPU and memory-intensive operations, and a Python-based receiver integrated with RTL-SDR on the receiver system. A dataset that captured the anomaly in the transmitter system was generated. The features included in the resulting dataset were the timestamped process metrics with binary classification for the anomaly, which offers valuable input for machine learning model development. Although complete file reconstruction remains challenging due to bit-level alignment issues, weak signal emission, and noise interference, the research proves the fundamental vulnerability of electromagnetic emissions from computer memory. With the implementation of our enhanced synchronization protocol that incorporates error correction and adaptive noise filtering, we achieved quantifiable improvements, resulting in a 68% file reconstruction success rate compared to the initial 42%. Also, the signal detection increased to 73% accuracy, 1000 bps effective transmission rate with 15% error rate, and 0.5-meter operational range. The findings and generated dataset have significant implications for cybersecurity, particularly for securing air-gapped networks and sensitive computing environments.

Keywords: Air-Gap, RTL-SDR, C/C++, Electromagnetic Side-Channel, Memory

IS-D1-SES01-2

Analysis of Industrial Noise from Machinery: A Case Study of Noise Exposure at Cable Factory, Indonesia

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Noise is a type of disturbing sound that usually comes from human activities which can happen in buildings, including industrial areas. Receiving too much noise can result in pain such as hearing problems and exhaustion at a high level. In response to the noise problem, this study was done in PT. Karya Mega Sarana, a cable company located in Bekasi, Indonesia to find the evaluation of noise exposure. The methods used are interviews about production machines and building dimensions of the company, surveys with workers about disturbances experienced during production days, measurement of noise intensity, and simulation of noise exposure using Surfer and SoundPLAN Essential 5.1. Based on the results, the noise intensity from production machines is 72.5 dBA in the Drawing building and 74.4 dBA in the Stranding building. The difference in noise distribution may vary depending on the position and whereabouts of every worker. Compared to the Indonesian Ministry of Environment and Forestry Policy by 1996, the noise intensity has overreached the limit of recommendation, which is 70 dBA for industrial areas. According to the Guideline by the Ministry of Employment Number 5 Year 2018, the noise intensity from both buildings did not reach the limit of recommendation, 85 dBA for 8 hours of exposure.

Keywords: industrial areas, noise exposure, intensity, Surfer, SoundPLAN

IS-D1-SES01-3

Noise level analysis using I-SIMPA Simulation: A case study in the Hotel Operations Laboratory, Universitas Multimedia Nusantara, Indonesia

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This study investigates noise levels in the laboratory of the Hotel Operations Department at Universitas Multimedia Nusantara, Indonesia, using on-site measurements and I-SIMPA software simulations. The primary objective is to address noise disturbances that impact activities in the laboratory and propose effective solutions. Noise level measurements revealed that several areas exceeded the Indonesian Minister of Environment Decree No. 48 of 1996 standard of 55 dB for educational facilities. Simulations identified the highest noise level, 72 dB, in the pastry room near a pipe system, the main noise source. Other affected areas included the bakery room, kitchen, storage spaces, and serving areas, with levels ranging from 58 dB to 68 dB. To mitigate these issues, the study recommends installing sound-absorbing barriers, using noise-dampening covers for equipment, and providing ear protection for personnel. These findings provide actionable insights to enhance acoustic comfort and create a conducive learning environment within educational laboratories.

Keywords: noise level, laboratory, I-SIMPA software, acoustic comfort, noise mitigation

IS-D1-SES01-4

IoT Based Plant Monitoring using Solar and LoRa Technology

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The adoption of Internet of Things (IoT) technologies in agriculture has emerged as a strategic approach to enhance productivity, reduce resource wastage, and promote sustainable farming practices. This study presents the design and implementation of an IoT-based plant monitoring system powered by solar energy and enabled with Long Range (LoRa) communication technology. The system addresses the limitations of traditional plant monitoring methods, which often lack precision, require high manual effort, and result in inefficient use of resources. The proposed solution integrates sensors to measure soil moisture, temperature, humidity, and light intensity, with collected data transmitted via LoRa to a centralized platform. Solar energy is employed to ensure autonomous, continuous operation in remote or off-grid locations. The findings highlight the potential of combining solar power and LoRa-based IoT networks to deliver cost-effective, scalable, and energy-efficient monitoring solutions.

Keywords: Internet of Things, Crop Monitoring, Sustainable Agriculture, LoRa Communication, Solar Powered

IS-D1-SES02-1

Multilingual Audio-Based Depression Detection using Audio Augmentation and Data Efficient Image Transformer

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Emerging evidence suggests that speech analysis is increasingly being utilized as an objective biomarker in artificial intelligence (AI) applications designed to complement clinical assessments, improve diagnostic accuracy and treatment response monitoring, enhance healthcare quality, facilitate remote patient monitoring, and reduce the cost and time associated with the assessment of Major Depressive Disorder (MDD). This study employs audio augmentation techniques including pitch shifting, time shifting, and noise addition to address the issue of data imbalance between Major Depressive Disorder (MDD) and Healthy Control (HC) labels identified in previous research. To mitigate this imbalance, oversampling is applied to the MDD class, which contains fewer samples than the HC class. The augmented data are then used to train two variations of the DeiT model, namely deit_base_patch16_224 and deit_small_patch16_224. Both models achieved an accuracy of approximately 70 percent across the training, validation, and testing phases. Although the deit_small_patch16_224 exhibited slightly lower accuracy compared to the deit_base_patch16_224 model, this performance was attained with only half the training time required by the deit_base_patch16_224. Furthermore, the proposed framework, which incorporates audio augmentation techniques, outperforms prior related studies by achieving a
14.82 percent performance improvement.

Keywords: Depression Detection, Audio Classification, Audio Augmentation, DeiT, Multilingual Audio

IS-D1-SES02-2

Gender Differences in EEG Absolute Band Power Across Alzheimer's Disease, Frontotemporal Dementia, and Healthy Controls

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Dementia affects the structure and function of the brain, which significantly impacts the well-being of older adults. Recent research shows that power spectrum and functional connectivity features can serve as potential biomarkers for diagnosing and classifying dementia. However, there is still limited research on gender-specific changes in the power spectrum in dementia, especially in Alzheimer's Disease (AD) and Frontotemporal Dementia (FTD). This paper examines differences in absolute power between male and female participants within each frequency band (delta, theta, alpha, beta, and gamma). First, the Power Spectral Density (PSD) was estimated using Welch's method. Absolute power was calculated by integrating the PSD within the frequency bands. The analysis was carried out on a publicly available resting-state (RS) eyes-closed (EC) electroencephalographic (EEG) dataset from 88 age-matched subjects. The dataset includes three groups: 36 (12 male) with AD, 23 (14 male) with FTD, and 29 (18 male) cognitively normal (CN) participants. Statistical comparisons were performed using Welch's two-sample t-test to find significant differences in group-averaged absolute band power between males and females within each band. The results showed distinct band power patterns between genders in each group. Notably, the average absolute power for females in the AD group was higher across all frequency bands except delta, which was lower compared to males. Furthermore, significant gender differences in absolute power were observed within the AD group in the theta ($p = 0.02$, $d = 0.59$, $\eta^2 = 0.17$), alpha ($p = 0.01$, $d = 0.73$, $\eta^2 = 0.16$), and beta ($p = 0.01$, $d = 0.69$, $\eta^2 = 0.17$) bands, all reflecting large effect sizes. In the CN group, males exhibited higher absolute mean power in the alpha, beta, and gamma bands; however, in the delta and theta bands, the values were lower compared to females. In the FTD group, males consistently showed higher absolute power than females across all frequencies except in the alpha band, where values were comparable. These gender-

based changes in overall absolute power revealed a spectral pattern, highlighting the influence of gender on EEG characteristics in AD and FTD.

Keywords: Alzheimer's disease, Electroencephalogram, Frontotemporal dementia, Power spectral density, Gender

IS-D1-SES02-3

Cross-Lingual Probing and Community-Grounded Analysis of Gender Bias in Low-Resource Bengali

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Large Language Models (LLMs) have achieved significant success in recent years; yet, issues of intrinsic gender bias persist, especially in non-English languages. Although current research mostly emphasizes English, the linguistic and cultural biases inherent in Global South languages, like Bengali, are little examined. This research seeks to examine the characteristics and magnitude of gender bias in Bengali, evaluating the efficacy of current approaches in identifying and alleviating Bias. We use several methods to extract gender-biased utterances, including lexicon-based mining, computational classification models, translation-based comparison analysis, and GPT-based bias creation. Our research indicates that the straight application of English-centric bias detection frameworks to Bengali is severely constrained by language disparities and socio-cultural factors that impact implicit biases. To tackle these difficulties, we executed two field investigations inside rural and low income areas, gathering authentic insights on gender Bias. The findings demonstrate that gender Bias in Bengali presents distinct characteristics relative to English, requiring a more localized and context-sensitive methodology. Additionally, our research emphasizes the need of integrating community-driven research approaches to identify culturally relevant biases often neglected by automated systems. Our research enhances the ongoing discussion around gender bias in AI by illustrating the need to create linguistic tools specifically designed for underrepresented languages. This study establishes a foundation for further investigations into bias reduction in Bengali and other Indic languages, promoting the development of more inclusive and fair NLP systems.

Keywords: Gender Bias, Natural Language Processing, Language Bias, Large Language Models

IS-D1-SES02-4

Adaptive tuning of the unscented Kalman Filter using particle swarm optimization for inertial-GPS sensor fusion systems

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Accurate vehicle positioning requires effective IMU–GPS fusion, yet prior methods—EKF, UKF, ML, GA, and DE—suffer from nonlinearity, instability, or high computational cost. This study introduces a PSO-based adaptive tuning framework for optimizing UKF parameters (α, β, κ, Q, R), evaluated in CARLA 0.9.14 using a Tesla Model 3 under diverse maneuvers and environmental conditions. Within defined parameter bounds, convergence stabilized within 15 generations, achieving an 82.14% accuracy improvement over manual tuning and reducing IMU drift by up to 21,606.59m. Multi-trial statistical validation confirmed consistent gains with low confidence intervals. With update times remaining below the 10 ms real-time threshold, the PSO-tuned UKF demonstrates practical localization performance for dynamic, GPS-challenged conditions.

Keywords: unscented Kalman filter (UKF), particle swarm optimization (PSO), inertial measurement unit-GPS (IMU-GPS) fusion, adaptive tuning, vehicle localization, CARLA simulation.

IS-D1-SES03-1

Optimizing Leukemia Classification with Fine-Tuned SENet Variants: A Comparative Study on Binary and Multi-Class Tasks

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Leukemia, a blood cancer diagnosed primarily through microscopic examination of blood smears, poses challenges due to the cost, time, and labor-intensive nature of the process. This paper proposes an automated deep learning based approach for leukemia classification, addressing two tasks: (i) binary classification between acute lymphocytic leukemia (ALL) and healthy cells (HTL), and (ii) five-class classification involving ALL, acute myelogenous leukemia (AML), chronic lymphocytic leukemia (CLL), chronic myelogenous leukemia (CML), and HTL. Microscopic images were obtained from the ALL Image Database (ALL-IDB1) and the American Society of Hematology (ASH) Image Bank. Transfer learning was applied using three state-of-the-art models: Inception-V3, ResNeXt, and SENet. Results demonstrate that SENet consistently outperforms the other models. To further enhance performance, three SENet variants were developed by integrating support vector machine (SVM) classifiers, additional hidden layers with diverse feature vectors, and dropout regularization. The best-performing variant (SENet-D), combining feature selection with dropout regularization, achieved testing accuracies of 99.84% for binary classification and 84.48% for five-class classification, establishing its robustness and effectiveness for automated leukemia detection.

Keywords: Leukemia, Deep Learning, Squeeze-and-Excitation Networks (SENet), Transfer Learning, Neural Networks, Multi-class Classification

IS-D1-SES03-2

Atrous Spatial Pyramid Pooling(ASPP)-Enhanced U-Net with Squeeze-and-Excitation(SE) Channel Recalibration for Early Smoke Classification

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Early smoke detection is critical for wildfire prevention and industrial safety, yet image-level classification under UAV conditions remains challenging due to low contrast, thin and transient plumes, cluttered backgrounds, and variable illumination. The Flame and Smoke Detection Dataset (FASDD) has expanded benchmarking beyond narrow scenes, but much of the literature emphasizes object detection or few-shot classification. Reported results on FASDD show that Fireformer achieves 87.3% accuracy, ConvNeXt 88.6%, and EfficientNetV2 82.69%, while FireCLIP, leveraging multimodal pretraining, reaches 98.56%. To balance accuracy and deployability for UAV platforms, we propose an ASPP-Enhanced U-Net with Squeeze-and-Excitation (SE) channel recalibration, a compact encoder–decoder repurposed for image-level classification via global pooling of decoder features. The design combines batchnormalized residual blocks for stable optimization, attentiongated skip connections to suppress irrelevant context, an SE mechanism to emphasize subtle smoke cues, and an Atrous Spatial Pyramid Pooling (ASPP) bottleneck to aggregate multiscale features for both faint wisps and broader plumes. On the FASDD_RS subset, the proposed model attains a best validation accuracy of 97.29%, substantially outperforming Fireformer, ConvNeXt, and EfficientNetV2, while remaining within ~1% of FireCLIP. Pixel-level evaluation further demonstrates strong background suppression (overall accuracy 0.955, precision 0.80, recall 0.81, IoU 0.68, Dice 0.81). These results highlight that a UNet backbone, augmented with ASPP and SE attention, delivers high accuracy in a single end-to-end model that is compact and well-suited for UAV-based early smoke detection.

Keywords: Early smoke detection, UAV imagery, U-Net, Atrous Spatial Pyramid Pooling (ASPP), Squeeze-and-Excitation (SE)

IS-D1-SES03-3

Advancing Prostate Cancer Diagnosis with DCGAN-Generated Synthetic Histopathology Images

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Deep learning models for prostate cancer diagnosis are often hindered by the scarcity and imbalance of medical imaging datasets. This study addresses this challenge by developing a Deep Convolutional Generative Adversarial Network (DCGAN) to produce high-fidelity synthetic histopathology images. Leveraging the Cancer-Net PCa dataset, our DCGAN, featuring over 51 million parameters, was trained for 200 epochs to generate realistic images. The model's performance was rigorously evaluated, demonstrating stable training dynamics with generator and discriminator losses converging at 0.6526 and 0.6953, respectively. A significant improvement in image quality was confirmed by the Fr´echet Inception Distance (FID) score, which dropped from an initial value of approximately 400 to 211.89. While the model showed high precision, limitations in image diversity were identified, indicating an area for future enhancement. Futhermore, we trained several transfer learning models on the augmented dataset using the proposed DCGAN model where the EfficientNetV2 performed the best at 97.02% accuracy and an improvement of 5.42% over the original dataset, demonstrating a state-of-the-art result among the other established GAN models. The results affirm the potential of DCGANs to effectively augment medical datasets, paving the way for more robust and accurate diagnostic tools in the fight against prostate cancer.

Keywords: Prostate Cancer, Synthetic Image Generation, DCGAN, Medical Imaging, Deep Learning

IS-D1-SES03-4

IntelliGrow: Image processing with IoT alert for pests and diseases classification in chili plant

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Pest and disease outbreaks in chili cultivation remain significant challenges for farmers, often resulting in reduced crop yields and economic losses due to delayed detection using traditional monitoring methods. This project introduces IntelliGrow, a monitoring system that detects and classifies pests and diseases in chili plants using image processing and IoT integration. A deep learning model based on Convolutional Neural Network (CNN), developed with TensorFlow, classifies chili leaf conditions into Anthracnose, Aphid Infestation, Powdery Mildew, and Healthy categories. The system integrates a Raspberry Pi with a webcam, LEDs, and a buzzer to enable real-time image capture, classification, and alert notifications. Detection results are stored in a MySQL database and displayed through a web application built using HTML, CSS, JavaScript, PhpMyAdmin, and XAMPP. Testing showed high classification accuracy, with 100% for Anthracnose, 98.92% for Healthy plants, 83.60% for Powdery Mildew, and 59.56% for Aphid Infestation. The system supports both scheduled and manual detection for real-time monitoring and alerts, offering a reliable and low-cost solution for early pest and disease detection in smart agriculture.

Keywords: Image Processing, CNN, TensorFlow, Classification, IoT, SQL

IS-D1-SES04-1

Multi-Agent Reinforcement Learning for Trajectory and Handover Optimization in UAV-Assisted 6G HetNets

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UAV-assisted heterogeneous networks (HetNets) in urban environments face significant challenges in optimizing trajectory, rate, and handover (HO) decisions under dense mobility and interference conditions. Existing approaches often fail to jointly address these factors, leading to inefficient resource allocation, frequent HO failures, and degraded user experience. This paper presents a multi-agent reinforcement learning (MARL) framework that enables cooperative UAV agents to optimize trajectory planning, network rate, and HO performance simultaneously. The model integrates signal-tointerference-plus-noise ratio (SINR), achievable rate, and HO-related parameters into the probability of identification (POI), ensuring accurate user association and sustained connectivity. A reward function is designed to balance rate maximization, HO frequency reduction, and trajectory efficiency, guiding agents toward optimal network performance. Simulation results, validated with ray tracing (RT) in realistic urban scenarios and benchmarked against 3GPP and NYM models, demonstrate that the proposed MARL framework achieves higher rate, lower HO failures, improved POI, and enhanced energy efficiency in complex urban HetNets.

Keywords: U2G Communication, Path Loss Modeling, UAV Orientation, 3D Time-Varying Multi-Agent Reinforcement Learning, UAV-Assisted HetNets, Trajectory Optimization, Handover Optimization, Rate Optimization, Energy Efficiency.

IS-D1-SES04-2

Octagonal Patch Antenna with Modified SRR Width and Ground Slot for Sub-6 GHz BandFSO Transmission

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This paper presents a miniaturized patch antenna that integrates an octagonal split-ring resonator (SRR) and a square-slot defected ground structure (DGS) for sub-6 GHz wireless applications. Designed on an FR-4 substrate (εr = 4.3, thickness = 1.6 mm), the antenna achieves a compact 10 × 10 × 1.6 mm3 footprint, which is significantly smaller than conventional patch designs. The optimized configuration operates across 4.20–7.05 GHz, covering upper sub-6 GHz 5G New Radio (NR), Wi-Fi 6/6E, and IoT frequency bands. The SRR enhances electromagnetic coupling, while the DGS improves impedance matching and bandwidth by suppressing unwanted resonances. Simulations indicate a return loss of −31 dB at 5.9 GHz, a wide impedance bandwidth of 2.85 GHz, and a peak gain of −2.8 dBi. Although the gain is modest compared with larger antennas, it is sufficient for short-range IoT gateways, smart sensors, and compact 5G devices, where small form factor and wideband compliance is more critical than high directive gain. The results demonstrate that SRR- and DGS-based techniques provide an effective approach for antenna miniaturization and wideband operation, offering a promising solution for next generation compact wireless systems.

Keywords: Sub-6 GHz antenna, octagonal patch, split ring resonator (SRR), defected ground structure (DGS), IoT applications

IS-D1-SES04-3

Framework Employing F-OFDM for Error Probability and Divergence Loss Evaluation in 5G Networks

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This paper presents an end-to-end freespace optical (FSO) transmission framework that employs a filtered-OFDM (F-OFDM) transceiver for 5G optical wireless backhaul and access. The architecture integrates an optical fiber front haul with an IM/DD FSO link and models the dominant impairments: atmospheric turbulence, pointing-induced misalignment, geometric divergence, front-end nonlinearities, and cochannel interference under multichannel operation. A composite statistical channel is formulated by coupling turbulence, pointing error, and geometric coupling into the received irradiance, from which closed-form expressions for the cumulative distribution function, outage probability, and error performance are obtained. The transmitter leverages subband filtering to suppress out-of-band leakage and reduce peak-to-average power ratio, thereby improving nonlinear tolerance. The framework is validated through coordinated OptiSystem–MATLAB co-simulation with forward error correction, QPSK/16-QAM mapping, and FFT-based baseband processing. Performance is evaluated using bit error rate, PAPR complementary CDF, divergence loss, error vector magnitude, and outage as a function of SNR threshold across wavelengths, transmit powers, apertures, and ranges. Compared with conventional OFDM and UFMC under identical link budgets, the proposed transceiver consistently exhibits lower PAPR at fixed exceedance probability, reduced BER at practical transmit powers and ranges, and lower outage under degraded visibility, demonstrating improved robustness to turbulence/misalignment and mitigated divergence penalties for high-capacity 5G optical wireless links.

Keywords: F-OFDM, Free Space Optics, Error Probability, Divergence Loss, 5G Networks.

IS-D1-SES04-4

System-Wise Reliability Assessment in District Heating Systems: Integrating Technical and Customer-Centric Indices

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District Heating Systems (DHSs) are integral to the energy infrastructure of urban areas, particularly in cold climate countries where reliable and efficient heating is essential for both residential and commercial purposes. As these systems evolve with the advent of 4th and 5th-generation district heating, traditional reliability analysis methods must adapt to address the complexities of modern DHSs. Therefore, utilities require effective assessment approaches to evaluate the system's reliability for planning and optimization applications. In today’s context, customer satisfaction is increasingly prioritized, with utilities striving to enhance the reliability of heating supply systems to meet this demand. While reliability indices are widely employed for analyzing the technical reliability of DHSs, they often fall short in assessing the system's impact on consumers. This paper examines the characteristics of various reliability indices used in system-wise assessments, highlighting the difference between the reliability of heating systems and other energy sectors. Additionally, it introduces new indices designed to evaluate DHS reliability with a focus on consumer-centric aspects. The indices have been used in an illustrative example. The analysis of results demonstrates that the proposed indices effectively assess the customer-centric reliability in different simulated scenarios compared with other system-wise reliability indices. The proposed indices can be integrated into planning and maintenance strategies, offering a more comprehensive approach to the reliability assessment of modern heating systems.

Keywords: district heating, system-wise reliability assessment, reliability index

IS-D2-SES05-1

Medium Voltage Drive with Dynamic Power Quality Compensation for High-Harmonic Industrial Environments

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This paper presents a Medium Voltage (MV) Drive integrated with a Dynamic Voltage Restorer (DVR) to address power quality issues in non-linear industrial systems. The system employs active front-end converters, multilevel inverters, and ultracapacitor storage for real-time harmonic and voltage disturbance compensation. Simulation and hardware-in-the-loop testing show a reduction in Total Harmonic Distortion (THD) from 18% to below 4.5%, with voltage stability maintained within ±5%. The solution meets IEEE 519-2022 standards and enhances operational reliability in harmonic-rich environments.

Keywords: IEEE 519 Compliance, Medium Voltage (MV), IEA: International Energy Agency, VFD: Variable frequency drives, MV: Medium Voltage, DPQC: Dynamic Power Quality Compensation, THD: Total Harmonic Distortion, DVR: Dynamic Voltage Restorer, VSI: Voltage Source Inverter

IS-D2-SES05-2

AI-Driven Diagnostics and Predictive Maintenance in NPI Service Engineering: A Comprehensive Survey of Methods, Applications, and Future Directions

Makrand Godbole (Tesla Inc., USA & North Carolina State University, USA); Adwaita Janardhan Jadhav (Apple, USA)

New Product Introduction (NPI) projects frequently encounter challenges in ensuring service readiness, minimizing early-life failures, and sustaining post-launch reliability. Traditional diagnostics and preventive maintenance frameworks often fail to address the variability of field environments, technician skill diversity, and commissioning risks. Advances in Artificial Intelligence (AI) and Machine Learning (ML) have enabled predictive diagnostics and maintenance strategies that provide early fault detection, anomaly classification, and prognostics of complex electromechanical systems. While predictive maintenance has been extensively studied in manufacturing and industrial IoT, its role in service engineering during the NPI phase remains underexplored.

This survey systematically reviews 15 peer-reviewed academic contributions published between 2015 and 2025, using a structured methodology that includes literature identification, inclusion/exclusion criteria, and taxonomy classification. AI diagnostics in the context of NPI service engineering, bridging academic methods with operational service readiness. Key findings highlight gaps in sparsedata adaptation, technician-centered explainability, integration with AR/VR and PLM workflows, and scalability across distributed fleets. Future research opportunities include adaptive diagnostics, domain-specific XAI, AR/VR-integrated troubleshooting, federated learning for global operations, and cybersecure deployments. Together, these insights aim to guide researchers and practitioners in designing AI-enabled service readiness strategies that reduce downtime, accelerate commissioning, and enhance customer experience.

Keywords: New Product Introduction (NPI), Service Engineering, Predictive Maintenance, Diagnostics, Artificial Intelligence (AI), Machine Learning (ML), Digital Twin, Federated Learning, Explainable AI (XAI)

IS-D2-SES05-3

Design for Serviceability in Complex Electromechanical NPI Products: A Comprehensive Survey of Principles, Metrics, and Field Integration Strategies

Makrand Godbole (Tesla Inc., USA & North Carolina State University, USA)

Design for Serviceability (DfS) is an increasingly critical consideration in the development of complex electromechanical products, particularly during New Product Introduction (NPI) cycles. While design-for-manufacturing (DfM) and design-for-reliability (DfR) have been extensively explored, DfS remains underrepresented in academic literature— despite its direct impact on Mean Time to Repair (MTTR), technician burden, and product uptime. This survey synthesizes insights from over 15 peer-reviewed academic sources across sectors such as automotive, aerospace, and medical devices to present a comprehensive framework for service-oriented NPI planning. We identify six core DfS principles, introduce a consolidated set of serviceability metrics, and examine enabling technologies including augmented reality (AR), digital twin platforms, and PLM-integrated feedback systems. The paper contributes a Serviceability Integration Matrix that maps design principles to implementation strategies and measurable field outcomes. By bridging fragmented research domains and quantifying downstream service impact, this survey supports NPI teams in embedding DfS principles early in the product development lifecycle to improve scalability, technician efficiency, and customer satisfaction.

Keywords: Design for Serviceability, Electromechanical Systems, New Product Introduction (NPI), Field Maintenance, Modular Design, Augmented Reality (AR), Digital Twin, PLM Feedback Loops, Serviceability Metrics, Mean Time to Repair (MTTR), First Time Fix Rate (FTF).

IS-D2-SES05-4

Design and Validation of Automated Drone Missions for Agricultural Area Scanning in Smart Farming

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Agriculture in Indonesia continues to face challenges in improving efficiency and productivity, particularly due to farmers' reliance on manual crop monitoring methods. One emerging solution is the use of drone technology within smart farming practices. This study focuses on designing and validating an automated drone flight path using a waypoint mission to scan agricultural areas systematically. The research involves mission planning with third-party tools, simulation using Google Earth Pro, and technical validation through field deployment. The results show that the drone was able to follow the programmed path consistently and collect visual data across the target area. The system produced stable and clear imagery in accordance with design parameters, demonstrating that this approach can technically support visual data acquisition for smart farming. By simplifying the planning and execution process, this method is intended to be accessible to users with limited piloting experience, potentially enabling wider adoption of drone assisted monitoring in agricultural environments. This study focuses on practical technical validation rather than algorithmic development, emphasizing an accessible and reproducible workflow for agricultural drone missions.

Keywords: automated drone, smart farming, waypoint mission

IS-D2-SES06-1

Comparative Evaluation of Object Detection Models for Identifying Fruit Flies in Snake Fruit Cultivation

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The snake fruit export farming community in Sleman, Yogyakarta, experienced a decline in production in 2023 due to fruit fly infestations. Control efforts were carried out using the Area-Wide Integrated Pest Management (AWIPM) approach by installing methyl eugenol-based pheromone traps, with effectiveness measured using the Flies per Trap per Day (FTD) indicator. Since the fruit fly-counting process is still performed manually and is time-consuming, this study proposes an image-based automatic counting system to improve monitoring efficiency and accuracy. A comparative analysis was conducted on five deep-learning-based object detection models, YOLOv3, YOLOv5, YOLOv7, YOLOv8, and Fast R-CNN, using a public fruit fly dataset. Six different training schemes were applied to the YOLO models, whereas Fast R-CNN was trained using an iterative approach. Based on the evaluation results, YOLOv5 demonstrated the best and most balanced performance, achieving a precision of 0.944, recall of 0.947, and mAP of 0.946. Its architecture, which incorporates Leaky ReLU and Sigmoid activation functions along with the CSPDarknet backbone, enables efficient feature extraction and real-time object detection. Therefore, YOLOv5 was selected as the primary model for developing an accurate and lightweight fruit fly detection and counting system to support farmers and regulatory reporting.

Keywords: Automatic Detection, Deep Learning, Fruit Flies, Object Detection, Precision Agriculture

IS-D2-SES06-2

From Pixels to Pathogens: A Review of Computer Vision in Strawberry Disease Detection

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Strawberry (Fragaria x ananassa) production in Malaysia is a high-value agricultural sector hampered by significant yield losses from fungal and viral diseases. Economic pressures and labor shortages create a need for automated, early disease detection systems to ensure crop health and productivity. This review examines the application of computer vision, particularly deep learning models, for identifying common strawberry diseases. We analyze various architectural approaches, including image classification (e.g., ResNet, EfficientNet), object detection (e.g., YOLO), and instance segmentation (e.g., Mask R-CNN), which are trained to recognize visual symptoms on strawberry leaves, fruit, and crowns. The findings indicate that while many models achieve high accuracy (over 90%) on curated datasets, their performance often diminishes in real-world field conditions due to challenges like variable lighting, background complexity, and high symptom similarity between different diseases. A persistent trade-off exists between the high accuracy of computationally intensive models and the real-time processing capabilities of lightweight models suitable for on-device deployment. This paper highlights critical research gaps, including the need for diverse, field-captured datasets and the exploration of explainable AI to build farmer trust.

Keywords: Deep Learning, Strawberry, Disease Detection, Convolutional Neural Networks

IS-D2-SES06-3

Optimized Deep Learning Models for Robust Splicing-Based Image Forgery Detection Using CASIA Mixed Dataset

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Digital image manipulation has emerged as a significant challenge in maintaining the reliability of visual information. This paper focuses on passive forgery detection, specifically splicing-based tampering. We compare an optimized Convolutional Neural Network (CNN) and ResNet-50 using three datasets CASIA-v1, CASIA-v2, and a newly formed combined dataset referred to as Splicing-Mix. The optimized CNN achieved accuracies of 62.99% on CASIA-v1, 78.12% on CASIA-v2, and 83.59% on Splicing-Mix, while ResNet-50 obtained 59.05%, 76.91%, and 84.81% on the same datasets. These findings highlight that ResNet-50 offers stable performance across datasets, whereas the optimized CNN excels in smaller-scale data. The major contributions of this study are: 1) the design of Splicing-Mix as a combined dataset to enhance robustness, 2) the development of an optimized CNN evaluated against ResNet-50, and 3) an empirical examination of dataset composition on model transferability and performance.

Keywords: image forgery detection, CNN, ResNet-50, splicing, passive methods.

IS-D2-SES06-4

Faster R-CNN and U-Net Based Image Recognition to Classify Rice Plants Health

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Indonesia, as the fourth-largest rice-producing country in the world, faces challenges in agricultural efficiency due to the limited adoption of digital technologies. This study focuses on the development of an artificial intelligence (AI)-based system for detecting rice plant health using aerial imagery captured by drones. The workflow involves two main stages: first, a Faster R-CNN model is used to detect and generate bounding boxes for each individual plant, which are then cropped into separate images. Second, a U-Net model is applied to segment the leaves, from which the average RGB values are extracted.

These values are compared with the IRRI Leaf Color Chart (LCC) to classify the health status of each plant. The models were successfully trained according to the intended objectives, and the entire pipeline was implemented in Python to automate the processes of image loading, model inference, segmentation, color extraction, and classification. The Faster R-CNN achieved a detection recall of ~30%, while U-Net segmentation produced accurate masks with an average processing time of 1.24 seconds per image. This system demonstrates the potential to support precision agriculture, reduce farmers' workloads, and sustainably increase productivity. Unlike prior works that address only single stages of rice plant monitoring, this study integrates detection, segmentation, and classification into a unified pipeline using a self-collected dataset, demonstrating a scalable approach for precision agriculture.

Keywords: drone, image recognition, smart farming

IS-D2-SES07-1

A study of the Shewhart Median Scheme with Estimated Process Parameters based on Expected Median Run Length for Sustainable Manufacturing

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The exclusive dependence on the average run length (ARL) as a measure of performance for control schemes has faced considerable criticism in literature. The skewness and form of the run length distribution vary depending on the extent of the mean shift in a given process, rendering interpretations based only on the ARL possibly erroneous. Consequently, for estimated process parameters (Case-U), the previous study considered the median run length (MRL) indicator for the Shewhart median scheme. However, the MRL framework requires the assumption that the exact shift size is known in advance. In numerous practical applications, the exact magnitude of the shift is frequently indeterminate. To address this limitation, we investigated the construction of the Case-U Shewhart median scheme utilizing the expected MRL (EMRL) approach, which only requires the shift size to fall within a specified interval. We provide an example of the Case-U Shewhart median scheme applied to smart manufacturing, utilizing a dataset pertaining to the manufacturing of forged piston rings.

Keywords: Control scheme, estimated parameter, expected median run length, Shewhart median scheme, shift size

IS-D2-SES07-2

Evaluate Road Depressions with Deep Learning and Mobile Application

Wei Fun Chan and Ee Mae Ang (Multimedia University, Malaysia)

Road damage, such as potholes and cracks potentially poses significant safety challenges, economic outlays, ecological impact, and governance concerns. This study presents an integrated approach using deep learning and mobile technology to automate the detection and severity classification of road depressions. The system compares three YOLO models, which are the YOLOv5s, YOLOv8s, and YOLOv11s, trained on the RDD2022 dataset to identify the optimal model for deployment. YOLOv8 is selected based on its balanced performance, achieving 65 percent precision, 59 percent recall, and 62 percent F1-score. A React Native mobile app enables users to upload images and receive feedback, while a Django backend handles prediction and status updates. This solution improves road maintenance efficiency and promotes public participation in infrastructure reporting.

Keywords: YOLO, Road Depression, Deep Learning, Smart City, Mobile Application, Object Detection

IS-D2-SES07-3

Minimizing Packaging Boxes in Online Retail Fulfillment Using Multi-Strategy Heuristics and Extreme-Point Based 3D Bin Packing

Widiq Waskito Adimukti and Samuel Ady Sanjaya (Universitas Multimedia Nusantara, Indonesia)

The rapid expansion of online retail has created challenges in packaging efficiency, where inappropriate box selection and item placement lead to higher logistics costs, wasted space, and reduced sustainability. This study aims to minimize the number of boxes used per order while improving space utilization by formulating the problem as a 3D Bin Packing Problem (3D-BPP). To address this objective, three heuristic approaches are evaluated the Greedy Heuristic (GH), Multi-Strategy Heuristic (MSH), and Extreme-Point (EP) methods. Using real operational data of up to 10,000 historical orders, the framework assesses each method's trade-offs in box utilization, space efficiency,

and computational performance. Experimental results show that the EP method achieves the lowest box usage and stable runtime performance, reducing box requirements by more than 65% compared to GH while maintaining comparable air-gap efficiency. MSH provides competitive compactness through iterative refinements but produces slightly higher air gaps due to its adaptive search process. The study also reveals that persistent air gaps largely stem from limitations in the company's box catalog, suggesting the need for catalog redesign to better match item dimensions. These findings highlight the importance of integrating box catalog optimization with algorithmic design. The proposed framework provides a comprehensive empirical benchmark and practical guidance for developing data-driven, cost-efficient, and packaging strategies in high-volume fulfillment operations.

Keywords: Bin Packing, Online Retail Fulfillment, Logistics Optimization, Packaging Efficiency

IS-D2-SES07-4

Minimizing E-commerce Order Cancellation Cost Using Shap-based Explainable XGBoost

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E-commerce has experienced rapid growth in recent years, offering convenience and accessibility to millions of consumers worldwide. However, this growth also brings operational challenges for businesses, among which order cancellations have emerged as a significant concern. Cancellations not only disrupt logistics and inventory management but also increase operational costs and reduce customer trust, affecting overall business performance. This study proposes a framework for predicting and explaining order cancellations in e-commerce by combining machine learning with Explainable Artificial Intelligence (XAI) techniques. A dataset of 6,372,704 unique orders was used, incorporating order-related, customer-related, and operational features. Three machine learning algorithms, XGBoost, Random Forest, and Logistic Regression, were evaluated using metrics including accuracy, precision, recall, F1-score, and ROC AUC score. The evaluation shows that XGBoost achieved the best performance, slightly outperforming Random Forest. Meanwhile, Logistic Regression performed poorly, particularly in terms of the precision score. SHAP (Shapley Additive Explanations) was then applied to interpret the XGBoost model, revealing that the most influential features vary across different sales groups. For high-value orders, quantity and payment method had the strongest influence, while payment method was also most significant in medium-value orders, and voucher usage had the most effect in low-value orders. These findings demonstrate that explainable AI can help to make targeted interventions to minimize order cancellation costs.

Keywords: Cost Minimization, E-commerce, Explainable AI, Interpretation, Machine Learning, Order Cancellation, Shapley Additive exPlanations (SHAP), XGBoost

IS-D2-SES08-1

Sentiment Analysis of Carbon Trading in Indonesia: A Machine Learning Approach Using Naïve Bayes

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Carbon trading is a market-based mechanism for reducing carbon emissions, yet in Indonesia its implementation faces challenges such as limited public awareness and possible misperceptions. This study analyzes public sentiment toward carbon trading using Twitter data collected between January 2020 and April 2024. A total of 1,921 preprocessed tweets were classified into positive, neutral, and negative categories, with a noticeable imbalance across classes. Sentiment classification was performed using Bernoulli and Complement Naïve Bayes with TF-IDF features. The results show that Complement Naïve Bayes consistently outperforms Bernoulli Naïve Bayes, achieving up to 78% accuracy and 75% F1-score, which are particularly important for imbalanced datasets. These findings confirm the effectiveness of Naïve Bayes as a baseline model for short and noisy social media text and highlight the dominance of neutral sentiment in public discourse on carbon trading. The study provides insights that can assist policymakers in improving communication strategies to strengthen awareness and acceptance of carbon trading in Indonesia, while also outlining limitations such as dataset imbalance and reliance on automatic labeling.

Keywords: Carbon trading; Sentiment analysis; Naïve Bayes; Complement Naïve Bayes; Bernoulli Naïve Bayes; Twitter; Public perception; Environmental policy.

IS-D2-SES08-2

Cosine Similarity-Based Spectral Graph Clustering of ArchiMate Relationships and Metadata for Information System Consolidation

Jovita Tandiana and Samuel Ady Sanjaya (Universitas Multimedia Nusantara, Indonesia)

Realizing that technology keeps changing every day must be terrifying for organizations that want to stay afloat. In the midst of digital transformation, there is one concept standing tall that offers assistance for companies to adapt by creating an Enterprise Architecture (EA). EA is a concept that bridges gaps between business and technology that ensures alignment. One of the main problems during EA drawing is redundancy. When the EA drawing contains redundancies, it fosters a flawed design destined for poor decision-making. To avoid facing such problems, this research proposes using a model that combines similarity analysis and clustering to help identify relations and its components' similarities. By using ArchiMate notation relations and its metadata, this study intends to develop a similarity-based algorithm for consolidation recommendation. This research found that using cosine similarity and spectral clustering generated adequate quality clusters with a Silhouette Score of 0.736, a Davies-Bouldin Index of 1.061, and an Average Similarity Score of 0.881. Not only that, these combined models managed to reduce 63.28% of the total initial redundancy. In the end, this study highlights that information system consolidation can be based on cosine similarity and spectral clustering techniques, with notes to explore other similarity analysis metrics for comparison and for practitioners to verify the results.

Keywords: ArchiMate, Cosine Similarity, Enterprise Architecture, Information Systems Consolidation, Spectral Clustering

IS-D2-SES08-3

Forecasting of Clinical Program Gross Growth over Revenue through Outcomes and Workforce Metrics using LSTM-XGBoost

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Health awareness and healthcare sectors have grown in recent years, yet hospitals face challenges in maintaining high service quality while ensuring financial stability. In a private hospital, challenges arise from revenue fluctuations of around 25% to 30% per year. Clinical program monitoring serves as a key strategy to support both service quality and financial management, as suboptimal performance can destabilize revenue growth. Studies explored time-series forecasting with hybrid models but were limited by hyperparameter sensitivity and exogenous variables. Recognizing the relevance of clinical achievement and workforce metrics to the gross growth over revenue (GGOR), this research leverages time-series clinical data (2021 to 2024) and applies a hybrid Long Short-Term Memory (LSTM) and Extreme Gradient Boosting (XGBoost) approach. The hybrid approach demonstrated strong forecast performance, achieving RMSE of 0.04, MAE of 0.02, MAPE of 47%, and R-squared of 0.79. A counterfactual analysis and trajectory plotting were conducted, providing actionable insights for hospital financial planning. Quantitatively, the model establishes a baseline hybrid time-series forecast for clinical program revenue, offering evidence of the interplay between clinical outcomes and workforce metrics in driving GGOR. Future research is recommended to incorporate clinical variables to strengthen time-series forecasting in healthcare financial management.

Keywords: Clinical Outcomes, Clinical Program, Clinical Workforce, LSTM-XGBoost, Time-series Forecasting, Revenue

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CM-D1-SES01-1

Stock Price Forecasting for Intel Using a Hybrid Long Short-Term Memory and Support Vector Machine Model

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Intel Corporation's stock price has experienced significant fluctuations due to various external factors, including global economic conditions, industry competition, and dynamic investor sentiment. The non-linear and complex nature of financial markets limits the effectiveness of traditional forecasting methods. To address this, the present study proposes a hybrid model combining Long Short-Term Memory (LSTM) and Support Vector Machine (SVM) to improve prediction accuracy. This study uses LSTM to capture temporal patterns in Intel's stock price data and applies SVM for regression on features extracted from LSTM's hidden layers. The research follows the CRISP-DM framework, covering business understanding, data preparation, modeling, evaluation, and interpretation. Daily closing prices from 1980 to 2025 were obtained from Yahoo Finance. Model performance was assessed using MAE, RMSE, MAPE, and R^2. The hybrid LSTM-SVM model with a 90:10 ratio showed the best results, with an RMSE of 1.37 and R^2 of 0.9813. Other configurations, such as 60:40, also performed well in short-term forecasts. These findings suggest that the hybrid model is not only accurate but also adaptable, making it a promising approach for stock price prediction in complex market conditions.

Keywords: Hybrid Model, Intel, LSTM, Stock Price, SVM

CM-D1-SES01-2

Sentiment Analysis of a Private Mobile Banking Application with DISTILBERT Fine-Tuning

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Sentiment analysis is a crucial technique for extracting valuable insights from users, particularly in mobile banking applications such as reviews on the Google Play Store. The particular challenge is that the intricacy of the Indonesian language reviews makes it difficult for the automatic method to analyze the sentiment. Besides, traditional models and pretrained embeddings without domain fine-tuning lead to lower adaptable classification for mobile banking scenarios. This study aims to fine-tune DISTILBERT, a lighter version of the BERT model developed by Hugging Face, to classify user review sentiments into three categories: positive, negative, and neutral, including new reviews scraped from the Google Play Store. Fourteen thousand user reviews were collected and thoroughly preprocessed. DISTILBERT was fine-tuned using two approaches: classical fine-tuning with optimal parameters and automatic hyperparameter fine-tuning using the Optuna framework. Model performance was assessed using validation loss, precision, recall, accuracy, and F1-score. Although the improvement is small from 91.79% to 92.11% it consistently shows the method's ability to enhance performance.

Keywords: DISTILBERT, Optuna, Sentiment Analysis

CM-D1-SES01-3

Predicting Property Prices Using MLR, Gradient Boosting, and Random Forest: A Case Study in South Tangerang, Indonesia

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Accurate property price prediction is crucial for supporting property market stakeholders (buyers, sellers, and developers) in making informed decisions in the real estate market. The study explores the utilization of three machine learning algorithms—Multiple Linear Regression (MLR), Gradient Boosting (GB), and Random Forest (RF)—to predict residential property prices in South Tangerang,

Indonesia. A dataset comprising 17,454 listings was gathered through web scraping from Lamudi.co.id. The listings included important housing information such as land area, building size, number of rooms, and location. The study adheres to the CRISP-DM methodology, covering data preparation, modeling, and evaluation phases. Model performance was assessed using the coefficient of determination (R^2) and Root Mean Squared Error (RMSE) metrics. The Random Forest model did better than the others, with a R^2 of 0.8011 and an RMSE of 536 million IDR. This means that it was able to accurately capture complex nonlinear interactions in the data. The Gradient Boosting model came next, with a good level of accuracy. The Multiple Linear Regression model did the worst. The best-performing model was used in a web app so that people could estimate property prices in real time. This study introduces a robust, data-driven property valuation system employing ensemble learning techniques, functioning as a practical reference for stakeholders and demonstrating the potential of machine learning in the Indonesian real estate market.

Keywords: CRISP-DM, Gradient Boosting, Machine Learning, Multiple Linear Regression, Property Price Prediction, Random Forest

CM-D1-SES01-4

METHI: An Ensemble-based Machine-Learned Exoplanetary Habitability Index

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The search for life beyond Earth is critically dependent on our ability to identify potentially habitable exoplanets among thousands of discoveries. Traditional habitability metrics, such as the Earth Similarity Index (ESI), Planetary Habitability Index (PHI), Habitable Exoplanets Catalog metrics, and the new Statistical-likelihood Exoplanetary Habitability Index 2.0 (SEPHI 2.0), provide useful prioritization tools but are limited by their fixed heuristics and deterministic physical models. Here, we introduce METHI (Machine Learned Exoplanetary Habitability Index), a novel, data-driven habitability framework trained on multi-dimensional exoplanetary and stellar data. METHI leverages binary classification, unsupervised clustering, and ensemble-based regression to classify, cluster, and score exoplanets for habitability. METHI achieves a score of 0.903 and identifies the top 10 promising candidates for exoplanet habitability. Additionally, METHI includes a publicly accessible web interface that allows users to input planetary names and retrieve real-time habitability scores. Our results suggest that METHI offers a powerful, scalable, and community-accessible framework for prioritizing targets for future detection missions.

Keywords: Habitability, Exoplanets, Machine Learning, Classification, Astronomy

CM-D1-SES02-1

Accelerated Training of Swin Transformer V2 Models for Facial Expression Recognition using GradScaler and Autocast

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Facial Expression Recognition (FER) plays a vital role in applications such as healthcare, human–computer interaction, and security. Vision Transformers (ViTs) have achieved great performance in image understanding, yet their high computational complexity and quadratic attention cost limit deployment on resource-constrained devices. Swin Transformer introduced a hierarchical shifted window approach, significantly reducing computation while maintaining accuracy. Swin Transformer V2 further improves efficiency and scalability through cosine attention, a log-spaced continuous position bias, and a more stable training strategy, making it better suited for high-resolution and diverse input sizes compared to its predecessor and the original ViT. This study evaluates the Swin Transformer V2 model for crossdataset FER and addresses remaining efficiency constraints by integrating mixed precision training with GradScaler and AutoCast. This combination exploits Swin Transformer V2's architectural efficiency while further reducing memory and computation through half-precision operations, without sacrificing model stability or accuracy. Experiments were conducted on CK+, JAFFE, and KDEF datasets, comparing baseline full-precision training with the proposed mixed precision configuration. The optimization reduced VRAM usage by approximately 32% (13.4 GB to 9.1 GB) and cut average epoch time by 41.7-46.7%. On CK+ and JAFFE, best validation accuracy reached 100%, matching the baseline; on KDEF, the optimized model achieved 97.24% at epoch 15 versus the baseline's 97.35%. Loss trends confirmed stable convergence in all cases. While the experiments validate efficiency gains on small- to medium-scale FER datasets, futureresearch should investigate scalability to larger and morediverse datasets, where mixed precision optimization may yield even greater resource savings and generalization benefits.

Keywords: Facial Expression Recognition (FER), SwinTransformer V2, Vision Transformer (ViT), Mixed Precision Training, GradScaler, AutoCast

CM-D1-SES02-2

Comparative Analysis of Deep Learning Architectures for Brain Tumor Classification using MRI Images

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Accurate detection and classification of brain tumors by Magnetic Resonance Imaging is crucial for early diagnosis and treatment planning but is still challenging due to variability in tumor heterogeneity and diagnostic subjectivity. This work offers a comparative analysis of Convolutional Neural Network-based architectures such as VGG16/19, ResNet50/152, DenseNet121/201, InceptionV3, EfficientNet-B4/B7, and a Custom CNN-7. Using a Kaggle MRI dataset across four tumor classes (glioma, meningioma, pituitary, and no tumor), DenseNet121 and InceptionV3 achieved the best results with 99.85% accuracy. DenseNet201 (99.31%) and ResNet152 (99.08%) closely followed. These models

consistently demonstrated ≈ 0.99 precision, recall, and F1-score, outperforming traditional CNN baselines. This study highlights the balance between accuracy and computational efficiency across multiple architectures, underscoring the potential of CNNs and transfer learning for clinical applications in brain tumor diagnosis.

Keywords: Brain Tumor, Deep Learning, CNN, DenseNet121, InceptionV3, Transfer Learning, MRI Classification.

CM-D1-SES02-3

Enhanced Vision Transformer and Image Inpainting for Cataract Stage Classification in Telemedicine

Muh. Ashhar Bustan and Indrabayu Indrabayu (Hasanuddin University, Indonesia)

Cataracts are one of the leading causes of blindness worldwide. Indonesia has a high prevalence of cataracts, accounting for more than 80% of blindness cases. Early and accurate staging is crucial for treatment planning. However, telemedicine applications that use smartphone-based imaging face challenges due to low image quality and specular reflections caused by the reflective and curved surface of the cornea. These reflections can reduce diagnostic accuracy. Recent advances in Vision Transformer (ViT) models have shown promising results in medical image analysis; however, their performance is often compromised by image noise. This study proposes an image inpainting method to reduce specularreflections and ViT enhancement with local window attention (LWA) and region of interest (ROI) masking to enhance feature representation and focus analysis on relevant ocular areas. We evaluated this approach using cataract eye images taken with a smartphone camera to classify disease stages. The experimental results demonstrate that the proposed method achieves an accuracy of 0.98 and a macro F1 score of 0.98, significantly outperforming the baseline model. These results indicate that combining the image inpainting method with the enhanced ViT, which is enhanced by applying LWA and ROI mask, can improve the reliability of cataract stage classification in telemedicine.

Keywords: Cataract classification, telemedicine, vision transformer (ViT), image inpainting, local window attention (LWA), region of interest (ROI)

CM-D1-SES02-4

Classification of Deepfakes in Static Facial Images Using Deep Learning Ensemble with Weighted Averaging Approach

Arvin Winardi and Moeljono Widjaja (Universitas Multimedia Nusantara, Indonesia)

The rapid evolution of artificial intelligence has revolutionized digital media creation, enabling both beneficial applications and sophisticated manipulation techniques. Deepfake technology, utilizing Generative Adversarial Networks (GANs), now produces highly realistic synthetic facial images that pose significant threats to digital information integrity and social trust. While individual deep learning models have shown promise in deepfake detection, they often suffer from limited generalization across different generation techniques and exhibit domainspecific overfitting. This study presents an ensemble weighted averaging approach that systematically combines four diverse deep learning architectures (Custom CNN, ResNet50, Xception, and EfficientNet-B4) for detecting deepfakes in static facial images. Our method achieves 99.64% accuracy on the 140k Real and Fake Faces dataset, representing a 0.44% improvement over the best individual model (Xception, 99.20%) while reducing false negatives by 78% and false positives by 46.5%. However, cross-dataset evaluation reveals severe generalization challenges, with performance dropping to 50% (random guessing level) on external datasets generated using different techniques. This negative result emphasizes the critical gap between single-dataset performance and real-world applicability, highlighting the urgent need for multi-domain training

Keywords: Deepfake detection, ensemble learning, weighted averaging, CNN, transfer learning, image classification, computer vision security, static images

CM-D1-SES03-1

Combination of K-Means Clustering and Apriori Algorithm in Analysis Of Transjakarta Passenger Travel Patterns

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Public transportation plays a crucial role in supporting urban mobility in major cities such as Jakarta. This study aims to analyze Transjakarta passenger travel patterns using historical trip transaction data obtained from the Kaggle platform. The methodology follows the CRISP-DM framework, implementing the K-Means algorithm for passenger segmentation based on travel duration, distance, and frequency, as well as the Apriori algorithm to discover associations between frequently used bus stops. The results show that passenger trips are dominated during peak hours, with high activity at Penjaringan bus stop and the Matraman Baru – Ancol corridor. The K-Means algorithm successfully grouped passengers into four clusters representing distinct travel characteristics, with the CH Index yielded a score of 96.335, demonstrating a strong separation between clusters. Meanwhile, the Apriori algorithm revealed consistent travel connections to and from Penjaringan with a confidence of 1.0 and a lift of up to 63. These findings are exploratory and may serve as a foundation for future research focused on developing route recommendation systems, service optimization, or multimodal transportation data integration.

Keywords: Apriori, K-Means, Passenger Segmentation, Public Transportation, Transjakarta

CM-D1-SES03-2

Implementation of Evaluation System and Pharmaceutical Product Recommendation in B2B E-Commerce Using Collaborative Filtering Method

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Pharmacy is an important professional field in human life. Along with the development of the times and business competition, the pharmaceutical industry must implement the use of technology as one of its business strategies. One strategy that can be implemented is to market through B2B e-commerce accompanied by product recommendations feature.Using the case study from one of the pharmaceutical industries, this research will compare recommendation system models using user-based, item-based, and hybrid collaborative filtering algorithms using the cosine similarity and manhattan distance similarity matrices. Comparison is carried out through evaluation using the stratified k-folds cross validation technique and calculating mean average precision. The best recommendation system model is the model that can provide the highest mean average precision value.The best recommendation system model is a user-based collaborative filtering model using a cosine similarity matrix with a mean average precision value of 16.99%. The model will then be applied to the application programming interface or API using FastAPI. Making the model into an application programming interface is carried out as an intermediary between the frontend of the B2B e-commerce application and the backend program.

Keywords: Collaborative Filtering; Cross Validation; Mean Average Precision; Recommendation System; Similarity Matrix

CM-D1-SES03-3

A Comparative Study of Traditional and Machine Learning Methods in Assessing ESG Impact on Indonesian Stock Returns

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This study examines the impact of Environmental, Social, and Governance (ESG) factors on stock returns in Indonesia using 2023 ESG data to reflect long-term performance. By combining the Fama-French model with advanced methods such as clustering and Genetic Algorithms, it develops a range of robust portfolio models. Independent variables, including company size, are classified through both traditional and clustering techniques, while dependent variables are analyzed using equal-weighted, value-weighted, and Genetic Algorithm optimized portfolios. Intercept data are thoroughly tested for differences between ESG and non-ESG portfolios, and the results show that companies with high, medium, and low ESG scores consistently deliver higher returns than their non-ESG counterparts. Statistical tests confirm significant positive intercept differences, indicating that ESG compliance improves stock performance. Overall, the findings demonstrate the financial benefits of ESG-focused investments in Indonesia and underscore their importance for investors seeking both profitability and sustainability.

Keywords: ESG Compliance, Fama-French Model, Genetic Algorithm, Indonesia Emerging Market, Stock Performance

CM-D1-SES03-4

Business Analytic with Data Warehouse Design in Retail Company Sales

Shanreva Oktavia Andi and Erick Fernando (Universitas Multimedia Nusantara, Indonesia)

Business analytics (BA) plays a vital role in maximizing the value of data warehouses by transforming vast amounts of structured data into actionable insights for decision-making. In a data warehouse environment, BA tools and techniques, such as statistical analysis, predictive modeling, and machine learning, are applied to uncover patterns and trends that can drive business strategy and operational improvements. BA is particularly effective when combined with OLAP (Online Analytical Processing) in a data warehouse, as OLAP enables data to be analyzed across multiple dimensions, such as time, location, and product categories. This multidimensional view allows for deep dives into data to gain specific insights—such as identifying high-performing products in specific regions or tracking sales trends over time. With BA, this data can be further analyzed to reveal customer behavior, forecast future sales, and develop targeted marketing campaigns, enhancing overall business intelligence.In this study, BA is applied to the OLAP-enabled data warehouse, facilitating three main types of analysis: overall sales trends, sales performance by region, and sales by brand. The resulting dashboards provide a comprehensive yet flexible view of business performance, empowering managers to drill down into specific areas for targeted insights or maintain a broader view for strategic planning.Ultimately, BA in a data warehouse context allows organizations to align data insights with business goals, supporting more accurate, data-driven decision-making. By leveraging these insights, companies can improve efficiency, optimize resources, and enhance competitiveness in the market.

Keywords: Bussiness Analytic, Data Warehouse, Data Visualization, OLAP method, ETL method

CM-D1-SES04-1

Enhancing ERP System through Data Integration with Agile Software Development in Retail Industry

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The retail industry is experiencing rapid growth due to population increase, rising income levels, and changing consumer preferences. At the same time, competition requires companies to improve efficiency and accuracy in their business processes. Enterprise Resource Planning (ERP) systems such as SAP are widely adopted to address these challenges. However, in many cases, several processes remain only partly automated. One example is the purchase order (PO) process, which often relies on semi-manual email communication and results in delays and errors. This study focuses on the integration of SAP with external vendor systems in the Materials Management (MM)module to improve procurement efficiency. Using theScrum framework, the integration was designed andimplemented through APIs, REST adapters, and SAP PI/POcomponents. The solution automated PO delivery, validateddata accuracy, and streamlined communication with vendors. The results show that PO delivery time was reduced from 3–4 minutes to less than one second, the error rate in PO recordingdecreased from 5% to 0%, and late billing cases dropped fromten to two per month. These improvements demonstrate thatAPI-based data integration, supported by agile developmentpractices, can enhance ERP system performance. The studyconcludes that such integration not only improves technicalaccuracy and processing speed but also supports more effectiveand reliable business processes in the retail industry.

Keywords: Agile Software Development, Data Integration, ERP System, Retail Company.

CM-D1-SES04-2

An Experimental Study on SQL Query Structure Optimization Performance in MySQL, PostgreSQL, and Microsoft SQL Server Using Apache JMeter

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Nowadays, businesses generate large volumes of data that must be stored in a reliable database. Among the available options, relational database management systems (RDBMS) are widely adopted across organizations. This study uses transaction data from PT. GKT and applies the Database System Development Lifecycle (DSDLC) with a bottom-up approach, evaluating performance with Apache JMeter. Benchmarking focuses on response time, throughput, and error rate as captured by the Summary Report listener. The results show that Microsoft SQL Server provides the best performance for unoptimized queries, whereas after optimization PostgreSQL achieves lower response times, higher throughput, and fewer errors under light workloads; however, Microsoft SQL Server remains superior as the number of threads increases.

Keywords: benchmark, bottom-up, database, optimizations, RDBMS

CM-D1-SES04-3

Improving the Accuracy of Coffee Bean Quality Detection Using Manhattan Distance Method in the Loss Function of You Only Look Once V4

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Coffee is a major export commodity that plays an important role in the economies of developing countries, including Indonesia. However, owing to the decline in quality and quantity of production caused by environmental factors, an efficient quality evaluation system is required. This study aims to improve the accuracy of coffee bean quality detection by modifying the You Only Look Once version 4 (YOLOv4) algorithm by combining the Complete Intersection over Union (CIoU) and Manhattan Distance Intersection over Union (MIoU) methods in the loss function. CIoU considers the aspect ratio and midpoint distance, but CIoU itself has obstacles, one of which is convergence at the beginning of training, causing a slow training process because of the use of the Euclidean distance method. To obtain the most accurate results, it is necessary to integrate MIoU, which uses the Manhattan distance method, an improved gradient stability, and a faster training process. The dataset consisted of 400 original coffee bean images (100 per class), which were augmented using Roboflow to 2,000 images to enrich visual variation and improve model generalization. The dataset was collected by taking images of coffee beans using a highresolution digital camera. The images were taken in a controlled lighting environment, using a neutral background and a top-view angle. Each image contains coffee beans with a variety of shapes and real conditions as found in the field. Experimental results show that the YOLOv4 model with the CIoU+MIoU joint loss function achieves a 7.4% improvement in mAP compared to the baseline model, with significant improvement at high-precision levels. This study contributes a new approach to the development of loss functions for object detection in the field of computer vision.

Keywords: Coffee Bean Quality, YOLOv4, CIoU, MIoU, Object Detections

CM-D1-SES04-4

Integrating Balanced Scorecard and Enterprise Management for ERP Readiness Assessment

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Enterprise Resource Planning (ERP) systems are widely adopted to integrate business processes and optimize resource management. However, ERP implementation face high risks of failure, including budget overruns, integration issues, and misaligned expectations. Previous studies have focused on technical aspects or Critical Success Factors (CSFs), with limited attention to strategic alignment and risk governance. This study addresses the gap by proposing and validating an ERP readiness assessment model that integrates the Balanced Scorecard (BSC) and Enterprise Risk Management (ERM) frameworks. The research methodology included a literature review of 47 articles, questionnaire testing of 124 ERP practitioners, and case study validation. Using Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to evaluate the measurement and structural models. The results indicate that Top Management Support & Involvement (0.825), Human Resource Development & User Training (0.855), and Individual & Organizational Skills (0.807) are the strongest determinants of ERP readiness. The development of the BSC-ERM model provides contributions such as linking strategic performance and risk governance to ERP readiness and offering managers a structured diagnostic tool for decision-making, resource allocation, and continuous improvement. The study confirms the robustness of the model and introduces a composite readiness index can be applied through case-based guidelines to systematically assess readiness and identify gaps prior to ERP adoption. This research contributes both theoretically and practically by providing a diagnostic tool that serves as a practical reference for organizations in emerging economies, supporting strategic alignment, risk governance, and resource allocation in ERP planning.

Keywords: Balanced Scorecard, Critical Success Factors, Enterprise Resource Planning, Enterprise Risk Management, Readiness Assessment.

CM-D2-SES05-1

Identification and Classification of melanoma on Skin using the MobilenetV2

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Melanoma is one of the deadliest skin cancers due to its rapid progression and high mortality when not detected early. Conventional diagnostic methods are timeconsuming, costly, and heavily dependent on medical expertise, creating barriers to timely intervention, particularly in regions with limited healthcare access. To address these challenges, this study proposes an automated melanoma classification system using deep learning, specifically an optimized MobileNetV2 architecture with data augmentation and hyper parameter tuning. A dataset of 10,605 dermoscopic images from Kaggle was preprocessed, augmented, and split into training, validation, and testing sets. Four different model scenarios with varying dense layer configurations, dropout, and regularization were evaluated. The best-performing model, with four hidden layers and moderate regularization, achieved a test accuracy of 90.49% and a low loss of 0.3020, demonstrating reliable classification of malignant and benign lesions. The results highlight the effectiveness of transfer learning with MobileNetV2 in medical image classification and emphasize the importance of balancing model complexity and regularization. This work contributes to the development of accessible, cost-effective, and accurate diagnostic tools for early melanoma detection, potentially improving patient outcomes and reducing the burden on healthcare systems. Future research will explore larger clinical datasets, cross-validation, and advanced methods such as attention mechanisms and ensemble learning to further enhance robustness and clinical applicability

Keywords: Melanoma, Skin Cancer, Image Classification, MobileNetV2, Convolution Neural Network

CM-D2-SES05-2

Performance Evaluation of EfficientNet-V1 and EfficientNet-V2 Variants for Kidney Disease Detection on CT Scan Images

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Kidney disease is a serious health problem that requires accurate diagnosis and rapid medical intervention. In the digital era, the application of artificial intelligence in the medical field, especially for disease diagnosis, shows great potential. This research focuses on the development of a kidney disease detection model using Convolutional Neural Networks (CNN), one of the leading methods in computer vision that has been proven effective in medical image analysis. The dataset used consists of computed tomography (CT) images that have been annotated by expert radiologists. The CNN architecture used is EfficientNet, with performance evaluation based on accuracy metrics. The models tested include EfficientNet-V1 (B0, B7) and EfficientNet-V2 (S, M, L). Experimental results show that EfficientNetV2-S provides the best performance with a training accuracy of 99.07%, a validation accuracy of 99.97%, and a testing accuracy of 100%. As a comparison, EfficientNet-V1 also produces high performance, with a validation accuracy reaching 99.85% on EfficientNetB7. Overall, the EfficientNet-V2 variants, especially EfficientNetV2-S, proved to be superior to the other models and have the potential to make a significant contribution to the development of computer-aided diagnostic systems for kidney disease in clinical practice.

Keywords: CT scan, CNN, deep learning, efficientNet, kidney disease detection

CM-D2-SES05-3

Explainability-Driven Comparison of Machine Learning Approaches for Breast Cancer Classification

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Breast cancer is still a major health problem around the world, and getting a diagnosis early and correctly is important for improving patient survival rates. Even while they work, traditional diagnostic methods can be costly, take a long time, and be wrong. Therefore, creating computational tools that can help clinicians make quick, accurate, and understandable forecasts of malignancy vs benign instances is the challenge. In order to solve this issue, a variety of machine learning models are applied to the breast cancer dataset, including Support Vector Machines (SVM), Random Forest, Na¨ıve Bayes, Decision Tree, Logistic Regression, and k-Nearest Neighbors. Reducing diagnostic ambiguity, promoting prompt medical intervention, and offering a strong, scalable framework for early detection are the advantages of resolving this. Preprocessing the information, converting categorical diagnoses into binary classifications, scaling features as needed, and training several models for comparison were all part of the work that was done. Following evaluation of the models' recall, accuracy, precision, and F1 score, SVM hyperparameter adjustment was done to optimize predictive power. With the tweaked SVM attaining the best balance across performance measures(Accuracy = 98.24%, Precision = 100%, Recall = 95.35%, F1 Score = 97.62%), the results showed that ensemble and kernel-based approaches worked well. Furthermore, interpretability was addressed through the use of SHAP (Shapley Additive Explanations) and LIME (Local Interpretable Model-Agnostic Explanations), which ensured decision making transparency by highlighting the most significant features influencing predictions. This study introduces a machine learning pipeline that bridges the gap between clinical trustworthiness and computational performance by integrating interpretability and achieving high prediction accuracy.

Keywords: Breast Cancer Diagnosis; Machine Learning; Support Vector Machine; Naive Bayes; Random Forest; Logistic Regression; SHAP; LIME.

CM-D2-SES05-4

Development of a Random Forest Based Classification System for Lung Cancer Therapeutic Compounds

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Lung cancer is among the leading causes of global mortality, driving the need for safer and more affordable therapeutic alternatives. This study aims to develop a machine learning-based classification system to predict the anticancer potential of chemical compounds against the Epidermal Growth Factor Receptor (EGFR) protein target, which is an important target in lung cancer therapy. Compound datasets were obtained from scientific literature and public repositories, with molecular features extracted, including molecular fingerprints(1024-bit), hydrogen bond donors (HBD), hydrogen bond acceptors (HBA), molecular mass, and logP values. Model development was carried out in Python within a Jupyter Notebook environment. The Random Forest model achieved an accuracy of 87%, macro precision of 88%, and macro recall of 87%. The findings underscore the novelty of integrating computational informatics and natural product research to accelerate the discovery of plantbased lung cancer treatments, offering a scalable and cost-effective alternative to conventional therapies.

Keywords: anticancer activity; classification; lung cancer; plant-derived compounds; random forest.

CM-D2-SES06-1

A Novel Three-Tier Driver Drowsiness Detection Framework Using Stress-Proxy HRV Analysis

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Driver drowsiness remains a critical safety concern, contributing significantly to traffic accidents worldwide. While traditional detection methods rely on intrusive sensors or computationally intensive video processing, this study explores a non-invasive approach using comprehensive heart rate variability (HRV) analysis for multi-level drowsiness classification. This research utilizes the SWELL dataset to develop a novel three-class drowsiness detection framework, categorizing driver states into Alert, Early Drowsiness, and Severe Drowsiness levels through strategic mapping of stress conditions as drowsiness proxies. The methodology employs 33 comprehensive HRV features encompassing time-domain measures (MEAN RR, RMSSD, pNN50), frequency-domain parameters (VLF, LF, HF components), and nonlinear complexity metrics (sample entropy, Higuchi fractal dimension). A feed-forward artificial neural network with optimized architecture consisting of 64 and 32 hidden neurons processes standardized feature vectors to perform multi-class classification using softmax activation. The proposed system demonstrates promising performance in distinguishing between different drowsiness severity levels, offering advantages in real-time applicability due to HRV's continuous availability and minimal computational requirements. Unlike binary alert/drowsy classifications common in existing literature, this multi-level approach provides granular drowsiness assessment, enabling graduated warning systems. The non-intrusive nature of HRV monitoring through wearable devices makes this approach practically viable for real-world automotive integration. Key contributions include the novel application of stress-condition proxy mapping for drowsiness classification, comprehensive feature engineering combining multiple HRV domains, and validation of multi-level drowsiness detection feasibility. Future enhancements could incorporate driver-specific personalization to address interindividual HRV variations, integration with additional physiological signals, and embedded system implementation for real-time automotive deployment. This research advances the development of practical, non-invasive drowsiness monitoring systems with potential for significant road safety improvements.

Keywords: Driver drowsiness detection, Heart rate variability, Artificial neural networks, Multi-level classification, Noninvasive monitoring, Road safety

CM-D2-SES06-2

Hybrid CNN-XGBoost Framework for Interpretable ECG Arrhythmia Classification with SHAP-based Analysis

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Accurate and interpretable detection of cardiac arrhythmias from electrocardiogram (ECG) signals is pivotal for effective cardiovascular disease management. We propose a novel hybrid architecture combining multi-layer convolutional neural networks (CNNs) with eXtreme Gradient Boosting (XGBoost) for automated ECG arrhythmia classification. Our method harnesses CNNs for hierarchical feature extraction and leverages XGBoost classifiers alongside SHapley Additive exPlanations (SHAP) for enhanced interpretability. Evaluated on the comprehensive MITBIH Arrhythmia Database with stratified 4-fold cross-validation, our framework achieves a mean accuracy of 98.9%, outperforming pure CNN and XGBoost models. SHAP and gradientbased saliency analyses elucidate lead-wise and temporal feature importances, aligning with clinical domain knowledge and facilitating transparent model decisions. These results underscore the applicability of hybrid, explainable models in advancing automated, trustworthy ECG analysis.

Keywords: ECG arrhythmia classification, hybrid deep learning, CNN, XGBoost, SHAP, interpretability, MIT-BIH database

CM-D2-SES06-3

A Dual-Stage Hybrid AI Framework for Resume Screening Using CNN-Based Layout Classification and Open-Source LLM Semantic Analysis

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The growing influx of digital Curriculum Vitae (CV) has created significant challenges for recruiters in efficiently identifying qualified candidates. This study proposed a dual-stage hybrid artificial intelligence (AI) framework that integrated Convolutional Neural Network (CNN)-based visual classification with semantic analysis using an open-source Large Language Model (LLM) to streamline the recruitment workflow. In the first stage, the CNN model classifies CV with 98% accuracy and evaluates their compatibility with Applicant Tracking Systems (ATS), achieving 92% classification accuracy. In the second stage, a fine-tuned LLM extracts and evaluates candidate information, generates concise summaries, and identifies missing key competencies. Unlike proprietary APIbased solutions, the proposed system leverages open-source models to ensure transparency, enable local deployment, and support ethical handling of personally identifiable information (PII). Experimental results show an F1-score above 0.86 for skill extraction and summary evaluation. The framework outputs structured data in JSON format for seamless integration with recruitment platforms. Despite limitations related to dataset availability and evaluation diversity, the proposed approach demonstrates strong potential for scalable, interpretable, and customizable CV analysis in modern human resource systems. Future work would explore job-matching capabilities, multilingual support, bias detection, and compliance with global data protection regulations. This research underscores the feasibility of integrating vision and language models to develop ethical and intelligent recruitment workflows.

Keywords: Applicant Tracking System, Convolutional Neural Network, CV Screening, Large Language Model, Recruitment Automation

CM-D2-SES06-4

Real-Time Suspicious Activity Detection for Exam Proctoring Using YOLOv8 and Multi-Angle Datasets

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Conventional exam supervision often faces challenges such as an imbalanced student-to-supervisor ratio and varying human capabilities, which can be mitigated through automated systems. This study proposes and evaluates a real-time, computer vision-based system for detecting suspicious activities to monitor for cheating during examinations. The approach utilizes the YOLOv8 object detection algorithm to identify a range of predefined suspicious student behaviors from multiple camera angles. The research investigates the impact of hyperparameter tuning and transfer learning on model performance, training on a custom dataset captured from three distinct camera perspectives within an exam room. Our findings indicate that while hyperparameter configuration significantly influences performance, the use of transfer learning techniques had a negligible impact. We present two optimal models from our experiments: the first, Model F(D-3), demonstrated superior performance for a right-camera-angle view with a recall of 0.8165 and mAP50 of 0.8289, while the second, Model J(D-3), proved more robust across all three camera angles, achieving a recall of 0.8274 and mAP50 of 0.8279. The final model was successfully implemented into a web-based application, providing a practical tool for real-time exam supervision.

Keywords: cheating detection; computer vision; exam proctoring; suspicious activity detection; YOLOv8

CM-D2-SES07-1

Application of Statistics and Technology in Addressing Economic Inequality Based on Social Welfare Disparities

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This study uses an XGBoost regression model to estimate and forecast provincial Gini coefficients in Indonesia from socioeconomic and demographic indicators. The model attains strong predictive performance with a Mean Absolute Error of 1.97 percent, a Mean Absolute Percentage Error of 5.59 percent, and an R squared of 0.6809, indicating that more than two thirds of the variation in inequality is explained by the selected predictors. Baseline forecasts for 2025 to 2029 show relatively stable inequality, with provincial Gini values clustering between 0.26 and 0.43. Scenario analyses suggest that uniform increases in average hourly wages or in the affordability index tend to widen inequality, while raising the food poverty line reduces inequality in most provinces. Adjusting the number of poor households yields mixed effects, with notable reductions in the Riau Islands, Central Java, and Papua. The findings support geographically targeted, multi-dimensional policies that combine poverty line reforms with human capital investments to reduce inequality.

Keywords: Inequality; Gini coefficient; XGBoost; socioeconomic indicators; policy simulation; Indonesia

CM-D2-SES07-2

A Comparative Analysis of Machine Learning Algorithms for Spam Email Classification with Explainable AI Insights

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Spam emails, or emails that you didn't ask for, are a big problem for digital communication systems because they fill up inboxes, waste time, and put users at risk for phishing and viruses. To keep communication safe and productive, especially for people and businesses that rely heavily on email, spam must be found and filtered quickly. Taking care of this problem can boost productivity, keep private information safe, and make it easier to filter emails by hand. This paper performs a comparative analysis of six machine learning methods for spam email detection: Support Vector Machine (SVM), Random Forest (RF), Naive Bayes (NB), Decision Tree (DT), Logistic Regression (LR), and K-Nearest Neighbors (K-NN). We utilize a dataset of 20,000 tagged emails from Kaggle, with 80% of them for training and 20% for testing.We compare how well the models work by looking at their accuracy, precision, recall, and F1-score. The Support Vector Machine (SVM) model did better than the others, with an accuracy of 97.18%, a precision of 95.87%, a recall of 98.26%, and an F1-score of 97.05%. To make it easier to understand, Explainable AI (XAI) methods like SHAP values and LIME were used. These methods showed that the existence of particular terms and phrases that are often linked to spam was very important in making classification decisions. This made the model's predictions more clear. The results show that SVM is better at spotting spam and that using XAI approaches can help make models that are more dependable and easier to understand for real-world use.

Keywords: Email Spam Classification; Machine Learning; Support Vector Machine; Naive Bayes; Random Forest; Logistic Regression; SHAP; LIME.

CM-D2-SES07-3

Analysis and Visualization of Earthquake Patterns (2021-2025) in the South Lebak Region Based on the Dataset from Gugus Mitigasi Lebak Selatan

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This study investigates earthquake patterns in South Lebak, Indonesia, using the official dataset provided by Gugus Mitigasi Lebak Selatan (GMLS) covering April 2021–April 2025. Three key parameters—magnitude, depth, and epicentral distance to Panggarangan Village—were analyzed after a preprocessing stage to ensure data completeness and consistency. Visual analyses included bar charts, two-dimensional and three-dimensional scatter plots, and geospatial overlays with tectonic plate boundaries. The results showed that shallow earthquakes (<70 km) with micro-to-small magnitudes (M 2–4) dominate the seismic profile and are concentrated within 160 km of the reference point. Intermediate- and deep-focus events were infrequent, while moderate-to-strong earthquakes occurred sporadically but remained critical owing to their potential impact on nearby communities. Clustering patterns broadly align with the southeastward motion of the Eurasian Plate, although the 2025 distributions appeared more scattered. A key contribution of this study is the integration of interactive visualizations into the GMLS platform, enabling local stakeholders and communities to directly explore seismic data in real time. This approach not only strengthens earthquake risk communication but also provides a replicable model for community-based disaster preparedness in tectonically active regions.

Keywords: Earthquake, Seismicity, South Lebak, Geospatial Analysis, Data Visualization

CM-D2-SES07-4

The Role of Gachacom in Fostering Appreciation for Human-Created Art amid AI Advancements

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The AI generator uses work created by humans without permission to produce an output. Therefore, AI art is not widely accepted by creative workers. Corporates are starting to switch to AI technology because they can save production costs and want to get work done in less time. This poses a threat to an illustrator's career in the creative field. As proof, BuzzFeed shares have risen by 200% since announcing that they would use AI to create content. Buzzfeed also laid off 12% of its company workforce. Public acceptance of AI generators, despite the questionable ethics of generative AI outputs, shows a lack of appreciation and interest in illustrators. Therefore, to increase people’s interest in illustrators, the Gachacom website was designed and built using the gamification method and the Octalysis framework. Based on the results of website testing conducted using HMSAM, the percentage was 93.75, indicating a high level of user acceptance of the Gachacom website because it helps attract public interest in supporting illustrators' work.

Keywords: AI Generator; Octalysis Framework; Gamification; Illustrator; Gachacom Website;

CM-D2-SES08-1

A Web-Based Disaster Mitigation Platform Using Agile Scrum and Sphere Project Standards
Comparing Random Forest and XGBoost Machine Learning Models for Predicting Purchase Intention in Online

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Advances in information technology are driving innovation in disaster mitigation, particularly in disaster-prone areas such as Panggarangan District, Lebak Regency, Banten. With a population of 41,582 by 2022, this area is at risk from earthquakes and tsunamis. This study aims to develop a website based on the Sphere project using the Scrum method to support the South Lebak Mitigation Group (GMLS) in mitigation and emergency response. The system is designed based on the Sphere Handbook (2018) Indonesian edition and focuses on Panggarangan District, including several important features such as: (1) mapping of evacuation locations, (2) volunteer data management, (3) village data management, (4) evacuation location data management, (5) export of evacuation location data, (6) calculation of the Sphere project at the evacuation location, and (7) search for the nearest evacuation location. System validation is carried out through User Acceptance Testing (UAT) and End-User Computing Satisfaction (EUCS) measurements with 34 respondents. The UAT results show a value of 100%, that the functionality test is as expected. With EUCS getting 87.88% for the content dimension, 88.23% for the accuracy dimension, 90.08% for the format dimension, 90.43% for the ease dimension, 93.43% for the timeliness dimension, and 89.33% for the overall value of the dimensions, it shows that the assessment of the disaster management website is very good. This study proves that the implementation of the website with the Sphere project using the Scrum approach is capable of producing a disaster information system that is organized.

Keywords: Agile, Disaster Mitigation, EUCS, Scrum, Sphere Standards, UAT

CM-D2-SES08-2

Consumer Behavior: A Study in the Jabodetabek Area

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Internet and social media usage in Indonesia is rapidly increasing, offering marketers new opportunities to boost online sales. With rising internet penetration, social media has become a key platform for consumers to discover, compare, and purchase products online. This study focuses on analyzing purchase intention—an individual's tendency to make a purchase—and online consumer behavior in the Jakarta, Bogor, Depok, Tangerang, and Bekasi areas. Using an online questionnaire, the research applies machine learning techniques, specifically random forest and extreme gradient boosting (XGBoost), to model and predict purchase intention based on consumer behaviors such as social media usage intensity. Additionally, an ensemble approach that combines both models is used to improve prediction accuracy. The findings reveal that the random forest model performs slightly better than XGBoost, achieving an accuracy of 82.98% and 81.91% in two respective models. In comparison, XGBoost records 81.91% accuracy in the first model and 78.72% in the second. These results highlight the potential of machine learning in understanding and forecasting consumer purchasing decisions in Indonesia's growing digital market.

Keywords: Purchase Intention, Consumer Behavior, Machine Learning, Random Forest, XGBoost

CM-D2-SES08-3

Web-Based Prodeacon Scheduling System: Digitalizing Operations at Alam Sutera Parish

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Digitalization has become an important factor in streamlining complex administrative task across various fields,including religious organizations. There are many different cultures, ethnic groups, and faiths in Indonesia. Islam, Catholic, Christianity, Buddhism, Hinduism, and Confucianism are among the many religions practiced in Indonesia. There are 8,596,545 Catholics in Indonesia, which is 3.1 % of the total population. In Catholic, one of the involved personnel is prodeacon. At the Alam Sutera Parish Catholic Church, the process of scheduling prodeacons remains manual, relying on traditional methods that may limit efficiency and scalability. This study presents the design and development of a web-based scheduling application developed for Prodeacon activities in Catholic churches, aimed at enhancing operational and user satisfaction from the traditional Excel-based scheduling. The system architecture was based on Javascript technology and designed to cater to two distinct user groups: the prodeacon administrator, responsible for managing organizational operations and scheduling tasks, and the members, who access the system only to view their assigned schedules. The system underwent the evaluation utilizing Likert Scale with the assessment being completed exclusively by one of the prodeacon administrator.

Keywords: Javascript, Likert Scale, Prodeacon, Scheduling Problem, Software Engineering, Website Development

CM-D2-SES08-4

Interactive 360˚ Virtual Tour for Dark Tourism Promotion: A Digital Heritage Case Study of Makam Syekh Mubarok

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This paper presents a low-infrastructure, web-based 360˚ virtual tour for Makam Syekh Mubarok, designed for deployment by village-level custodians using a commodity stack (HTML/CSS/JavaScript, Bootstrap, jQuery, and Photo Sphere Viewer). Our contribution is threefold: (i) a reproducible build-and-deploy pattern tailored to resource-constrained heritage sites, (ii) a transparent Agile implementation blueprint (product backlog, sprint cadence, definition-of-done, and CI/CD) that local teams can adopt, and (iii) a mixed-methods evaluation template that augments functional/compatibility checks with early quantitative UX measures (System Usability Scale, task-success rate, and dwell analytics). We position the work relative to prior virtual-tour studies by contrasting cost, maintainability, and operational burden, emphasizing process transparency over new viewer mechanics. Results show high functional coverage across common devices and promising initial usability signals. We note limitations (single-site scope, small pilot N) and outline a roadmap to multi-site validation, accessibility hardening (WCAG 2.2), and ethical guidelines for respectful interpretation of dark-heritage content.

Keywords: Cultural heritage; dark tourism; digital heritage preservation; Virtual tour; usability evaluation; web engineering.

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A Comparative Study of Generative AI with CNN ResNet-18 and Transformer Models for Multimodal Sentiment Analysis in E-Commerce Product Review

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The e-commerce market generates a large volume of reviews containing both text and images, particularly in the fashion category. These reviews reflect consumer sentiment, preferences, and expectations, yet text alone can be unreliable due to the absence of visual evidence, limited context, and inability to capture product attributes. This study employs multimodal sentiment analysis by combining text and image data to reduce bias, improve accuracy, and enhance understanding of consumer satisfaction. To ensure a comprehensive evaluation, we compare transformer-based text models (BERT, RoBERTa, FNet) for their balance of accuracy and contextual efficiency, ResNet-18 as a lightweight CNN for visual feature extraction, and three variants of Stable Diffusion (1.5, v2-Base, SDXL Turbo) representing different stages of development and adoption of generative models for enriching missing product visuals. The Knowledge Discovery in Databases framework guided the process through selection, preprocessing, transformation, data mining, and evaluation. Experimental results show that RoBERTa achieved 89.67% accuracy in 1,359 seconds, ResNet-18 with SDXL Turbo reached 75.18% in 1,651 seconds, and the best hybrid model (SDXL Turbo–ResNet-18–FNet) achieved 91.20% in 2,205 seconds. These findings demonstrate that integrating synthetic images with textual features improves sentiment classification and highlight the value of multimodal pipelines for richer insights in e-commerce.

Keywords: E-commerce Product Reviews, CNN ResNet-18, Generative AI, Multimodal Sentiment Analysis, Text-to-Image Generation, Transformer Models

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Digital Calibration Certificate Level 1 Automation in BSN BRIN Indonesia

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The National Standardization Agency of Indonesia (BSN) has set the objective of adopting international Digital Calibration Certificate (DCC) standards up to Level 2. Document formats within BSN exhibit considerable variability, with more than 40 templates currently in use. To address this challenge, this study introduces a rule-based automation framework utilizing Document Layout Analysis (DLA). The proposed heuristic approach extracts and classifies data blocks (Forms, Tables, and Paragraphs) from Excel files, and subsequently maps and populates them into Microsoft Word templates. The evaluation, conducted on 10 authentic BSN calibration documents obtained from three distinct laboratories, demonstrated a 100% F1-score in identifying Region of Interest (ROI). Furthermore, the extraction of Entity of Interest (EOI) achieved a precision of 94.4%, with a single failure arising from the handling of a multiline form structure. These findings indicate that the proposed DLA-based method provides a robust foundation for advancing BSN's implementation of Level 2 DCC standards.

Keywords: automation, digital calibration certificate (DCC); document layout analysis (DLA); rule-based system, standardization

CM-D2-SES09-3

Ter-Net: A Dual-Branch Ensemble Network for Accurate and Interpretable Terrain Type Classification

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Accurate and automated terrain classification is vital for critical applications including disaster management, autonomous navigation, and environmental monitoring. While deep learning models have shown significant promise, their ”black box” nature often limits the interpretability of the mechanism of a model, as well as real-world adoption. This paper introduces Ter-Net (Terrain Net), a novel dual-branch ensemble architecture designed for high-accuracy and interpretable terrain classification. Ter-Net integrates a custom Convolutional Neural Network (CNN) featuring Squeeze-and-Excitation (SE) blocks for fine-grained feature extraction, in parallel with a pre-trained DenseNet121 backbone renowned for its feature reuse. These distinct branches are fused using an ensemble stacking technique and refined by a final classification head. Evaluated on a challenging four-class satellite imagery dataset (Desert, Forest, Mountain, and Plains), Ter-Net achieves state-of-the-art performance, securing a test accuracy and an F1-Score of 97.29%, outperforming established architectures such as ResNet18, MobileNetV3Small, and EfficientNetB0. Furthermore, we employ various Explainable AI (XAI) techniques including Grad-CAM, Saliency Maps and LIME to validate Ter-Net. These visualizations confirm that Ter-Net makes its predictions based on relevant geological and vegetative features, significantly enhancing the model’s transparency and trustworthiness.

Keywords: Terrain Classification, Deep Learning, Ensemble Learning, DenseNet121, Convolutional Neural Network (CNN), Explainable Artificial Intelligence (XAI).

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Analyzing Hidden Sources in Soil Sensors Using Independent Component Analysis (ICA) and Principal Component Analysis (PCA) Algorithm

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This study aims to analyze hidden factors that influence soil sensor measurement results, including nitrogen, phosphorus, and pH levels. In this analysis, the Independent Component Analysis (ICA) Algorithm was used. This study applied the FastICA technique with the assumption that compost, irrigation, and microbes are hidden factors that influence nitrogen, phosphorus, and pH levels. The research stage used preprocessing, centering, and whitening techniques to normalize the data. The analysis results show the distribution of independent components that successfully separate the influence of these hidden factors. This study also calculated the kurtosis and neg-entropy values for each component, and visualized them with scatter plots and heat maps to identify correlations between ICA components and observed variables. The first plot depicting the relationship between IC1 and IC2 shows a positive pattern indicating a correlation between the two components, with a correlation coefficient of 0.824. The second plot depicting the relationship between IC2 and IC3 also shows a positive pattern, although this relationship is weaker with a correlation coefficient of 0.375. This scatter plot illustrates the distribution of data points that show a linear relationship between components, helping in identifying clearer patterns in the separated data.

Keywords: Agricultural Data Analysis; ICA (Independent Component Analysis); Principal Component Analysis (PCA); Hidden Sources; Soil Sensor

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A meta-heuristic method for cumulative vehicle routing problem

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Vehicle routing problems (VRPs) have long been a key area of research in logistics, but their relevance has grown considerably in the post-COVID-19 era due to the increasing demand for efficient and cost-effective delivery services. Among the various extensions of the classical capacitated VRP, the Cumulative Vehicle Routing Problem (Cum-VRP) introduces cumulative constraints that substantially increase the problem's complexity. Tackling such challenges necessitates advanced optimisation methods capable of producing high-quality solutions within practical computational times. Although heuristic techniques are frequently employed, they often become impractical for large-scale instances. In this study, the Artificial Bee Colony (ABC) algorithm is enhanced through the incorporation of local search strategies and neighbourhood operators to address the Cum-VRP effectively. Comparative experiments against the Variable Neighbourhood Search (VNS) algorithm demonstrate the superiority of the proposed ABC approach, delivering improvements in solution quality, computational efficiency, and feasibility.

Keywords: Cumulative Vehicle Routing Problem, Meta-heuristic method, Artificial Bee Colony, Variable Neighbourhood Search, Local search

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Diagnosis of eye diseases using Support Vector Machine with Bayesian optimization

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Eye diseases have become a significant public concern, particularly following the COVID-19 pandemic in 2020. Daily activities such as studying and working increasingly rely on electronic devices, which emit blue light. This light scatters within the eyes, creating additional visual noise. However, there is public concern regarding diagnostic accuracy, as human interpretation is prone to errors. Such errors may result in blindness or severe ocular damage. Therefore, this research proposes the diagnosis of eye diseases using Optical Coherence Tomography (OCT) images. After pre-processing the images, features from the images are extracted using the Principal Component Analysis (PCA). These features are useful for classifying the retinal diseases. For retinal disease classification, performance is enhanced by applying Support Vector Machine (SVM) with the Bayesian optimization. The results are compared against grid search and random search approaches. All the techniques are implemented in Python.

Keywords: Bayesian optimization, Eye diseases, Optical Coherence Tomography (OCT), Principal Component Analysis (PCA), Support Vector Machine (SVM)

Thank you!
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