Telkom University PURWOKERTO

CENTIVE
Conference on Electrical Engineering, Telematics, Industrial Technology, and Creative Media

PROGRAM BOOK

"Advance solution for local and global problems through multidisciplinary and industrial synergy"

CENTIVE 2025

The 5th International Conference on Electrical Engineering, Informatics, Industrial Technology, and Creative Media 2025

November 29th, 2025
at Telkom University Purwokerto

Advance solution in Telecommunication
Advance solution in Informatics and Computer
Advance solution in Electronics
Advance solution in Industrial System Engineering
Advance solution in Media Communications and Advertising

Co-host:

Universitas Ma Chung · STMIK Widya Utama · Universitas Duta Bangsa Surakarta · Universitas Nahdlatul Ulama Cilacap · Universitas Sahid Surakarta · Universitas Halu Oleo

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Welcome Address

Dr. Tenia Wahyuningrum

Director of Telkom University Purwokerto Campus

Good morning, distinguished guests, esteemed speakers, participants, and colleagues,

It is my great pleasure to welcome all distinguished speakers, researchers, industry partners, students, and esteemed guests to the International Conference on Electrical Engineering, Informatics, Industrial Technology, and Creative Media (CENTIVE) 2025. This year's theme, "Advance Sustainable Solutions for Local and Global Problems Through Multidisciplinary and Industrial Synergy," reflects our shared commitment to addressing societal challenges through collaboration, innovation, and scientific integrity. As we navigate a world marked by rapid technological advancements and increasingly complex problems, it becomes clear that meaningful solutions require contributions from diverse disciplines and strong engagement with industry.

CENTIVE 2025 provides a vital platform for academia, government, and industry to come together to exchange ideas, showcase breakthroughs, and forge new collaborations. We are honored to host participants from across Indonesia and abroad, both onsite and online, who unite to enrich the conference's impact.

As the host institution, Telkom University Purwokerto remains committed to fostering research excellence, empowering young innovators, and strengthening partnerships that support sustainable development—locally within our region and globally within the broader scientific community.

I extend my gratitude to all presenters, reviewers, organizing committees, and partners whose dedication makes this conference possible. May CENTIVE 2025 inspire new insights, catalyze impactful research, and nurture collaborations that contribute to a more sustainable and resilient future.

Thank you, and I wish you a productive and inspiring conference.

Warm regards,
Dr. Tenia Wahyuningrum
Director of Telkom University Purwokerto Campus

Andi Prademon Yunus, Ph.D.

General Chair, CENTIVE 2025

Greetings!

It is my great pleasure to welcome you to the CENTIVE2025, held this year in Purwokerto. On behalf of the organizing committee, I extend our warmest greetings to all participants joining us from around the world. We are honored by your presence and deeply appreciative of your commitment to advancing research, fostering collaboration, and contributing to the intellectual vibrancy of our community.

This conference brings together leading scholars, practitioners, and emerging researchers to explore the latest developments in Industrial, Telecommunication, Electronics, Informatics, and Digital Advertisement. We will engage in thought-provoking discussions, exchange innovative ideas, and reflect on the challenges and opportunities that lie ahead. The diversity of perspectives represented here is one of our greatest strengths, and we look forward to the dynamic dialogue that such diversity inspires.

Organizing a conference of this scope would not have been possible without the dedication and hard work of many individuals. I would like to express my sincere gratitude to the program committee, organizing committee, reviewers, and volunteers, whose tireless efforts have shaped a rich and rigorous program. We are also grateful to our sponsors and institutional partners for their generous support. I encourage you to take full advantage of the sessions, workshops, and networking opportunities that this conference offers. Whether you are presenting your latest findings, seeking feedback on ongoing work, or forging new collaborations, I hope

you find this gathering both intellectually stimulating and professionally rewarding. Thank you once again for joining us. I wish you a productive, inspiring, and memorable conference.

Sincerely,
Andi Prademon Yunus, Ph.D.
General Chair, CENTIVE 2025

Keynote Speaker Profile

Prof. Drs. Agus Harjoko, M.Sc., Ph.D.

Professor at Gadjah Mada University

About the Speaker

Prof. Agus Harjoko, Drs., M.Sc., Ph.D. is a Professor at the Department of Computer Science and Electronics, Universitas Gadjah Mada, Indonesia. He earned his B.Sc. in Physics from UGM and completed his M.Sc. and Ph.D. in Computer Science at the University of New Brunswick, Canada. With more than 30 years of experience, he has been actively leading research in computer vision, artificial intelligence, image processing, and intelligent systems.

Throughout his academic career, Prof. Agus has received numerous research grants, supporting the development of intelligent technologies for agriculture, transportation, education, and healthcare. He has produced hundreds of scientific publications, supervised many postgraduate students, and contributed to the advancement of digital technology across various strategic sectors in Indonesia. With a consistent and impactful research record, Prof. Agus continues to contribute significantly to the advancement of computer vision and artificial intelligence at both national and international levels.

Dr. Kento Morita

Associate Professor at Mie University

About the Speaker

Kento Morita received his B.E. in 2014, M.E. in 2016, and Ph.D. in 2019, all from the University of Hyogo. He served as a Research Fellow of the Japan Society for the Promotion of Science (JSPS DC2) from 2017 to 2019. He was an Assistant Professor at Mie University from 2019 to 2023 and has been an Associate Professor there since 2023. Since 2021, he has also been a Specially Appointed Research Fellow at the National Cerebral and Cardiovascular Center.

His research focuses on medical image analysis and industrial support system development, combining advanced artificial intelligence methods with practical applications in healthcare and industry. He has published dozens of scientific papers in international journals and conferences, and also serves as an editorial board member for several academic journals in his field. He received the Young Researcher Award 2023 from Fuji Technology Press Ltd.

Faisol Riza, S.Si., M.A.

Deputy Minister of Industry of the Republic of Indonesia

About the Speaker

Faisol Riza currently serves as the Deputy Minister of Industry of the Republic of Indonesia. He earned his Bachelor's degree in Philosophy from the Driyarkara School of Philosophy, Jakarta, graduating in 2001. In 2021, he completed his Master's degree in Public Administration at the University of Indonesia, Depok. Before assuming his role in government, he was actively engaged as a writer and social activist, contributing to public discussions on democracy, policy, and social development. His professional journey reflects a strong dedication to advancing national industry, fostering sustainable economic growth, and empowering communities through inclusive policies.

Andy Ananto Muhammad

Legal Supervisor at PT Tanjung Power Indonesia

About the Speaker

Andy Ananto Muhammad is a Legal Supervisor at PT Tanjung Power Indonesia, a subsidiary within the Alamtri Geo and Adaro Energy Group. Holding a Bachelor of Law (S.H.) from Diponegoro University, earned in 2018, and certification as a Certified Contract Drafter (C.CD), he specializes in drafting and reviewing Memoranda of Understanding (MoU), agreements, and other corporate legal instruments that support the company's strategic partnerships and sustainable operations.

With more than five years of experience in the private sector, Andy's expertise spans corporate law, contract management, and regulatory compliance. He has a strong track record in preparing, analyzing, and negotiating legal documents, ensuring adherence to regulatory requirements, and providing strategic legal support to strengthen business continuity. His role also involves advising management on legal risks, supporting governance practices, and contributing to long-term corporate sustainability. Andy remains dedicated to advancing legal excellence within the energy industry, fostering a corporate environment that is compliant, accountable, and forward-looking.

Organizing Committee

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Andi Prademon Yunus, Ph.D.

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Danny Kurnianto, M.Eng.
Dimas Fanny Hebrasianto Permadi, M.Kom
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Prasetyo Hartanto, M.M.

Halim Qista Karima, M.Sc.
Wahyu Andi Saputra, M.Eng.
Vita Karuna, S.T.

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Yesy Diah Rosita, M.Kom. (Chair)
Rakhmad Maulidi, M.Kom.

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Consumption

Yulia Rachmawati, S.Hum (Chair)
Reta Vitantri Cherly Nanda Stelia, S.Kom.
Dinar Dityas Rasmita, S.P

Program

Main Schedule

Room: Rachmat Effendi Hall (Main Hall)
Rektorat Building, 5th floor, Telkom University Purwokerto
Date and time: November 29th, 2025 and 08.30 - 20.00 WIB
Zoom meeting: https://telu.ac.id/centivewaluyojatmiko

Time	Activity
08:30 – 08:35	Opening
08:35 – 08:45	Traditional dance performance
08:45 – 08:50	Singing the Indonesian national anthem
08:50 – 08:55	Welcoming speech by Director of TUP, Dr. Tenia Wahyuningrum
08:55 – 09:05	Opening remarks by the General Chair, Dr. Andi Prademon Yunus
09:05 – 09:50	Presentation and Q&A session by the first keynote speaker – Prof. Dr. Agus Harjoko
09:50 – 10:35	Presentation and Q&A session by the second keynote speaker – Dr. Kento Morita
10:35 – 10:45	Break
10:45 – 11:30	Presentation and Q&A session by the third keynote speaker – Andy Ananto Muhammad
11:30 – 12:15	Presentation and Q&A session by the fourth keynote speaker – Faisol Riza
12:15 – 12:25	Appreciation to Keynote and Photo session with all participants
12:25 – 13:25	Long Break
13:00 – 14:00	Poster presentation (Main Hall)
14:00 – 16:30	Parallel Session
16:30 – 18:15	Long Break
18:15 – 19:30	Banquet & Awarding
19:30 – 20:00	Closing

Poster Session: All Tracks

Room: Rachmat Effendi Hall (Main Hall)
Date and time: November 29th, 2025 and 13.00 - 14.00 WIB
Session Chair: Maie Istighosah, M.Kom.
60 minutes for poster presentation

37: Automated Detection of Foot Tumor: A Machine Learning Approach Leveraging GLCM Texture Analysis
Asyafa Ditra Al Hauna (Telkom University)*, Raphon Galuh Candraningtyas (Mie University), and Yit Hong Choo (Swinburne University).

107: Reveals Beyond Motion: A Hybrid Graph-Recurrent Model with Human Fall Foresight
Asyafa Ditra Al Hauna (Telkom University)* and Masanori Fukui (Mie University).

102: Ecobass Mini: Innovation in Bamboo Material as an Alternative for Making Bass Guitars
Dwi Prasetyo (Telkom University)*.

71: Novel Machine Learning Approach to Forecasting Inventory Turnover Rates and Mitigating Backorders in Perishable Goods Supply Chains
Rathanah Andita (Telkom University), Miftahol Arifin (Telkom University)*, Luluk Salma (Telkom University), and Ajeng Utami (Telkom University).

73: Sustainable Procurement Practices: Empirical Analysis of Cost, Quality, and Compliance Trade-offs Using Purchase Order Data
Dinda Artaviana (Telkom University), Miftahol Arifin (Telkom University)*, Muhammad Hilmiy Nastama (Telkom University), and Muhammad Alam Syahputra (Telkom University).

93: Wood Waste Grinder Coffee
Afan Fariki (Product Design, Telkom University).

101: Bambify Scoot (Bamboo Children's Scooters:An Innovative, Eco-Friendly Toy Based on Local Materials and Sustainable Values)
Risheva Avilla (Telkom University)*.

117: Spatial Temporal Graph Convolutional Networks for Human Motion Prediction and Fall Classification
Agung Ibrahim (Telkom University)*, Himam Bashiran (Telkom University), and Fito Satrio (Telkom University).

116: Application of Serayu Batik Motifs on the Sign System for the Peken Banyumas Event
Haya Ramdani (Telkom University)* and Annida Husna Muthmainnah (Telkom University).

29: Human Motion Forecasting and Fall Classification Using Vision Transformer
Fito Satrio (Telkom University)*, Himam Bashiran (Telkom University), and Agung Malik Ibrahim (Telkom University).

109: Assessing the Robustness of Speech Emotion Recognition for Lecturer Evaluation: A Speaker-Independent Analysis of Hand-Crafted and Learned Features
Agung Widiyanto (Telkom University)*, Muhammad Prawira Hutomo (Telkom University), and A.A Istri Candra Manika Dewi (Telkom University).

35: Multi-Layer Perceptron with Advanced Acoustic Features for Speech Emotion Recognition in Education Evaluation
Muhammad Afiq Tamamul Wafa (Telkom University)*.

Parallel Session: Informatics and Computer 1

Room: REK-301 (Online BR-01)
Date and time: November 29th, 2025 and 14.00 - 16.30 WIB
Chair: Dodi Zulherman, Ph.D.
10 minutes for presentation, 5 minutes for QnA

5: Automated Detection of MRONJ Lesions in Panoramic Dental X-rays Using Candidate Region Identification and Semantic Segmentation
Manami Inoue (Mie University)*, Kento Morita (Mie University), Yasuaki Sadakane (Kobe University), Takumi Hasegawa (Kobe University), Masaya Akashi (Kobe University), and Tetsushi Wakabayashi (Mie University).

111: IndoBERT and Transformer-Based Multimodal Fusion for Indonesian Contextual Speech Emotion Recognition
Anggun Cahyaningrum (UIN Sultan Maulana Hasanuddin Banten), Destika Sabila Kamilain (UIN Sultan Maulana Hasanuddin Banten), Fajar Gustri Amanda (UIN Sultan Maulana Hasanuddin Banten), and M. Iman Wahyudi (UIN Sultan Maulana Hasanuddin Banten)*.

103: Forest Fire Detection Leveraging Hybrid Convolutional-Recurrent Models
Raphon Galuh Candraningtyas (Mie University)*, Asyafa Ditra Al Hauna (Telkom University), Mohamad Nassar (Tagliatela College of Engineering University of New Haven).

106: Palm Oil Ripeness and Quality Detection System Using YOLOv11
Queenta Paradissa Ramadhani (Telkom University)* and Favian Dewanta(Telkom University).

110: Comparative Study of CNN, Vision Transformer, and Hybrid CNN–ViT Models for Indonesian Batik Pattern Classification
Naufal Rahman (Telkom University)*, Akmelia Zahara (Telkom University), and Bintang Yudhistira (Telkom University).

27: Deep Learning-Based Object identification in Ocean Environment by Convolutional Neural models
Omprakash Gurrapu (Volvo, USA)*.

121: Deep Learning-Based Herbal Plant Classification Using Leaf Shape and Pattern: The UII Botanical Leaf Dataset
Aldesta Yudi Hananta (Universitas Islam Indonesia), Muhammad Febrian Putra (Universitas Islam Indonesia), Sisdarmanto Adinandra (Universitas Islam Indonesia), and Elvira Sukma Wahyuni (Universitas Islam Indonesia)*.

28: Automated Hyperparameter Optimization Using Optuna for EfficientNet-Based Medical Image Classification A Case Study on Acute Lymphoblastic Leukemia Detection
Windra Swastika (Universitas Ma Chung)*, David Yusaku Setiyono (Universitas Ma Chung), and Bita Parga Zen (Universitas Ma Chung).

Parallel Session: Informatics and Computer 2

Room: REK-302 (Online BR-02)
Date and time: November 29th, 2025 and 14.00 - 16.30 WIB
Chair: M. Agung Nugroho, S.Kom., M.Kom.
10 minutes for presentation, 5 minutes for QnA

2: Integration Of Game Recommendation System And Sentiment Analysis On Steam Games
Jadiaman Parhusip (University of Palangkar Raya)*, Muhammad Kurniawan Halim (University of Palangka Raya).

10: Integrating Supervisor Access Using Hybrid RBAC–ABAC In A Web-Based Research Permit Information System: A Case Study At Dr. Moewardi General Hospital
Santyana Rahmawati (Universitas Duta Bangsa)*, Hanifah Permatasari (Universitas Duta Bangsa), and Intan Oktaviani (Universitas Duta Bangsa).

12: Performance Portability, Reliability, Usability, and Maintainability of PT. ASDP Indonesia Ferry's E-Procurement Website Based on ISO/IEC 25010 Standards
Afif Faris Hudaifi (Universitas Sahid Surakarta), Dwi Retnoningsih (Universitas Sahid Surakarta)*, Astri Charolina (Universitas Sahid Surakarta).

16: Determining Factors in the Success of the SatuSehat Application to Support the Free Health Program Using the DeLone & McLean Method
Desi Rahmawati (STMIK Widya Utama Purwokerto)*, Adnan Purwanto (STMIK Widya Utama Purwokerto), and Muhammad Akbar Setiawan (STMIK Widya Utama Purwokerto).

25: Designing and Validating a Website-Based Knowledge Management System for Micro, Small, and Medium Enterprises: A KMSLC Approach with SECI-Driven Knowledge Capture
Johanes Dom Noel Wijaya (Universitas Ma Chung), Muhammad Nurwegiono (Universitas Ma Chung)*, and Rudy Setiawan (Universitas Ma Chung).

31: Design and Implementation of a Game-Based Learning System for Slow Learner Students in Visual Communication Design Department
Evelyne Henny Lukitasari (Universitas Sahid Surakarta), Farid Fitriyadi (Universitas Sahid Surakarta)*, and Yunita Primasanti (Universitas Sahid Surakarta).

40: Analysis of the User Experience of Auto-Battler Magic Chess: Go Go Game using Game Experience Questionnaire (GEQ)
Vivi Mufti Afifah (STMIK Widya Utama Purwokerto)*, Adnan Purwanto (STMIK Widya Utama Purwokerto), Bayu Rizkya Pratama (STMIK Widya Utama Purwokerto), and Nila Ayu Anggraeni (STMIK Widya Utama Purwokerto).

9: Whistleblowing System for Website-Based Sexual Violence Complaints: An Improved Approach Combining Design Thinking and Software Development Life Cycle
Luthfiah Gustiana (Telkom University), Tenia Wahyuningrum (Telkom University)*, and Teotino Gomes (Soares, Timor Leste).

Parallel Session: Informatics and Computer 3

Room: REK-303 (Online BR-03)
Date and time: November 29th, 2025 and 14.00 - 16.30 WIB
Chair: Wahyu Andi S, S.Pd., M.Eng
10 minutes for presentation, 5 minutes for QnA

120: A Lexicon-Based VADER Approach for Aspect-Based Sentiment Analysis in the Indonesian Language
Siti Khomsah (Telkom University)* and Muhammad Al Bana (Telkom University).

100: Sentiment Classification of FatSecret Application Reviews with Machine Learning Models
Mayang Gumelar (Universitas Sahid Surakarta) and Farid Fitriyadi (Universitas Sahid Surakarta)*.

30: The Role of Hashtags in Driving Instagram Engagement: An Analysis of Indonesian Independence Day Content
Farid Fitriyadi (Universitas Sahid Surakarta)*, Yunita Primasanti (Universitas Sahid Surakarta), Erna Indriastiningsih (Universitas Sahid Surakarta), and Evelyne Henny Lukitasari (Universitas Sahid Surakarta).

15: Optimization of Random Forest Model via GridSearchCV for Hoax News Detection

Lutvi Riyandari (STMIK WIdya Utama), Singgih Andiko (STMIK Widya Utama)*, Singgih Briandoko (STMIK WIDYA UTAMA), and Siti Delimasari (STMIK Widya Utama).

24: ClimatePulse: Sentiment and Emotion Analysis of Public Discourse on Climate Change in Social Media using BERT, NER, Multilabel Classification, and Spatio-Temporal Visualization
Alfi Muharramah (Halu Oleo University) and Rizal Saputra (Halu Oleo University)*.

22: Integration of YOLOv11 and Convolutional Neural Network in a Deep Learning Approach for Coffee Bean Defect Detection and Classification
Fildzah Khalishah Ghassani (Universitas Halu Oleo), Rizal Adi Saputra (Universitas Halu Oleo)*, Fid Aksara (Universitas Halu Oleo), Isnawaty Isnawaty (Universitas Halu Oleo), Muhammad Golok Jaya (Universitas Halu Oleo), Ishak Kadir (Universitas Halu Oleo), and Rafi Iyad Madani Chaidir (Universitas Halu Oleo).

41: Determinant Factors of SeaBank Application Success for Digital Payments Using Extended Technology Acceptance Model
Zahra Anisya (STMIK Widya Utama Purwokerto)*, Adnan Purwanto (STMIK Widya Utama Purwokerto), Singgih Briandoko (STMIK Widya Utama Purwokerto), and Wika Purbasari (STMIK Widya Utama Purwokerto).

Parallel Session: Informatics and Computer 4

Room: REK-304 (Online BR-04)
Date and time: November 29th, 2025 and 14.00 - 16.30 WIB
Chair: Dimas Fanny Hebrasianto Permadi, S.ST., M.Kom
10 minutes for presentation, 5 minutes for QnA

13: Applying Consistent Fuzzy Preference Relation in Weighting Software Effort Estimation Criteria
Ika Lestari (STMIK Widya Utama)*, Adnan Purwanto (STMIK Widya Utama), Sulistiyasni Sulis (STMIK Widya Utama), and Singgih Briandoko (STMIK Widya Utama).

17: Optimization of Random Forest Model with Correlation-Based Feature Selection for Enhanced Forest Health Prediction
Singgih Setia Andiko (STMIK Widya Utama)*, Bayu Rizkya Pratama (STMIK Widya Utama), singgih briandoko (STMIK Widya Utama), Muhammad Akbar Setiawan (STMIK Widya Utama), and Eldas Puspita Rini (STMIK Widya Utama).

23: Clustering Passenger Satisfaction Levels in Air Travel Using the K-Means Method
Pipin Hastuti (Universitas Duta Bangsa Surakarta)* and Dwi Hartanti (Universitas Duta Bangsa Surakarta).

26: Fraud Prediction Model on Premium Cosmetics Transactions Using Deep Learning: A Long Short-Term Memory (LSTM) Approach
Nandita Dewi (Duta Bangsa University)* and Aprilisa Sari (Duta Bangsa University).

99: Enhancing Decision-Making in Local Government through K-Means Clustering of Structural Officials' Performance
Adrian Unggul Wirawan (Universitas Sahid Surakarta), Hardika Khusnuliawati (Universitas Sahid Surakarta)*, Astri Charolina (Universitas Sahid Surakarta), Anniez Rachmawati Musslifah (Universitas Sahid Surakarta), and Rusnandari Retno Cahyani (Universitas Sahid Surakarta).

104: Performance Comparison of Breast Cancer Classification Methods: Naive Bayes vs. Support Vector Machine
Sri Anwariningsih (Universitas Sahid Surakarta)* and Tutus Pradipta (Universitas Sahid Surakarta).

112: The Structural Interaction between Teachers' Collaboration and Inquiry-Based Learning Networks: Effects on the Implementation of Inquiry-Based Learning
Masanori Fukui (Mie University)*, Hari Widi Utomo (Telkom University), Andi Prademon Yunus (Telkom University), and Asyafa Ditra Al Hauna (Telkom University).

114: Evaluation of Village E-Government in Banyumas Regency Using the UN E-Government Development Index
Syefulloh S (STMIK WIDYA UTAMA PURWOKERTO)*, Adnan Purwanto (STMIK WIDYA UTAMA PURWOKERTO), Evi Martiani (STMIK WIDYA UTAMA PURWOKERTO), and Tarwoto Tarwoto (STMIK WIDYA UTAMA PURWOKERTO).

Parallel Session: Telecommunication & Electronics

Room: REK-305 (Online BR-05)
Date and time: November 29th, 2025 and 14.00 - 16.30 WIB
Chair: Eko Fajar Cahyadi S.T., M.T., Ph.D
10 minutes for presentation, 5 minutes for QnA

14:Mitigation of Inter-Carrier Interference (ICI) in Mobile DVB-T2 Technology Using Zero Forcing Equalization
Solichah Larasati (Telkom University Purwokerto)*, Jilan Haidar Rahman (Telkom University Purwokerto), and Wahyu Pamungkas (Telkom University Purwokerto).

32:Comparison of Ensemble Learning Methods on the IoT-23 Dataset
Syakira Zahra (Universitas Bengkulu)* and Kurnia Anggriani (Universitas Bengkulu).

124: Data Acquisition System to Support Predictive Maintenance on Soft Laminator Machines in an Electronics Manufacturing Company
Firdaus Firdaus (Universitas Islam Indonesia)*, Deny Rahmat (Universitas Islam Indonesia), Dwi Ana Ratna Wati (Universitas Islam Indonesia).

125: Low-Cost IoT-Based Landslide Early Warning System
Hasbi Nur Prasetyo Wisudawan (Universitas Islam Indonesia)*, Ahmad Mahfudh Setyawan

(Universitas Islam Indonesia), Syifaa' Muhammad Ihsan (Universitas Islam Indonesia), and Elvira Sukma Wahyuni (Universitas Islam Indonesia).

126: Electrical Energy Consumption Monitoring System for Boarding Rooms Using IoT and Progressive Web Application
Muhammad Raihan Alfarij (Universitas Islam Indonesia Yogyakarta), Muhammad Daffa Thareq Arrizky (Universitas Islam Indonesia Yogyakarta), Medilla Kusriyanto (Jurusan Teknik Elektro Universitas Islam Indonesia), and Wahyudi Pramono (Universitas Islam Indonesia Yogyakarta)*.

55: Analysis of BTS Selection for Implementation Of Multi Operator Core Network (MOCN): Merger Case Study PT Indosat Ooredoo Tbk With PT Hutchison 3 Indonesia
Wahyu Pamungkas (Telkom University)*, Alfin Hikmaturokhman (Telkom University), Ida Tutiek Samsyiah (Telkom University).

105: Design and Implementation of a Network-Based Real Time Monitoring System for Smart Incubators Using IoT
Diyah Ruswanti (Universitas Sahid Surakarta)*, Muhammad Ikhsan Hidayat (Universitas Sahid Surakarta), Jallu Satrio Murdowo (Universitas Sahid Surakarta), and Mukhlis Al Hakim (Universitas Sahid Surakarta).

Parallel Session: Industrial System Engineering, Media Communication, and Advertisement 1

Room: REK-306 (Online BR-06)
Date and time: November 29th, 2025 and 14.00 - 16.30 WIB
Chair: Dr. Pricilla Tamara Irawan, S.T., M.T.
10 minutes for presentation, 5 minutes for QnA

6: Prioritization Analysis of Instagram Digital Marketing Strategy HMBD Telkom Purwokerto with SWOT and AHP Methods
Johanes Ageng Dharma (Telkom University), Dzaky Azhar Rafif Saepudin (Telkom University), Adrian Wismar Munthe (Telkom University), and Muhammad Eka Purbaya (Telkom University)*.

18: Culinary Content Delivery Strategies by Micro-Influencer @nyamwithinop in Building Consumer Trust on TikTok
Cindy Nasywa Aurora* (Universitas Duta Bangsa Surakarta), Hanifah Permatasari (Universitas Duta Bangsa Surakarta), and Rizky Betha Nur Ramadhany (Universitas Duta Bangsa Surakarta).

33: Selection Strategy for Handling Deadstock Products using the Analytical Hierarchy Process (AHP) and Expected Monetary Value (EMV) Method
Nabila Noor Qisthani (Universitas Telkom)*, Oktavia Leni Susanti (Universitas Telkom), Yulinda Uswatun Kasanah (Universitas Telkom), Muhammad Rizqi Alvarensyah (Univer-

sitas Telkom), and Haninvia Haris Herlani (Universitas Telkom).

34: Application of Distribution Requirement Planning in Optimizing Packaged Drinking Water Distribution to Mitigate Lost Sales
Nabila Noor Qisthani (Universitas Telkom)*, Khoirul Anwar Pohan (Universitas Telkom), Yulinda Uswatun Kasanah (Universitas Telkom), and Januar Rahmat (Universitas Telkom).

36: The Implementation of Green Economy in Increasing the Achievement of Sustainable Development Goals (SDGs) in the Tempe Industry in Sanan Malang
Purnomo (Universitas Ma Chung)*.

38: A Systematic VDI 2221 Methodology for Piezoelectric Energy Harvesting in Ergonomic Lumbar-Support Wearables Product
Kristian Ismartaya (Design Product, Duta Wacana Christian University)*, Michelle Aurelia Nathanael (Universitas Kristen Duta Wacana), Devina Relian (Universitas Kristen Duta Wacana), Kezia Angelina Hermawan (Universitas Kristen Duta Wacana), and Jesslyn Felicia Abdisusilo (Universitas Kristen Duta Wacana).

51: Green Innovation Product for Sustainable Waste Management: A Case Study on Upcycling Glass Bottle Waste via Flameworking
Centaury Harjani (Universitas Kristen Duta Wacana)*, Servatia Mayang Setyowati (Universitas Kristen Duta Wacana), Restituta Wening G. Gyarwahyu (Universitas Kristen Duta Wacana).

Parallel Session: Industrial System Engineering, Media Communication, and Advertisement 2

Room: REK-307 (Online BR-07)
Date and time: November 29th, 2025 and 14.00 - 16.30 WIB
Chair: Sukmadiningtyas, S.Kom., M.Kom.
10 minutes for presentation, 5 minutes for QnA

92: Influencer Marketing as a Catalyst for Sustainable MSME Growth in Indonesia
Arya Budi Sutopo (Universitas Sahid Surakarta)*, Sri Huning Anwariningsih (Universitas Sahid Surakarta).

94: Decision Support System Using the Analytical Hierarchy Process (AHP) Method for Evaluating Marketing Strategy Effectiveness (Case Study: Gressoy Indonesia)
Hindun Afni Al Haya (Telkom University)*, Lina Fatimah Lishobrina(Telkom University), Michelle Putri Hariyanto (Telkom University), Muhammad Fajar Sayyid Murtadho (Telkom University), Ade Yanyan Ramdhani (Telkom University).

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53: Spandaya e-Motion
Michelle Nathanael (Universitas Kristen Duta Wacana)*, Kristian Ismartaya (Universitas Kristen Duta Wacana), Kezia Hermawan (Universitas Kristen Duta Wacana), Devina Relian (Universitas Kristen Duta Wacana), and Jesslyn Abdisusilo (Universitas Kristen Duta Wacana).

113: Alphine Watch Series
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115: Persona Watch
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Abstracts

Usability-Driven E-Commerce for EcoFashion: The Cimemo.id Redesign Case

ID 1

Sukhaenah Tri Utami[1], Tenia Wahyuningrum[2], Khoem Sambath[3]

[1,2]Telkom University
[3]National Polytechnic Institute of Cambodia

Eco-friendly products are a solution to the widespread textile industry waste pollution in Indonesia. To support the eco-fashion trend, Cimemo.id, an ecoprint boutique established in 2018 in Purwokerto, faces challenges in attracting buyers and introducing ecoprint products more widely. Furthermore, Cimemo.id requires a platform that can address these challenges. The existing mobile application has drawbacks, including a lack of flexibility due to the need to install it on the user's mobile phone. Therefore, alternatives are needed to improve the user experience. This study aims to enhance the user interface and experience by redesigning the Cimemo.id e-commerce website using the User-Centered Design method. The design process involved five UCD stages and usability testing with 70 respondents, determined using the Slovin formula. Evaluation was conducted using the System Usability Scale to measure effectiveness, efficiency, and user satisfaction. The results showed an effectiveness rate of 98.36% (very effective), an efficiency of 0.184 goals/second (very fast), and a SUS score of 87.64 (A-Very Good). Its effectiveness exceeded user performance testing in previous research by 15%, and its efficiency increased by 11%. The front-end website implementation was tested using black box testing, with a 'pass' result for all components. This research yielded an effective interface design, ready for further development with the addition of a back-end system to achieve full functionality.

Integration Of Game Recommendation System And Sentiment Analysis On Steam Games

ID 2

Jadiaman Parhusip

Universitas Palangka Raya

The rapid growth of the gaming industry has made it challenging for users to find games that match their preferences. Steam's recommendation system, which relies solely on user ratings, often suffers from inconsistencies between ratings and review content. This study proposes integrating a Content-Based Filtering (CBF) recommendation system with sentiment analysis to improve recommendation relevance. The CBF system uses TF-IDF and cosine similarity to calculate game similarity based on genre and description. Sentiment analysis is conducted using the BERT model to classify user reviews as positive or negative. The sentiment analysis results are used to re-rank the recommendation list based on the proportion of positive reviews. Evaluation using NDCG and MRR metrics shows improved performance after integration, with NDCG increasing from 0.954 to 0.977

and MRR from 0.600 to 0.625. These results indicate that integrating sentiment analysis can enhance the quality and relevance of the recommendation system, making it more reflective of user perception and preferences.

ID 5

Automated Detection of MRONJ Lesions in Panoramic Dental X-rays Using Candidate Region Identification and Semantic Segmentation

Manami Inoue[1], Kento Morita[2], Yasuaki Sadakane[3], Takumi Hasegawa[4], Masaya Akashi[5], Tetsushi Wakabayashi[6]

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Medication-related osteonecrosis of the jaw (MRONJ) is a severe adverse effect associated with the administration of bone-modifying agents, such as bisphosphonates (BP) and denosumab (Dmab), and angiogenesis inhibitors. Despite the advancements in therapeutic agents, the incidence of MRONJ has increased, as medication remains a primary risk factor. In most cases, MRONJ is diagnosed at an advanced stage, where portions of the jawbone become exposed in the oral cavity, interfering with both primary disease management and MRONJ treatment. Therefore, early detection and treatment prior to progression are critical for improving patient outcomes and reducing treatment complexity. In Japan, the low penetration of dental CT limits the feasibility of 3D diagnostic imaging in routine practice in dental clinics. Therefore, this study proposes a diagnostic method that relies solely on panoramic X-ray images to automatically predict MRONJ lesions. The proposed method first performs pre-processing to extract the mouth region, and then compares two approaches for MRONJ lesion segmentation. The first approach subdivides the mouth region into patches and utilizes patch-based classification to identify candidate regions before MRNOJ lesion segmentation. The second approach employs the masked vision transformer (Masked-ViT) to estimate the probability of MRONJ lesion presence across the image, and then segmentation is applied to high probability areas. On our panoramic X-ray image dataset consisting of 118 MRONJ patients, the patch-based method achieved a maximum Dice Similarity Coefficient (DSC) of 0.70, outperforming the method using Masked-ViT. Although promising, further enhancements are necessary to meet the requirements for clinical use.

Prioritization Analysis of Instagram Digital Marketing Strategy HMBD Telkom Purwokerto with SWOT and AHP Methods

ID 6

Johanes Ageng Dharma, Dzaky Azhar Rafif Saepudin, Adrian Wismar Munthe, and Muhammad Eka Purbaya

Telkom University

The digital era has changed the paradigm of student organization communication, which needs to optimize digital marketing strategies to increase visibility and engagement. Instagram, with 90.18 million users in Indonesia, is a potential strategic platform but requires a systematic approach in determining strategic priorities. This study aims to determine the optimal digital marketing strategy priorities for the Instagram account @hmbd.telkompurwokerto through an integrated approach combining SWOT Analysis and the Analytical Hierarchy Process (AHP). The research method employs a mixed-method approach with a single-case study design, involving in-depth observation, structured interviews, and focus group discussions for SWOT analysis, as well as pairwise comparisons with 4–5 hmbd committee members for AHP implementation. The research results are expected to identify the main strengths, namely institutional credibility and the quality of educational content; the main weaknesses, namely budget constraints and inconsistent posting schedules; the greatest opportunities in stakeholder collaboration and new Instagram features; and the main threats, namely dynamic algorithms and content saturation. The criteria "Content Quality & Relevance" and "Audience Engagement Strategy" are predicted to have the highest weight of importance in AHP. The research contributes theoretically through a SWOT-AHP integration model for student organization digital marketing and practically through an implementable strategic roadmap that can be adapted by other student organizations.

Whistleblowing System for Website-Based Sexual Violence Complaints: An Improved Approach Combining Design Thinking and Software Development Life Cycle

ID 9

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Cases of sexual violence in higher education often go unreported due to concerns about the safety of the reporter's identity and the absence of adequate reporting mechanisms. This study developed a website-based sexual violence reporting system equipped with whistleblowing features, using a combined approach of Design Thinking and the Software Development Life Cycle (SDLC). The Design Thinking stages were applied to understand user needs and design empathy-based solutions, while SDLC provided the technical framework for system implementation. Development followed an iterative process, starting with planning, UI/UX design, and interface development using React.js, and then proceeding to system testing through black-box testing, usability testing, and the System Usability Scale (SUS). The testing results show that the system functions as intended and achieved a SUS score of 82.43 (Excellent category) from the user side and 79.5 (Good category) from

the admin side, indicating that the system is easy to use and fosters a sense of safety and comfort for reporters. Overall, the system shows potential to enhance comfort, security, and the effectiveness of digital reporting for sexual violence cases.

ID 10 Integrating Supervisor Access Using Hybrid RBAC–ABAC In A Web-Based Research Permit Information System: A Case Study At Dr. Moewardi General Hospital

Santyana Rahmawati, Hanifah Permatasari, and Intan Okaviani

Duta Bangsa University

The increasing demand for research activities in hospitas requires a secure, reliable and efficient information system to manage research permit applications. In many healthcare institutions, supervisory teams, play a crucial role in monitoring research activities to ensure compliance with institusional policies and ethical standards. This study presents the integration of supervisory team access into the existing web-based Research Permit Information System at Dr. Moewardi General Hospital. The integration is designed to enable the supervisory team to directly access and review research data through the system with access control aligned by hospital's organizational hierarchy and regulations. To enhancing security and handling some access scenarios, a hybrid access control model combining Role-Based Access Control (RBAC) and Attribute-Based Access Control (ABAC) is implemented. RBAC is used to define role-specific permissions for different supervisory levels, ensuring consistent enforcement of access boundaries. ABAC complements this by allowing more granular, attribute-driven policies that improve adaptibility to dynamic and context-specific access requirements. The proposed hybrid model strengthens system security and increase flexibility in access management for various supervisory role. This approach demonstrates a practical and scalable solution for integrating multiple access control mechanism in a healthcare research context

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ID 12 Performance Portability, Reliability, Usability, and Maintainability of PT. ASDP Indonesia Ferry's E-Procurement Website Based on ISO/IEC 25010 Standards

Dwi Retnoningsih, Astri Charolina, Afif Faris Hudaifi

Sahid University Surakarta

Website quality influences customer satisfaction, building a positive reputation, time, cost, and process efficiency. The importance of a website for a company's professionalism means that website quality assurance is crucial. A comprehensive software quality assurance standard is ISO/IEC 25010. This international standard serves as the basis for measuring the quality of web-based software. The software product quality model includes eight characteristics: functional suitability, performance efficiency, compatibility, security, usability, reliability, portability, and maintainability. The E-Procurement website is the operational medium for PT. ASDP Indonesia Ferry's digital business. The company's efforts to ensure website quality have been measured using the ISO/IEC 25010 standard,

which is limited to four characteristics: functional suitability, performance efficiency, compatibility, and security. This study proposes measuring website performance by examining four other characteristics: usability, reliability, portability, and maintainability. Performance measurement was carried out using the Mean Opinion Score (MOS) method and the WAPT test tool. The results showed that the usability characteristic reached 83%, meaning the system is simple enough to be used and understood by users. The website's reliability proved stable and capable of handling access loads without failure, according to WAPT testing. In terms of maintainability, the use of the component-based Angular framework simplifies system development and maintenance. Portability testing showed the website experienced no significant issues across browsers and operating systems. These four characteristics demonstrate that the E-Procurement website is easy to use, highly reliable, easy to maintain, and compatible with various platforms.

Applying Consistent Fuzzy Preference Relation in Weighting Software Effort Estimation Criteria

ID 13

Ika Indah Lestari, Adnan Purwanto, Sulistiyasni, Singgih Briandoko

STMIK Widya Utama

Software effort estimation (SEE) is a critical process in project planning, as it determines budget allocation, resource management, and timeline accuracy. The weighting of estimation criteria significantly influences the reliability of the estimation model. This study aims to determine the weights of SEE criteria using a fuzzy logic approach, specifically the Consistent Fuzzy Preference Relation (CFPR) method. As a Multi-Criteria Decision Making (MCDM) technique, CFPR offers an efficient mechanism for extracting consistent expert preferences by requiring only n-1 pairwise comparisons from n criteria, making it suitable for rapid weighting calculations. The study evaluates four main attributes: Product, Computer, Personnel, and Project. Expert assessments were conducted using crisp numbers on a 1-9 scale. The results show the following attribute weights: Product (0.372), Computer (0.275), Personnel (0.231), and Project (0.122). Furthermore, the top three ranked cost drivers are Required Reliability (0.1674), Product Complexity (0.1384), and Execution Time Constraint (0.1050). Conversely, the lowest weights were assigned to Programming Language Experience (0.0270), Virtual Machine Experience (0.0296), and Required Development Schedule (0.0303). The integration of CFPR into SEE models produces a stable and interpretable weight distribution, thereby enhancing the accuracy of effort estimation.

ID 14

Mitigation of Inter-Carrier Interference (ICI) in Mobile DVB-T2 Technology Using Zero Forcing Equalization

Jilan Haidar Rahman, Wahyu Pamungkas, and Solichah Larasati

Telkom University

Orthogonal Frequency Division Multiple Access (OFDM) is the transmission mechanism employed in DVB-T2 digital broadcasting systems. However, under mobility conditions, Doppler shift becomes a major factor limiting OFDM performance. The Doppler effect induces Carrier Frequency Offset (CFO), which disrupts the orthogonality among subcarriers and generates Inter-Carrier Interference (ICI). This issue causes frequency mismatches between the transmitter and receiver. In this study, a DVB-T2 system configuration is used with 2k mode, guard interval 268, cyclic prefix 1/4, and 64-QAM modulation. To evaluate mobility effects, simulations were performed with maximum Doppler frequency variations ranging from 2.87 Hz to 40.18 Hz and SNR ranges from 0 dB to 40 dB. On the receiver side, equalization was applied using a Zero Forcing Equalizer. Simulation results indicate that without equalization, the BER remains approximately 0.5 across all Doppler variations. Conversely, with the application of Zero Forcing Equalizer, BER decreases significantly at SNR $\geq$ 20 dB. This method proves effective in mitigating ICI in DVB-T2 systems under mobility conditions, achieving an average performance improvement of 98.42% with BER approaching zero at low to moderate Doppler frequencies.

ID 15

Optimization of Random Forest Model via GridSearchCV for Hoax News Detection

Lutvi Riyandari, Singgih Setia Andiko, Siti Delimasari, and Singgih Briandoko

STMIK Widya Utama

In this time of fast digital information growth, information sources can be helpful or harmful.The internet makes it easier for people to find information, but it also makes it easier for fake news and hoaxes to spread quickly and widely.This work seeks to combat the dissemination of false news in the digital age by employing text categorization through the Random Forest algorithm, coupled with hyperparameter optimization via Grid SearchCV.The dataset comprises both hoax and authentic news from Indonesia, subjected to various steps including text processing (case folding, tokenization, and stopword elimination) and feature weighting via TF-IDF.The study's results reveal that the Random Forest model does an impressive job of telling the difference between fake and real news when tested using a confusion matrix.The confusion matrix shows that the model works better after hyperparameter tweaking with GridSearchCV. This is shown by the fact that the number of accurate predictions (TN and TP) goes up and the number of wrong predictions (FP and FN) goes down.The evaluation measures (accuracy, recall, precision, and F1 score) also demonstrate significant improvements, increasing from 96% to 97%.

Determining Factors in the Success of the SatuSehat Application to Support the Free Health Program Using the DeLone & McLean Method

ID 16

Desi Rahmawati, Adnan Purwanto, Muhammad Akbar Setiawan, and Riana Safitri

STMIK Widya Utama

SatuSehat Mobile is a digital health platform introduced by Indonesia's Ministry of Health as a key initiative in the country's ongoing healthcare technology modernization. This application provides various features to help users manage and monitor their personal health, one of which is the Free Health Check feature that functions for early detection of non-communicable diseases such as high cholesterol, diabetes, hypertension, lung function disorders, and early cancer screening. This study aims to evaluate the impact of the Free Health Check feature on users and measure the effectiveness of the SatuSehat Mobile application in achieving its objectives using the DeLone & McLean method. This method includes six measurement variables, namely: system quality of SatuSehat Mobile, information quality of SatuSehat Mobile, service quality of SatuSehat Mobile, use of SatuSehat Mobile, user satisfaction of SatuSehat Mobile, and net benefits of SatuSehatMobile. Data analysis was performed using the Smart PLS-SEM technique to test the hypothesis. The results of the PLS-SEM analysis show that of 9 relationships between constructs that were tested, there were 5 significant relationships, namely Information Quality and Service Quality to Use, System Quality to User Satisfaction, Use to Net Benefits, User Satisfaction to Net Benefits. There were 4 insignificant relationships, namely Information Quality, Service Quality and Use to User Satisfaction, System Quality to Use.

Optimization of Random Forest Model with Correlation-Based Feature Selection for Enhanced Forest Health Prediction

ID 17

Singgih Setia Andiko, Singgih Briandoko, Bayu Rizkya Pratama, Muhammad Akbar Setiawan, and Eldas Puspita Rini

STMIK Widya Utama

Forest health serves as a key indicator for maintaining ecosystem sustainability and biodiversity. This study aims to predict forest health status using a Random Forest algorithm integrated with Correlation-Based Feature Selection (CFS). The dataset comprises 1,000 samples with 18 attributes—including Disturbance_Level, Fire_Risk_Index, Tree_Height, and Menhinick_Index along with health status labels categorized into four classes: Unhealthy, Sub-Healthy, Healthy, and Very Healthy. The research methodology encompassed data preprocessing, feature selection using CFS, Random Forest model construction, and performance evaluation. Feature selection identified four key attributes that significantly contributed to forest health prediction. The model was trained on 70% of the data and tested on the remaining 30%, achieving an accuracy of 92%. Further analysis revealed an average precision of 91%, recall of 90%, and F1-score of 90%. The confusion matrix indicated accurate predictions across most categories, though some misclassification occurred in the Sub-Healthy class. This study demonstrates that the CFS-based Random Forest approach is effective for forest health prediction, offering a valuable analytical tool to support conservation efforts and damage risk mitigation.

ID 18 Culinary Content Delivery Strategies by Micro-Influencer @nyamwithinop in Building Consumer Trust on TikTok

Cindy Aurora

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The rise of social media has fostered the emergence of the content creator profession, which plays a vital role in the digital economy ecosystem, including the culinary sector. This study aims to analyze the communication strategies employed by the Micro-Influencer @nyamwithinop on TikTok in building credibility and audience trust. The research adopts a descriptive qualitative method with a case study approach, in which data were collected through documentary observation of video content and audience interactions during the period 2020–2025, covering aspects such as presentation style, narrative, visuals, and user responses. The findings reveal that @nyamwithinop's success in fostering trust is supported by four key communication strategies: (1) understanding the audience by tailoring topics, language, and delivery styles according to audience segments; (2) defining distinct content objectives between premium restaurant reviews and simple culinary experiences; (3) constructing messages through concise and straightforward narratives, complemented by engaging and audience relevant visuals; and (4) selecting appropriate methods and media by leveraging TikTok as the primary platform that aligns with the characteristics of younger generations. These strategies are reinforced by two-way interaction, consistent content posting, and active audience engagement, which collectively enhance both credibility and loyalty. The study underscores that Micro-Influencer's are effective in shaping consumption decisions through well-crafted communication strategies and provides practical implications for culinary UMKM in designing social media based promotional strategies.

ID 22 Integration of YOLOv11 and Convolutional Neural Network in a Deep Learning Approach for Coffee Bean Defect Detection and Classification

Fildzah Khalishah Ghassani, Rizal Adi Saputra,Fid Aksara, Isnawaty Isnawaty, La Ode Muhammad Golok Jaya, Ishak Kadir, Rafi Iyad Madani Chaidir

Halu Oleo University

The coffee industry is a strategic commodity that significantly contributes to the global and national economy. Coffee bean quality strongly influences flavor and market value, while defective beans—such as broken, moldy, or quaker beans—can reduce overall quality. Manual sorting methods, still widely used by farmers and small-scale producers, are time-consuming, inefficient, and prone to human error. This study proposes an automated deep learning–based system for detecting and classifying defective coffee beans by integrating YOLO for object detection and EfficientNetV2 as the classifier. A dataset of 5,636 coffee bean images from multiple sources was used. The system was evaluated through black box testing to ensure the functionality of the web interface and performance testing using a confusion matrix. Results show that YOLOv11 achieved an mAP@0.5 of 98.83%, while EfficientNetV2 obtained a test accuracy of 93.81%. The proposed system demonstrates strong potential to improve coffee sorting by providing a faster, more accurate, and efficient alternative to manual methods..

Clustering Passenger Satisfaction Levels in Air Travel Using the K-Means Clustering Algorithm

ID 23

Pipin Tri Hastuti, and Dwi Hartanti

Universitas Duta Bangsa Surakarta

This study aims to cluster the satisfaction levels of airline passengers in the business class segment with business travel purposes who are categorized as disloyal, using the K-Means clustering method. The data was sourced from the Airline Passenger Satisfaction dataset on Kaggle, then cleaned, filtered for disloyal business travelers, and transformed into numerical format. The optimal number of clusters was determined using the Elbow Method, which indicated an optimal value at k=3. Clustering was subsequently carried out with the K-Means algorithm and visualized using PCA. Cluster quality evaluation employed the Davies-Bouldin Index, resulting in a value of -0.5, indicating reasonably good cluster separation. These findings can help airlines understand patterns of dissatisfaction among premium customers and design more targeted service strategies to improve their loyalty.

ClimatePulse: Sentiment and Emotion Analysis of Public Discourse on Climate Change in Social Media using BERT, NER, Multilabel Classification, and Spatio-Temporal Visualization

ID 24

Alfi Zahrah Muharramah, Reyvan Revolusioner, Jalaluddin Muflih, Fabelina Agsaria, Febri Haerani, Rizal Adi Saputra, Isnawaty, Ishak Kadir, and La Ode Muhammad Golok Jaya

Halu Oleo University

Climate change poses major global challenges with wide-ranging impacts on ecosystems, health, and policy. Public responses to climate policies are increasingly voiced on social media, producing large volumes of data that require intelligent analysis. This study introduces ClimatePulse, a unified system for analyzing Indonesian public opinion on climate change by integrating sentiment analysis, fine-grained emotion classification, and spatio-temporal visualization. The system leverages a fine-tuned BERT model trained on a balanced dataset of 3,256 tweets. Results demonstrate that the model achieves an accuracy of 75.57% and a Macro F1-Score of 0.7556, outperforming traditional baselines like SVM and Logistic Regression. Specifically, the model excels in detecting negative sentiment with an F1-Score of 0.8151, capturing critical public dissatisfaction. Beyond sentiment, the system identifies dominant emotions (e.g., sadness, joy, fear) and visualizes geographic trends through an interactive map, providing actionable insights for policymakers. While challenges remain in classifying ambiguous neutral texts (F1-Score 0.7035) and detecting sarcasm, ClimatePulse effectively bridges the gap between unstructured social media data and data-driven decision-making, directly supporting SDG 13: Climate Action.

Designing and Validating a Website-Based Knowledge Management System for Micro, Small, and Medium Enterprises: A KMSLC Approach with SECI-Driven Knowledge Capture

ID 25

Johanes Dom Noel Wijaya, Muhammad Nurwegiono, Rudy Setiawan

Universitas Ma Chung

This study develops a website-based Knowledge Management System (KMS) for an MSME (Amadea Kitchen) by combining the Knowledge Management System Life Cycle (KMSLC) focused on knowledge capture, design blueprint, and verification & validation with SECI-driven mechanisms to surface and codify tacit and explicit knowledge. The captured assets were translated into a minimal, deployable blueprint comprising a knowledge map, role-based actors (admin/owner/employee), and three high-leverage modules (Document Library, FAQ, Feedback). Verification confirmed that explicit artifacts were digitized (PDF) and recurring tacit themes were codified into FAQs, while validation addressed usability and operational performance. With eight participants (one owner, seven employees), the system achieved a SUS score of 79.6 ± 6.8 (95% CI [73.9, 85.3]), indicating Good usability. Performance measurements over 10 runs per page yielded average page loads of 2.10 ± 0.22 s (Homepage), 2.32 ± 0.27 s (Document Library), and 1.84 ± 0.19 s (FAQ), with server response times of 186 ± 21 ms, 204 ± 25 ms, and 175 ± 18 ms, respectively. These results suggest the proposed KMS is usable and operationally responsive for day-to-day MSME use. Limitations include the single-site scope, small sample, and short evaluation window; future work will extend to multi-site validation, longer observation periods, and additional objective service indicators.

Fraud Prediction Model on Premium Cosmetics Transactions Using Deep Learning: A Long Short-Term Memory (LSTM) Approach

ID 26

Nandita Sekar Sukma Dewi and Aprilisa Arum Sari

Duta Bangsa University

The rapid growth of the premium cosmetics industry has significantly increased online and offline transactions, but also heightened the risk of fraud. Traditional detection approaches often fail to capture dynamic patterns. This study proposes a fraud prediction model using Long Short-Term Memory (LSTM), a deep learning architecture suitable for sequential transaction data. Unlike previous studies that mainly focus on banking and general e-commerce fraud, this research specifically addresses premium cosmetics transactions, a domain with limited exploration. The dataset consists of 2,133 transactions with 16 features covering demographics, transaction details, and technical attributes. After preprocessing (cleaning, normalization, categorical encoding, and sequential arrangement), the LSTM model was trained and validated (70-15-15 split), achieving 94.2% accuracy, 91.5% precision, 89.7% recall, 90.6% F1-score, and 0.95 AUC. These results highlight the novelty and effectiveness of LSTM in detecting fraudulent patterns in the premium cosmetics sector, offering practical implications for enhancing security and trust in high-value transactions.

Deep Learning-Based Object identification in Ocean Environment by Convolutional Neural models

ID 27

Omprakash Gurrapu

Volvo

The proposed research work describes on development of a robust model for object identification on ocean environments by convolutional neural infrastructure merged with computer vision mechanism. The proposed method employs the advantages of deep learning for effectiveness in the way of capturing of spatial related and also visual features from difficult and dynamically varying aquatic situations, ensuring accurate determination of various objects in challenging scenarios such as waves patterns , reflections actions, and varying in illumination. By training stage the network for marking a changeable for suitable to marine imagery model, the framework enhances recognition of abilities and reduces determination of lightings errors compared to traditional mechanism. The core contribution of Proposed method lies in its capability to give a scalability and smart intelligent answer it will used to real-world maritime cases, supporting scenarios for navigation, environmental and its related surveillance, and for the ocean safety based parameters. The proposed systems have a advancements current determination methodological by improvising adaptability to the dynamically impacting nature of oceanic cases, thereby describing a reliable and effectively way of approach for practical deployment stages.

Automated Hyperparameter Optimization Using Optuna for EfficientNet-Based Medical Image Classification A Case Study on Acute Lymphoblastic Leukemia Detection

ID 28

Windra Swastika, David Yusaku Setiyono, Bita Parga Zen

Universitas Ma Chung

Manual hyperparameter tuning remains a significant bottleneck in developing robust deep learning models for medical applications. This study presents a comprehensive analysis of Optuna's Tree-structured Parzen Estimator (TPE) for automated hyperparameter optimization of EfficientNet-B2 architecture in Acute Lymphoblastic Leukemia (ALL) cell classification. Using the C-NMC dataset comprising 10,661 training and 1,867 test images, we conducted 20 optimization trials with architecture-specific search spaces targeting learning rate (1×10^{-5} to 1×10^{-2}), dropout rates (0.1-0.5), weight decay (1×10^{-6} to 1×10^{-2}), and hidden layer sizes (256-1024 neurons). Results demonstrate that learning rate dominates optimization importance (55%) followed by dropout regularization (34%). The framework achieved optimal configuration with 96.86% validation accuracy, reducing manual tuning time by approximately 90% while maintaining its performance (86.72% test accuracy, 0.92 AUC-ROC). Statistical analysis across multiple runs shows consistent performance with coefficient of variation of 1.96%, validating the reliability of TPE-based optimization for medical imaging applications.

ID 29

Human Motion Forecasting and Fall Classification Using Vision Transformer

Fito Satrio, Himam Bashiran, Agung Malik Ibrahim

Telkom University

Human fall motion prediction is an important preventive approach that can help reduce accidents by forecasting human movements before a fall occurs. In this study, we developed a unified framework that combines human motion forecasting and fall classification using the Vision Transformer (ViT). Human body poses were extracted from the TelUP dataset videos using YOLOv11-Pose, which detects 17 keypoints per frame. These pose features were standardized and structured into sequences using a sliding window, with 30 input frames predicting the next 10 frames. The ViT model, configured with 4 transformer layers, 4 attention heads, and a model dimension of 64 (268,606 parameters), achieved an MPJPE of 0.2688 and an MPJVE of 0.0937 on the forecasting task, while reaching an accuracy of 95.82% and an F1 Score of 95.81% for fall classification. These results demonstrate that ViT can quantitatively forecast human motion with high precision and consistently distinguish between fall and non-fall actions. However, qualitative evaluation shows that while ViT captures the general motion trend, it still struggles to replicate detailed human body poses, particularly in backward fall scenarios. This highlights both the potential and the limitations of ViT-based systems for real-world fall prediction applications.

ID 30

The Role of Hashtags in Driving Instagram Engagement: An Analysis of Indonesian Independence Day Content

Farid Fitriyadi, Yunita Primasanti, Erna Indriastiningsih, and Evelyne Henny Lukitasari

Universitas Sahid Surakarta

This study investigates the intricate relationship between Instagram hashtag patterns and user engagement trends. Utilizing a quantitative research design with a descriptive-correlational approach, the research systematically analyzed publicly available Instagram post data collected within a specific timeframe, focusing on content related to the Indonesian Independence Day celebration. The methodology involved rigorous URL cleaning, web scraping for hashtags and likes data, comprehensive data cleaning, and hashtag normalization. Subsequently, descriptive statistics were used to characterize hashtag usage, followed by correlation analysis and multiple linear regression to determine the statistical relationship and predictive power of hashtag patterns on engagement metrics. Initial findings indicate a weak or non-existent linear correlation between the sheer number of hashtags and likes (Pearson: 0.0345), suggesting that more hashtags do not automatically guarantee increased engagement. However, specific hashtags like #hutri80 and #17agustus demonstrate higher average likes, highlighting the importance of relevance and specificity over quantity. The analysis also revealed that a few viral posts significantly skew average engagement for certain popular hashtags, indicating the strong influence of outliers. Overall, the study concludes that while hashtags are crucial for discoverability, content quality, relevance, and other contextual factors likely play a more significant role in driving Instagram user engagement.

Design and Implementation of a Game-Based Learning System for Slow Learner Students in Visual Communication Design Department

ID 31

Evelyne Henny Lukitasari, Farid Fitriyadi, Yunita Primasanti

Universitas Sahid Surakarta

An inclusive learning approach is essential in vocational education, especially for slow learners who need more focused, gradual, and visual experience-based learning strategies. The complexity of the material in Visual Communication Design (DKV) often makes it hard for them to grasp design concepts, visual principles, and creativity tasks that require significant cognitive effort. These challenges led to the development of game-based learning (GBL) as an alternative method aimed at increasing engagement, retention, and learning effectiveness. This study designs and implements a GBL system for slow learner DKV students at SMK N Surakarta using a design and development research approach. This includes needs analysis, design, development, and implementation testing. The system incorporates the principles of visual scaffolding, simple narratives, task-based interactions, and gamification through a point system, gradual levels, and instant feedback. Testing shows that GBL helps improve learning focus, strengthens understanding of basic design concepts, and motivates students to complete visual tasks. Teachers observed an increase in independence and self-confidence in students after they interacted with the game. These findings confirm that GBL is an effective way to create a more inclusive learning environment in vocational design education. They also open up opportunities for the development of more adaptable and personalized digital learning systems in future research.

Comparison of Ensemble Learning Methods on the IoT-23 Dataset

ID 32

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Universitas Bengkulu

The Internet of Things (IoT) has provided numerous benefits across various sectors, but it also poses significant challenges in cybersecurity, particularly malware threats. Malware on IoT devices has the potential to damage systems, steal data, and disrupt network performance. Previous research has shown that the Naïve Bayes algorithm produces a low accuracy of 0.24, increasing slightly to 0.35 when combined with AdaBoost, and reaching 0.99 when combined with XGBoost using the soft voting method. However, there is still room to explore other ensemble learning methods to obtain more stable results. This research focuses on the application of an alternative ensemble learning method, namely stacking, using the IoT-23 dataset with reference to the CRISP-DM framework. The results show that the stacking method can significantly improve malware detection accuracy from 0.35 to 0.72, thus proving superior to soft voting and can be an effective approach in improving malware detection performance in IoT networks.

ID 33 Selection Strategy for Handling Deadstock Products using the Analytical Hierarchy Process (AHP) and Expected Monetary Value (EMV) Method

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Telkom University

The accumulation of deadstock on Network Terminal Equipment (NTE) products in the telecommunications company's warehouse has resulted in increased storage costs and financial losses for the Company. This study aims to develop an optimal deadstock-handling selection strategy by integrating the Analytical Hierarchy Process (AHP) and the Expected Monetary Value (EMV). The AHP method is used to determine the weight of the decision criteria (cost, implementation time, and ease of implementation). At the same time, EMV is calculated using a Monte Carlo simulation to evaluate the monetary value of each of eight handling alternatives (re-layout, FIFO strategy, purchase forecast, stock opname, product discount, resale to supplier, sale to Marketplace, and sale with bundling strategy). Data were collected through expert interviews and historical deadstock data from the telecommunications company's warehouse. The analysis shows that the AHP-EMV combination can recommend the best strategy by considering both financial and non-financial factors. The EMV simulation revealed that sales with a bundling strategy provide the highest monetary value of IDR. 288,572,250 compared to other alternatives. This research offers practical contributions in the form of a data-based decision-making framework for deadstock management and policy recommendations for internet service providers.

ID 34 Application of Distribution Requirement Planning in Optimizing Packaged Drinking Water Distribution to Mitigate Lost Sales

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Telkom University

The bottled water industry in Indonesia has experienced a positive growth trend due to increasing public awareness of the importance of hydration and a healthy lifestyle. However, DC Formula Paluta in Padang Lawas Utara, North Sumatra, faced a 7% lost-sales challenge in 2023, exceeding the typical FMCG industry tolerance level of 3–5%. The purpose of this study is to identify the causes of lost sales and propose solutions through demand forecasting, determining the optimal order quantity, and planning a more efficient distribution using the Distribution Requirement Planning (DRP) Worksheet and Economic Order Quantity (EOQ). Historical data analysis from January to December 2023 using Pom QM software shows that the Regression/Trend Analysis and Multiplicative Decomposition methods have the lowest Mean Absolute Deviation (MAD) values. Therefore, these two methods were selected to forecast demand for gallon, bottle, and cup products in the coming year. The implementation of the Economic Order Quantity (EOQ) method successfully reduced the ordering frequency from 190 times to 124 times

per year, saving costs from IDR 147,440,000 to IDR 96,224,000, or approximately 35%. The application of Distribution Requirement Planning (DRP) improved the efficiency of distribution planning and inventory management, ensuring product availability in line with market demand. The combination of forecasting methods, EOQ, and DRP is expected to reduce mismatches between inventory and demand, improve operational and distribution management efficiency, and directly reduce lost sales at DC Formula Paluta.

Multi-Layer Perceptron with Advanced Acoustic Features for Speech Emotion Recognition in Education Evaluation

ID 35

Muhammad Afiq Tamamul Wafa

Telkom University

Traditional methods for evaluating lecturer performance in education, such as student surveys, are often limited by their nature. This study explores the development of an objective, a framework to complement these evaluations through Speech Emotion Recognition (SER). This Research utilizes a specialized Indonesian speech emotion dataset, applying data augmentation techniques to enhance model generalization. A set of advanced acoustic features, including Mel Frequency Cepstral Coefficients (MFCCs), Chroma, and Spectral Contrast, along with their statistical variations, is used to create representations of the vocal expressions. A Multi Layer Perceptron (MLP) neural network was designed and trained on these features to classify five different emotions: happy, angry, sad, surprised, and neutral. The Research resulted in a model that demonstrated very good performance, achieving an overall classification accuracy of 94% with high precision, recall, and F1-scores across all emotions, indicating a balanced and reliable system. A critical feature analysis was also conducted, revealing the significance of the standard deviation of Chroma and MFCC features. This study shows that an MLP model paired with feature engineering can be used as a powerful and objective tool for providing deeper insights into student feedback, contributing a valuable new methodology for quality assurance in higher education.

The Implementation of Green Economy in Increasing the Achievement of Sustainable Development Goals (SDGs) in the Tempe Industry in Sanan Malang

ID 36

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The application of green economy principles is one of the important strategies in encouraging sustainable development, especially in the small and medium industrial sector. This study aims to analyze the level of application of green economy principles in the tempeh industry and its contribution to the achievement of the Sustainable Development Goals (SDGs). The research method used is a descriptive quantitative approach by collecting data through questionnaires to 30 tempeh industry players. The analysis was carried out using descriptive statistics and Pearson correlation tests. The results of the study

showed that the level of green economy implementation was in the "adequate" category with an average score of 3.04 on the Likert scale of 1–5. The highest indicator is in the aspect of economic impact on the community, while the lowest aspect is the use of environmentally friendly technology and waste management. Correlation analysis showed a significant positive relationship between the length of business and the level of green economy implementation ($r = 0.45$; $p < 0.05$), which indicates that business experience also influences sustainability awareness and practices. Although the tempeh industry has a positive contribution to the achievement of SDG 8 (decent work and economic growth), its contribution to SDG 12 (responsible consumption and production) and SDG 13 (handling climate change) is still limited. Policy interventions in the form of training, incentives, and adoption of clean technologies are needed to increase synergy between green economy practices and SDGs goals.

ID 37

Automated Detection of Foot Tumor: A Machine Learning Approach Leveraging GLCM Texture Analysis

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Foot tumors are rare but diagnostically challenging due to overlapping symptoms with benign conditions. Automated image-based detection can aid early identification and reduce misdiagnosis. This study explores the use of GLCM-based feature extraction to classify foot magnetic resonance imaging, focusing on the presence or absence of tumors. The features were classified using logistic regression, decision tree, and random forest. Model performance was evaluated under a five-fold cross-validation framework with scaled features. Experimental results demonstrated strong classification performance, with all models achieving scores between 0.97 and 1.0 across defined metrics. Correlation analysis further revealed that homogeneity, energy, and angular second moment (ASM) had negative associations with the target, while other features showed positive correlations. These findings provide evidence that classical machine learning models, supported by feature engineering, are effective for the detection of foot tumors in absence and presence.

A Systematic VDI 2221 Methodology for Piezoelectric Energy Harvesting in Ergonomic Lumbar-Support Wearables Product

ID 38

Kristian Ismartaya, Michelle Aurelia Nathanael, Devina Relian, Kezia Angelina Hermawan, Jesslyn Felicia Abdisusilo

Universitas Kristen Duta Wacana

The need for sustainable, portable renewable energy sources is increasingly crucial, especially for human activities in remote areas with minimal access to electricity. The research aims to develop Piezo-Powered Ergo-Lumbar Support Device prototype, an ergonomic lumbar support cushion-backpack integrated with a portable renewable energy source through a piezoelectric energy harvesting system. A combination of VDI 2221 and Human-Centered Design (HCD) methods was applied to simultaneously optimize the technical and ergonomic needs of users. A technical-economic evaluation was used to determine the best design solution concept. Vibration simulation test in Solidwork software confirmed that the product can accommodate vibrations up to an average of 1218 Hz, which is required to activate 32 piezoelectric elements arranged in parallel to optimally convert kinetic energy into electrical energy. This research results in a final prototype with dimensions of 38.5 × 26.5 × 10 cm and a weight of 475 grams with a power storage capacity of 1200 mAh. Evaluation conducted on 43 respondents proved that the product increases comfort and improves body posture (88.4% of respondents agreed), and the feature of generating renewable energy independently is considered innovative and useful. This product offers a promising integrated ergonomic-energy solution for sustainable energy innovation.

Analysis of the User Experience of Auto-Battler Magic Chess: Go Go Game using Game Experience Questionnaire (GEQ)

ID 40

Vivi Indriyani Mufti Afifah, Adnan Purwanto, Bayu Rizkya Pratama, Nila Ayu Anggraeni

STMIK Widya Utama

This study aims to analyze the user experience (User Experience/UX) in the mobile auto-battler game Magic Chess: Go Go using the Game Experience Questionnaire (GEQ) instrument of the Post-Game module. The study used a descriptive quantitative approach with 100 respondents obtained through the distribution of an online questionnaire. Data were analyzed using descriptive statistics with average calculations, frequency distribution, and Respondent Achievement Rate (TCR). The results showed that the Positive Experience dimension obtained the highest average score (4.14; TCR of 83%) in the Very Good category, indicating that the majority of players feel satisfied, happy, and entertained after playing. Meanwhile, the Negative Experience dimension (2.45; TCR 49%), Tiredness (2.63; TCR 53%), and Returning to Reality (2.72; TCR of 54%) is in the Sufficient category, suggesting that players experienced mild frustration, cognitive fatigue, reduced focus, and minor difficulty transitioning back to daily activities after gameplay. These findings

imply that although the game provides strong positive emotional engagement, developers should consider improving balance mechanisms, reducing repetitive gameplay load, and managing in-game intensity to minimize negative psychological effects and maintain longterm player retention.

ID 41 Determinant Factors of SeaBank Application Success for Digital Payments Using Extended Technology Acceptance Model

Zahra Nur Anisya, Adnan Purwanto, Singgih Briandoko, Wika Purbasari

STMIK Widya Utama

This study explores the crucial determinants affecting the successful adoption of SeaBank's digital payment application through Extended Technology Acceptance Model (ETAM), incorporating trust as an additional external variable. As one of Indonesia's fastest-growing digital banks, SeaBank provides distinctive features but improve user convenience and support the transition to cashless transaction. Using a quantitative methodology, were gathered from 100 active SeaBank users through an online survey. The relationship between trust, perceived ease of use, perceived usefulness, attitude, and intention to accept e-payment were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4. The analysis substantiates that trust considerably mitigates user concerns regarding data privacy and security. Additionally, both perceived ease of use and perceived usefulness positively shape user attitudes, which subsequently drive the intention to accept e-payment services. This study validates the relevance and suitability of the ETAM framework in the context of digital banking and underscores the necessity of building user trust, ensuring ease of use, and demonstrating clear benefits in platforms such as SeaBank.

ID 51 Green Innovation Product for Sustainable Waste Management: A Case Study on Upcycling Glass Bottle Waste via Flameworking

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The management of glass bottle waste remains a critical environmental challenge in urban centers like Yogyakarta, Indonesia. This study investigates the upcycling of this waste stream into high-value, functional products, such as platters, through a combination of cold working (cutting) and hot working (flameworking), within the Green Innovation Product (GIP) paradigm. An experimental methodology was employed, comparing the efficiency of a small, updraft kiln (2023 experiment) with a larger, downdraft kiln (2025 experiment). Results demonstrated that while utilizing the entire glass bottle (neck, body, and base) enhanced material efficiency, the larger kiln's stacked firing arrangement was ineffective, as only the top layers melted completely even with extended firing durations up to 120 minutes. The study concludes that scaling production efficiency is contingent

not on kiln size alone, but on achieving uniform heat distribution, for which a single-level, flat-bed kiln design is proposed. This research confirms the technical feasibility of transforming glass waste into commercially viable products and underscores the necessity of appropriate technology integration to realize the principles of GIP, offering a scalable model for sustainable waste management and local entrepreneurship.

Analysis of BTS Selection for Implementation Of Multi Operator Core Network (MOCN): Merger Case Study PT Indosat Ooredoo Tbk With PT Hutchison 3 Indonesia

ID 55

Wahyu Pamungkas, Alfin Hikmaturokhman, Ida Tutiek Samsyiah

Telkom University

Multi Operator Core Network (MOCN) is aproject that aims to create a network system core for several telecommunication operators in one system, first implemented in Indonesia by Indosat Ooredoo and Hutchison 3. Before the merger Indosat Ooredoo has 29,503 physical BTS and Hutchison 3 Indonesia has 32,489 physical BTS, a total of 61,992 physical BTS that must be maintained and monitored but they are not yet integrated with each other. This makes the focus on customer service larger and Unintegrated. With MOCN, BTS networks will be able to be integrated and focus on customer service can be maximized. Indonesia currently uses a tower collocation scheme, where in 1 tower there can be more than 1 operator. Similarly, at Indosat Ooredoo and H3I, there are 22,389 BTS units physically located on the same tower, commonly referred to as 'pair collo'. A decision is needed to determine whether Node B should be activated for MOCN or deactivated during the network consolidation process.. Technical analysis by considering BTS capacity, coverage, antenna position, and transmission mode to determine which BTS provides greater benefits to IOH after the network merger. With the network merger, it is hoped that there will be efficiency in network maintenance of 27.6%, as well as maintenance cost efficiency which will be reduced. This research aims to provide strategic and operational solutions for managing the infrastructure, especially related to the selection of operational sites and network optimization. Literature study, case study, and comparative analysis is used in this research. Solution applied includes reconciliation and monitoring post-MOCN performance and ensuring quality the network remains maintained, while maximizing tower rental efficiency.

Novel Machine Learning Approach to Forecasting Inventory Turnover Rates and Mitigating Backorders in Perishable Goods Supply Chains

ID 71

Rathanah Andita, Miftahol Arifin, Luluk Salma, Ajeng Utami

Telkom University

Perishable goods supply chains face persistent challenges due to demand volatility, short shelf life, and high backorder risks, leading to substantial food waste and financial losses. Traditional inventory models, such as EOQ and ARIMA, are limited in addressing these complexities, necessitating more adaptive and data-driven approaches. This study proposes a hybrid machine learning framework that combines Long Short-Term Memory Recurrent Neural Networks (LSTM-RNN) for forecasting inventory turnover rates with Q-learning for dynamic reorder optimization. Using a grocery inventory dataset of over 1,000 entries across categories (Fruits & Vegetables, Dairy, Seafood), the framework was empirically validated. The forecasting module demonstrated superior performance, reducing Mean Absolute Error (MAE) and Root Mean Squared Error (RMSE) by 15–25% compared to baseline models. The mitigation module achieved backorder reductions of 18–25%. It generated significant cost savings, particularly in the dairy category (Rp. 2.392.500). Sensitivity analysis confirmed the model's robustness within ±10% variations in reorder thresholds, while highlighting the need for category-specific adjustments. Visualizations, including turnover forecast plots and backorder heatmaps, enhanced interpretability and provided actionable insights for decision-makers. The results confirm the framework's efficacy in improving forecasting accuracy, reducing waste, and enhancing operational efficiency in perishable goods management. Beyond its empirical contributions, this study advances the integration of predictive and prescriptive analytics, offering a scalable foundation for future research. Potential extensions include incorporating external demand drivers (e.g., weather, promotions) and leveraging technologies such as IoT and blockchain to strengthen transparency and resilience in perishable supply chains.

Sustainable Procurement Practices: Empirical Analysis of Cost, Quality, and Compliance Trade-offs Using Purchase Order Data

ID 73

Dinda Artaviana, Miftahol Arifin, Muhammad Hilmiy Nastama, Muhammad Alam Syahputra

Telkom University

This study aims to examine the trade-offs among cost, quality, and compliance in sustainable procurement practices. While procurement research often emphasizes cost efficiency, little empirical evidence exists on how these dimensions interact in real-world transactions. A dataset of 777 purchase orders across multiple categories (Office Supplies, MRO, Packaging, and Raw Materials) was analyzed using a data-driven approach. Variables include unit price, negotiated price (for cost analysis), defect rate (for quality), and supplier compliance (binary). Descriptive statistics, regression analysis, cluster analysis, and a Kraljic portfolio mapping were employed to identify patterns and strategic implications. Results reveal significant trade-offs: compliant suppliers tend to offer higher

negotiated prices but deliver lower defect rates, suggesting that compliance functions as a guarantee of sustainability. Regression analysis confirms a negative relationship between compliance and defect rate. In contrast, cluster analysis identifies three supplier segments: high-cost/low-defect compliant suppliers, low-cost/high-defect non-compliant suppliers, and balanced moderate suppliers. Cross-category comparisons indicate that defect and compliance patterns vary substantially across product types. The Kraljic Matrix highlights that many suppliers fall into the "strategic" quadrant (high price and high risk), underscoring the need for long-term partnerships. Procurement managers should avoid focusing solely on cost and incorporate defect rates and compliance as key decision criteria. Strategic alliances with compliant suppliers, despite higher prices, provide long-term sustainability benefits. This study extends sustainable procurement literature by providing empirical, transaction-level evidence of cost–quality–compliance trade-offs, moving beyond conceptual discussions to operational insights grounded in actual purchase data.

Influencer Marketing as a Catalyst for Sustainable MSME Growth in Indonesia

ID 92

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Micro, Small, and Medium Enterprises (MSMEs) form 99.9% of Indonesian businesses and employ 97% of the workforce, yet struggle with market access and visibility. This review explores how influencer marketing—especially via nano- (¡10K followers) and micro-influencers (10K–100K)—can drive sustainable MSME growth. Nano-influencers deliver up to 7× higher engagement than macro-influencers, offering a cost-effective solution for budget-limited MSMEs. The study integrates three theories: Social Capital Theory (trust transfer in Indonesia's collectivist culture), Technology Acceptance Model (highlighting digital literacy gaps affecting 62% of MSMEs), and Stakeholder Theory (linking marketing to economic, social, and environmental value). Findings show MSMEs gain traction through authenticity and values alignment—not ad spend—with TikTok emerging as a key platform (18% of organic MSME posts exceed 100K views). Persistent barriers include infrastructure disparities (33% gap between Java and Eastern Indonesia), financial constraints (67% allocate ¡2% of revenue to marketing), and difficulty identifying authentic influencers (45%). The paper proposes a five-phase implementation roadmap and ecosystem-level policy actions for government, platforms, financial institutions, and associations. Aligned with CENTIVE 2025, this research demonstrates how digital marketing can foster inclusive, culturally rooted, and environmentally conscious economic development in Indonesia.

ID 94 Decision Support System Using the Analytical Hierarchy Process (AHP) Method for Evaluating Marketing Strategy Effectiveness (Case Study: Gressoy Indonesia)

Hindun Afni Al Haya, Lina Fatimah Lishobrina, Michelle Putri Hariyanto, Muhammad Fajar Sayyid Murtadho, Ade Yanyan Ramdhani

Telkom University

Gressoy Indonesia is a micro business in the food and beverage sector that faces challenges in increasing sales of its products. To assist decision-making in choosing the most effective marketing strategy, this research develops a decision support system using the Analytical Hierarchy Process (AHP) method. This method is used to develop a hierarchical structure based on objectives, evaluation criteria, and marketing strategy alternatives, then weighted through pairwise comparisons. Data was obtained through observation, interviews, and questionnaires with Gressoy management. There are four marketing strategies evaluated, namely promotion through social media, cooperation with partnerships, providing seasonal discounts, and participating in an event. The results of data processing show that the strategy of cooperation with partnerships is the top priority to be evaluated with the highest weighted value of 0.436. Other strategies in order are participating in an event (0.270), giving seasonal discounts (0.187), and promotion through social media (0.106). The criteria that most influenced the decision was ease of implementation, followed by effectiveness in increasing sales, market reach, and cost. These results suggest that strategies that are easy to implement and have a direct impact on sales need to be the main concern. These findings are expected to help MSMEs in developing more effective and targeted marketing strategies to increase product sales.

ID 97 Signal Integrity Analysis and Thermal Profiling Techniques for High-Speed Digital Circuits in Industrial Applications

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This paper overviews the complex interdependency of thermal and signal integrity challenges that high-speed, multi-layer printed circuit board designs face in their typical industrial application within servo control systems. Legacy or traditional design methodologies and practices treat these domains as divergent; thus, the design is prone to performance degradation and late failures. A new novel framework has been proposed that embraces simulation-driven design and integrates thermal and electrical analyses right from the beginning of the design cycle [1]. The methodology here applies a bidirectional co-simulation process utilizing a temperature profile gleaned through Ansys SIwave and Altium PDN Analyzer industrial standards to quantify direct causation between material state changes due to temperature on one hand, and degradation of high-speed signals on the other [2][3][5]. This study proves that localizing a thermal hotspot in a 12-layer Servo Control PCB increases signal jitter significantly-with eye diagram closure-that leads to system unreliability. Targeted design modifications found under such a proposed framework-e.g., optimized high current traces with continuous ground planes-were found capable of improving the thermal profile and quality of signals. The paper ends by providing practical

design tips on how to make an engineer adopt an active, multi-physics approach thereby reducing the prototyping costs and accelerating the time to market of robust industrial electronic systems.

Enhancing Decision-Making in Local Government through K-Means Clustering of Structural Officials' Performance

ID 99

Adrian Unggul Wirawan, Hardika Khusnuliawati, Astri Charolina, Anniez Rachmawati Musslifah, Rusnandari Retno Cahyani

Sahid Surakarta University

Employee performance evaluation is a critical process in public sector management. However, in Karanganyar Regency, this process has been traditionally conducted on an individual basis, leading to inefficiencies and a lack of actionable insights. This study addresses the gap by applying the K-Means clustering algorithm to categorize the performance of structural officials based on 2021 Employee Performance Target (SKP) data. Key performance indicators include SKP Value, Service Orientation, Commitment, Cooperation, Leadership, and Work Initiative. Using RapidMiner, the data was clustered into three categories: "very good," "good," and "satisfactory." The clustering quality was validated using the Davies-Bouldin Index (DBI), achieving an optimal value of 0.113, which indicates high intra-cluster similarity. The results provide a data-driven foundation for more efficient performance assessments, aiding decision-making in promotions and personnel management. This study demonstrates the potential of machine learning, specifically K-Means clustering, in improving administrative processes and strategic decision-making within local government.

Sentiment Classification of FatSecret Application Reviews with Machine Learning Models

ID 100

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In the current digital era, mobile applications have become an indispensable part of daily life, leading to a surge in user reviews as invaluable repositories of opinions. Health and fitness applications, such as FatSecret, generate millions of reviews rich with insights. However, specific sentiment analysis on FatSecret reviews using a structured Machine Learning (ML) approach remains limited. This study presents a comprehensive approach for sentiment classification of FatSecret application reviews using ML models. We collected Indonesian-language reviews from the Google Play Store, performed extensive data preprocessing (case folding, tokenization, filtering, normalization), and extracted features using Term Frequency-Inverse Document Frequency (TF-IDF) and Bag of Words (BoW). Subsequently, we trained and evaluated five distinct sentiment classification algorithms: Random Forest, Decision Tree, Logistic Regression, SVM, and XGBoost, utilizing the StratifiedKFold method for automatic splitting in training and validation. Evaluation metrics include accuracy, precision, recall, and F1-score. The results of this research are expected to provide deep insights into user perceptions of FatSecret, identify favored and criticized features, and offer a replicable methodological framework for sentiment analysis of other applications in the future..

ID 103

Forest Fire Detection Leveraging Hybrid Convolutional-Recurrent Models

Raphon Galuh Candraningtyas[1], Asyafa Ditra Al Hauna[2], Mohamad Nassar[3]

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Forest fires pose serious environmental and economic risks across tropical, temperate, and boreal regions. Traditional detection methods are often limited in accuracy and adaptability, motivating the use of deep learning for automated solutions. While Convolutional Neural Networks (CNNs) have shown promise, fewer studies have systematically examined hybrid models combining CNN feature extraction with recurrent layers such as Recurrent Neural Networks (RNN), Long Short-Term Memory (LSTM), and Gated Recurrent Units (GRU). This study compares CNN-MLP, CNNRNN, CNN-LSTM, and CNN-GRU architectures on a public forest fire dataset, evaluating classification performance and computational efficiency. Results show that CNN-GRU offers the best trade-off, closely matching CNN-MLP in accuracy while requiring fewer resources. CNN-LSTM provides stable performance, whereas CNN-RNN underperforms and needs refinement. Computational analysis further indicates that CNN-MLP is the the most resource intensive models with over 1 millions parameter. These findings highlight CNN-GRU as a strong candidate for real-time forest fire detection, balancing accuracy and efficiency, and suggest future exploration of adaptive thresholds and transformer-based approaches.

ID 104

Performance Comparison of Breast Cancer Classification Methods: Naive Bayes vs. Support Vector Machine

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Breast cancer is a global health issue where early detection and accurate diagnosis play a key role in improving patients' chances of successful recovery. Despite their widespread use and proven effectiveness, traditional diagnostic methods have limitations that have prompted the development of computational approaches. Machine learning is one such approach. Numerous prior studies have investigated various algorithms, including Naive Bayes and Support Vector Machine (SVM), for breast cancer classification; however, research directly comparing their performance on the same dataset is still limited. This study evaluates the efficacy of Naive Bayes and SVM methods for classifying breast cancer diagnoses as benign or malignant using the publicly available Wisconsin Diagnostic Breast Cancer (WDBC) dataset. The research stages include data collection, preprocessing, splitting the dataset into training and test sets at 70% to 30%, standardizing features for the SVM model, applying both algorithms, and evaluating performance using metrics such as accuracy, precision, recall, and F1-score. The test results indicate that the SVM algorithm achieved an accuracy of 98.25%, precision of 100%, recall of 95%, F1-score of 98%, and MCC of 0.96. Conversely, the Naive Bayes algorithm achieved 94.15% accuracy, 94% precision, 91% recall, a 93% F1-score, and 0.88 MCC. The comparison results indicate that SVM outperforms Naive Bayes on this dataset, especially in reducing falsepositive

and false-negative rates. This research is expected to serve as a valuable resource for medical professionals and researchers seeking to select the appropriate machine learning algorithm for early breast cancer detection.

Design and Implementation of a Network-Based Real Time Monitoring System for Smart Incubators Using IoT

ID 105

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Universitas Sahid Surakarta

Temperature setting is very important during the process of hatching chicken eggs, and it's something that poultry farmers worry about a lot. When the temperature isn't steady, it can lead to fewer eggs hatching and longer time needed for the eggs to develop. Regular incubators can keep the temperature somewhat controlled, but they don't always respond quickly to sudden changes like when there's a power cut or a technical problem. This study introduces a system that uses IoT technology to monitor incubation conditions in real time. The system uses a DHT22 sensor to measure temperature and humidity, a relay module to control the heating automatically, and an ESP32 microcontroller that connects to the internet. Result of the data is sent to server using the MQTT protocol, which makes it easy and fast to share the information. The system also includes an API so farmers can view the data on a web page or through apps Telegram. If the temperature goes out of the safe range, the system sends an alert so farmers can fix the problem right away. The experiments show that this system makes monitoring easier, increases the number of eggs that successfully hatch, and gives farmers a reliable, quick, and easy way to manage their incubation process from a distance

Palm Oil Ripeness and Quality Detection System Using YOLOv11

ID 106

Queenta Ramadhani

Telkom University

The ripeness level of oil palm fruit is a crucial factor that determines the quality and efficiency of palm oil production. Manual ripeness assessment is often subjective, inconsistent, and time-consuming, creating the need for an automated solution. Therefore, an automated approach using computer vision is needed to ensure efficiency and consistency. This study implements the YOLOv11 deep learning model to classify palm fruit into four categories (unripe, underripe, ripe, and overripe. The dataset, obtained from Roboflow, consists of 800 annotated images evenly distributed across the four classes. Data preparation included resizing images to 640×640 pixels and applying augmentation techniques to improve model generalization. The model was trained for 100 epochs on google colab with GPU L4 acceleration. Evaluation results demonstrate high performance with an average precision of 94,7%, recall of 90,6%, and accuracy of 97,4%. The best performance was achieved on the unripe and underripe classes, while the ripe category showed relatively lower accuracy due to visual similarities with adjacent classes. These findings confirm that YOLOv11 is an effective and efficient approach for automatic oil palm ripeness detection, offering potential benefits for harvesting optimization and supporting smart farming practices.

Reveals Beyond Motion: A Hybrid Graph-Recurrent Model with Human Fall Foresight

ID 107

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Falls constitute a predominant etiology of injury across demographic spectra and represent a significant contributor to morbidity, mortality, and escalating healthcare expenditures in Australia. Mitigating such incidents necessitates integrating intelligent, real-time surveillance systems capable of preemptive detection and rapid intervention. To support these goals, our study advances a deep learning model designed to anticipate and classify fall-related human motion by modeling the intricate spatiotemporal interdependencies inherent in bodily dynamics. As our proposed model, GCN-GRU operationalizes a synergistic representation of spatial posture and temporal progression to forecast imminent falls with heightened precision. Empirical validation reveals a marked performance improvement over extant baselines, attaining an accuracy of 97.40%, an F1-score of 96.89%, a mean per-joint position error (MPJPE) of 113.4 pixels, and a mean per-joint velocity error (MPJVE) of 64.66 pixels. Supplementary analyses concerning computational complexity and comparative visual evaluation corroborate the model's superior efficacy relative to prevailing architectures, notably outperforming the LSTM benchmark.

Assessing the Robustness of Speech Emotion Recognition for Lecturer Evaluation: A Speaker-Independent Analysis of Hand-Crafted and Learned Features

ID 109

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Telkom University

This study investigates the robustness of Speech Emotion Recognition (SER) models for lecturer evaluation under speaker-independent conditions. The experiments compare traditional hand-crafted acoustic features with deep learned representations derived from self-supervised models, using multiple classifiers including MLP, CNN, LGBM, and XGBoost. Two evaluation protocols were applied: a conventional Train–Test Split (TTS) and a more rigorous Leave-One-Speaker-Out (LOSO) validation. Results show that all models achieved high performance under TTS, with accuracy and macro-averaged F1-scores exceeding 0.96, indicating strong within-speaker generalization. However, performance declined sharply in LOSO, confirming the models' limited robustness to unseen speakers. Among all configurations, the CNN model trained on learned features (LOSO-L) achieved the best balance between accuracy (0.5807) and F1-score (0.4844), outperforming hand-crafted feature models. Confusion matrix analysis revealed that handcrafted features led to overprediction of negative emotions, while learned representations improved class balance and generalization across speakers. These findings underscore the necessity of speaker-independent evaluation for realistic SER performance assessment and highlight the superiority of learned feature representations in modeling speaker-invariant emotional cues. The study contributes empirical evidence supporting the integration of SER-based emotion analysis into lecturer evaluation systems and suggests future exploration of advanced architectures and interpretability methods to enhance model robustness and transparency.

Comparative Study of CNN, Vision Transformer, and Hybrid CNN–ViT Models for Indonesian Batik Pattern Classification

ID 110

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Batik is an Indonesian cultural heritage with unique visual characteristics and deep philosophical value. The complexity of motifs, color variations, and geometric details make batik classification an interesting challenge in the field of computer vision. This study conducted a comparative study between three deep learning approaches for classifying Indonesian batik motifs using Convolutional Neural Network (CNN), Vision Transformer (ViT), and a hybrid CNN–ViT model. The dataset used includes more than 3,000 batik images from various regions in Indonesia, with a variety of motifs such as Yogyakarta Kawung, Aceh, Ceplok, and Megamendung.Each model was trained with uniform parameters and augmentations to ensure fair evaluation, resulting in CNN accuracy of 94.43% F1-macro 93.45%, ViT accuracy of 91.55%, F1-macro 89.78%, and Hybrid CNN-ViT accuracy of 94.04% F1-macro 92.91%. This is reinforced by the combination of modules (EfficientNet-B2 + CBAM + ArcFace) that can improve model performance furthermore, This study contributes to the development of an automated batik classification system and supports cultural preservation through artificial intelligencebased digitization.

IndoBERT and Transformer-Based Multimodal Fusion for Indonesian Contextual Speech Emotion Recognition

ID 111

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UIN Sultan Maulana Hasanuddin

Speech Emotion Recognition (SER) is a crucial component in the development of more natural and empathetic human-computer interactions. However, SER research for Indonesian still faces significant challenges due to the limited availability of natural conversational emotion data and models that have not been able to capture multimodal and contextual cues effectively. This study introduces IndoSER-Fusion, a new multimodal fusion architecture that synergistically integrates Transformer-based speech encoder, trained on raw audio data, with IndoBERT, a large-scale pre-trained language model for Indonesian, to comprehensively extract acoustic and lexical features. This architecture is equipped with fusion through concatenation features followed by multiple layers of Transformer Encoder. The model was evaluated on the SER in Language Dataset (EDOM), a dataset containing the emotions that were acted out. The results of the experiment showed that the proposed model achieved a significant performance improvement compared to the unimodal baseline model and the non-contextual fusion method, achieving an Unweighted Average Recall (UAR) of 91.66% and a Weighted Accuracy (WA) of 92.23%.

ID 112 The Structural Interaction between Teachers' Collaboration and Inquiry-Based Learning Networks: Effects on the Implementation of Inquiry-Based Learning

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The purpose of this study is to clarify the structural relationship between teacher collaboration and InquiryBased Learning (IBL) networks in the diffusion process of IBL among Japanese teachers (N = 650). Teacher collaboration was measured using three subscales: teacher collaboration among colleagues (CF1), leadership by administrators (CF2), and partnerships with communities and parents (CF3). The analysis revealed high correlations among CF1–CF3 (r = .62-.69) and moderate correlations with the IBL Network (r = .31-.41), indicating the interconnection between intra-school and extra-school collaborative cultures and IBL networks. Furthermore, a Seemingly Unrelated Regression (SUR) model demonstrated a statistically significant reciprocal facilitation relationship between collaboration and the IBL network. These results suggest that the diffusion of IBL is mutually promoted by strong internal interactions (collaboration within schools), external network linkages (diffusion across contexts), and the formation of inquiry-related teacher networks.

ID 114 Evaluation of Village E-Government in Banyumas Regency Using the UN E-Government Development Index

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STMIK Widya Utama

In modern governance practices, digital transformation has become a fundamental foundation for improving the quality of public services, transparency, and participation. This study aims to assess the maturity level of e-government implementation across all villages in Banyumas Regency. Using a quantitative approach and census method, this research employs an evaluation model consisting of eleven parameters. The first stage involved determining the total number of villages in Banyumas Regency (297 villages), followed by direct observation to assess the availability of official village websites. The findings show a very high adoption rate, with 285 villages (96.0%) maintaining an active online presence. These 285 websites were then classified into two categories—278 Independent and 7 Integrated—and further evaluated using ten additional parameters adapted from the four-stage UN E-Government Development Index (UN-EGDI), covering Emerging, Enhanced, Transactional, and Connected Presence. The results provide a comprehensive mapping of the two models of village e-government implementation and highlight significant disparities between website availability and functional service delivery. Although adoption is nearly universal, the functional maturity of village websites remains relatively low, indicating a clear gap in digital service readiness. The insights from this study are expected to support strategic policy formulation aimed at promoting more equitable and sustainable digital transformation at the village level. As future work, this research will be extended to the provincial scope by evaluating e-government maturity across districts and cities in Central Java Province.

Spatial Temporal Graph Convolutional Networks for Human Motion Prediction and Fall Classification

ID 117

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Telkom University

Falls remain a major cause of injury, motivating the need for systems that can anticipate fall events before impact rather than merely detect them afterward. In this research, we propose a unified framework based on a Spatio-Temporal Graph Convolutional Network (ST-GCN) to jointly perform human motion forecasting and fall classification from 2D pose sequences. The model incorporates both joint positions and velocities, enabling richer motion representation within a multitask learning setup. Experiments on the TelUP Human Fall Dataset show that the proposed method achieves strong forecasting performance with an MPJPE of 0.2452 and an MPJVE of 0.1353, outperforming previous baseline architectures such as MLP, RNN, and LSTM. The model also attains a competitive classification accuracy of 88.53% in a subject-independent evaluation. These results demonstrate that graph-based modeling effectively captures human movement dynamics for fall prediction and highlight its potential for real-time safety and healthcare applications.

A Lexicon-Based VADER Approach for Aspect-Based Sentiment Analysis in the Indonesian Language

ID 120

Siti Khomsah, Muhammad Al Bana

Telkom University

Aspect-Based Sentiment Analysis (ABSA) provides detailed insights into customer opinions by identifying specific aspects—such as product, service, and management—in textual reviews and analyzing the sentiment toward each aspect. Unlike general sentiment analysis, ABSA reveals which dimensions of customer experience require improvement. However, applying ABSA in low-resource languages like Indonesian is challenging due to limited annotated dataset, sentiment lexicon, and pre-trained model, which often reduce the accuracy of machine learning or deep learning approaches. This study employs the Valence Aware Dictionary for Sentiment Reasoning (VADER), a lexicon-based algorithm effective in analyzing short, informal, and mixed-language texts, such as online reviews. VADER enables reliable sentiment scoring without large labeled datasets, making it suitable for Indonesian-language analysis. A total of 8,438 Google Maps reviews from 2016 to 2025 were analyzed to observe sentiment trends over time. Keywords were developed for three main aspects:product (1,112 words), service (468 words), and management (666 words). Results show that most reviews express positive sentiment (85.4%), followed by neutral (9.9%) and negative (4.6%). The product aspect was most discussed (7,839 reviews), followed by management (4,608) and service (4,589). In conclusion, VADER-based ABSA can effectively analyze customer sentiment in low-resource languages, providing actionable insights to guide restaurant service improvements. The lack of VADER are an obstacle in handling nuance in the Indonesian language and many keywords cannot be extracted by VADER. Futher, method development is needed for more precise aspect extraction.

ID 488

Deep Learning-Based Herbal Plant Classification Using Leaf Shape and Pattern: The UII Botanical Leaf Dataset

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Islamic University of Indonesia

Herbal plants play a crucial role in healthcare and are widely used as traditional medicines. However, identifying herbal species remains a major challenge due to morphological similarities, particularly in leaf shape and texture. This study aims to develop an intelligent classification system for Indonesian herbal plants based on leaf image analysis using artificial intelligence (AI) and digital image processing techniques. A localized dataset of 47 herbal species collected from Botanical SmartPark SMA UII was used to train a deep learning model employing the MobileNetV2 architecture through transfer learning. The proposed model achieved an average accuracy of 96.6% on the testing dataset, demonstrating high reliability in recognizing species with complex visual variations. The trained model was then implemented into an Android-based application called HERBfull Botanical SmartPark, enabling real-time plant identification and interactive access to botanical information. The system successfully enhances efficiency, accessibility, and educational value in the identification of local herbal species. This research contributes to the advancement of AI applications in botanical education, promoting digital literacy, biodiversity conservation, and the integration of smart technology into sustainable environmental learning platforms.

ID 124

Data Acquisition System to Support Predictive Maintenance on Soft Laminator Machines in an Electronics Manufacturing Company

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Islamic University of Indonesia

This study presents the design and implementation of an Internet of Things (IoT)-based data acquisition system for a soft laminator (profile wrapping) machine used in electronic audio device manufacturing. The system aims to enable real-time monitoring of critical process parameters, including heater roll temperature, heater dry zone temperature, and roll spacing, which are essential for maintaining product quality and reducing machine downtime. The proposed system employs an ESP32 microcontroller integrated with DS18B20 temperature sensors and VL53L0X distance sensors, supported by an Ethernet W5500 module for reliable data transmission to a MySQL-based server. A web-based dashboard was developed to visualize sensor data, display alerts, and log historical records. Experimental results show that the system achieved high accuracy, with mean absolute errors of 0.38 °C (0.63%) for heater roll temperature, 0.44 °C (0.73%) for heater dry zone temperature, and 0 mm (0%) for all distance sensors, well within the industrial tolerance of ¡1%. Additionally, the indicator subsystem—consisting of LEDs and buzzers—responded consistently to simulated fault conditions such as sensor failure and network disconnection. Overall, the developed system demonstrates reliable performance for industrial monitoring applications and offers a foundation for implementing predictive maintenance in manufacturing environments.

Low-Cost IoT-Based Landslide Early Warning System

ID 125

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EWS (Early Warning System) or commonly called an early warning system is an electronic circuit designed to detect systematically that will be monitored online. In this early warning system, it designs a landslide or landslide disaster. This tool uses two microcontrollers including Arduino Nano as a support for data results from both sensors and ESP32-DevKit V1 as a data receiver that has been processed on Arduino Nano and sending data to Blynk Console via 4G LTE WiFi Modem Module with a delay of 48 seconds to get a good signal and a delay of 30 seconds to initiate a connection with the ESP32 DevKit V1 microcontroller. The Slide Potentiometer Sensor which is used to determine the indication of a landslide shift, which has 2 parameters Alert (2-3 cm) and Warning (4-6 cm) with a sensor accuracy level of 98.48%, and has a Soil Moisture Sensor which plays an additional role and indication and humidity conditions in the soil with a sensor accuracy of 90.15%. Thus, both sensors are delivered in an integrated manner with the MQTT Blynk Console application which can provide real-time notifications.

Electrical Energy Consumption Monitoring System for Boarding Rooms Using IoT and Progressive Web Application

ID 126

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Energy efficiency has become an essential aspect of sustainable living, particularly in boarding facilities where electrical usage is often uncontrolled and inefficient. This study presents Molection, an Internet of Things (IoT)-based system designed to monitor and control electrical energy consumption in boarding rooms by integrating sensors, microcontrollers, and a Progressive Web App (PWA). The system collects real-time data on voltage, current, power, and energy consumption using the PZEM-004T sensor module, which communicates with an ESP32 microcontroller. The collected data are transmitted to a cloud database and displayed via a responsive web interface accessible from various devices. The results indicate that the system provides effective real-time monitoring, with a measurement accuracy of 98.3% compared to standard electrical meters. This study demonstrates that implementing IoT and PWA technologies can support efficient, transparent energy management, especially in shared or rented residential spaces..

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