



**ICIMICE 2023**  
International Conference on Informatics, Mechanical, Industrial and Chemical Engineering

**FAKULTAS  
TEKNIK**  
UNIVERSITAS WAHID HASYIM



# Conference PROGRAM BOOK

2023

**International Conference on Informatics,  
Mechanical, Industrial and Chemical  
Engineering**

**(ICIMICE)**

**“The Impact of Industrial Revolution 4.0  
to Society 5.0’s Digital Transformation”**

[www.teknik.unwahas.ac.id](http://www.teknik.unwahas.ac.id) 

[teknik@unwahas.ac.id](mailto:teknik@unwahas.ac.id) 

024-8505680 



# Welcoming Speech by Dean of Engineering Faculty, Wahid Hasyim University



## Dr. S.M Bondan Respati, ST., MT

Your excellency, Rector Universitas Wahid Hasyim (UNWAHAS), All of the Deans from UNWAHAS, Keynote speakers, Moderators, Head of the study program, and All participants,

Distinguished Guests, Ladies, and Gentlemen, It is my pleasure to welcome everyone to the International Conference on Informatics, Mechanical, Industrial and Chemical Engineering (ICIMICE 2023) organized by the Faculty of Engineering at Wahid Hasyim University.

This international conference is part of a series of conferences, seminars, and workshop activities provided by the Faculty of Engineering at Wahid Hasyim University and as a co-host Trunojoyo University. ICIMICE 2023 brings out ideas and research in the fields of informatics, mechanical, industrial, and chemical engineering towards sustainable development. This conference promotes new approaches and innovations in the aforementioned fields. All of this is in support of creating sustainable energy and technology without depleting natural resources.

The objectives of ICIMICE 2023 are:

1. Creating an international forum for researchers, students, industries, and governments to communicate their research results on the fundamentals and applications of informatics, mechanical, industrial, and chemical engineering
2. Sharing and exchanging ideas, thoughts, and discussion on all aspects of informatics, mechanical, industrial, and chemical engineering.



3. **Facilitating the formation of networks among participants to enhance the quality and benefit of research and development**
4. **Furthermore, this conference also constitutes a great opportunity for escalating collaboration among institutions in terms of various academic necessities. I would like to thank the Keynote Speakers for allowing us a chance to experience valuable sharing. It is essential to gather experts in the fields of science and technology to improve the quality of postgraduate education.**

In ICIMICE 2023 there are 90 papers submission and only 74 papers are accepted for presentation which is around 82% acceptance rate.

The accepted papers will be presented in regular parallel oral sessions via online and after the paper has been revised and accepted will be published in the AIP conference proceedings with an estimate on 8 to 12 months. The diversity of authors come from 5 different countries.

We would like to thank for all Keynote Speakers, Reviewers, Authors, Rumah Publikasi Indonesia (RPI) and Committees, for their effort, guidance, contribution and valuable support. We would like to also extend our gratitude to Wahid Hasyim University, Biodam, Material Laboratorium, Design Laboratorium, Momentum, Inteka, and JINRPL for sponsored this event.

**Dr. Sri Mulyo Bondan Respati, ST., MT**  
**Dean of The Faculty of Engineering**  
**Wahid Hasyim University**



# Welcoming Speech Chairperson of The ICIMICE 2023

Your excellency, Rector Universitas Wahid Hasyim (UNWAHAS), All of the Deans from UNWAHAS, Keynote speakers, Moderators, Head of the study program, and All participants, Ladies and gentlemen,

On behalf of the ICIMICE 2023 and 13th SNST Organizing committee, I am honored and delighted to welcome you to the International Conference on Informatics, Mechanical, Industrial and Chemical Engineering (ICIMICE 2023) and Seminar Nasional Sains dan Teknologi (13th SNST), with the theme "The Impact of Industrial Revolution 4.0 to Society 5.0's Digital Transformation". This conference is expected to designate an interactive international forum to provide a platform for sharing and exchanging information on the latest research on informatics, mechanical, industrial, and chemical engineering.

Our technical program is rich and varied, with three keynote speakers that come from Australia, Philipines, and Japan. There are 61 papers for SNST and 74 papers for ICIMICE will be presented on parallel oral sessions. The participants come from various countries and from all over Indonesia, consisting of researchers, lecturers, practitioners, and postgraduate and undergraduate students belonging to various institutions. A large number of papers submitted to this conference indicate that interest in the fields of informatics, mechanical, industrial, and chemical engineering is on the rise in this country and worldwide.

We are also proud to present the plenary speakers who are qualified to share their valuable information and knowledge at this conference. On behalf of the ICIMICE 2023 and 13th SNST Committee, we wish all participants good attainment. We would like to acknowledge our high appreciation to the Rector of Wahid Hasyim University, the Dean of the Faculty of Engineering at Wahid Hasyim University, and the keynote speakers.

I would also like to take this opportunity to thank the organizing team from the Faculty of Engineering at Wahid Hasyim University for all their hard work and dedication in preparing for this conference. As we have tried our best to conduct this event, we humbly realize that we may still be lacking in some parts. Accordingly, we would like to apologize for any inconvenience. I sincerely hope you will enjoy today and the next few days of the conference and networking. With great pride, we present ICIMICE 2023 and 13th SNST, and we wish you an inspiring time. Thank you for your participation.

**Arief Hidayat**  
Chair of Organizing Committee



# TABLE OF CONTENTS

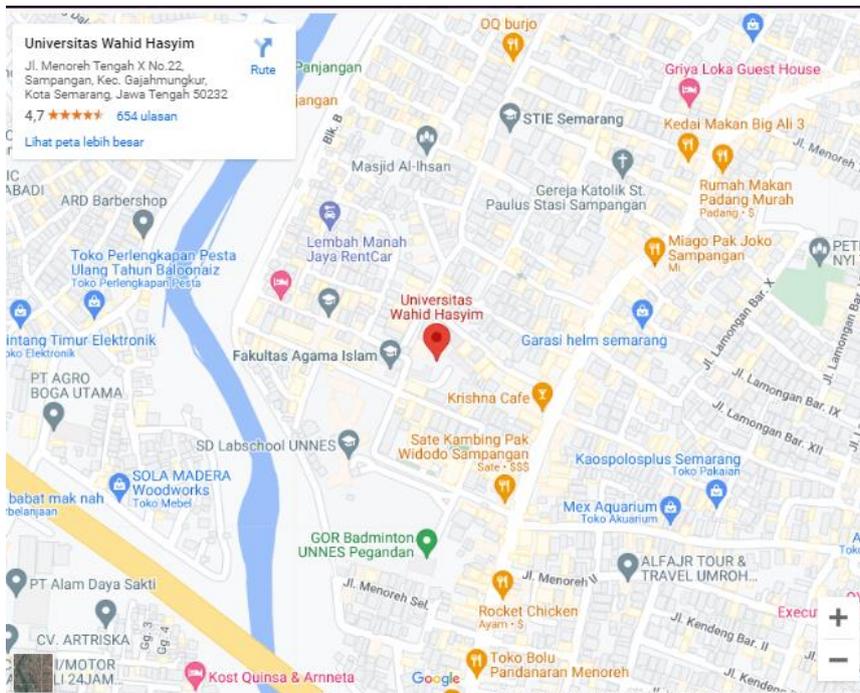
<b>WELCOMING SPEECH BY DEAN OF ENGINEERING FACULTY .....</b>	<b>1</b>
<b>WELCOMING SPEECH CHAIRPERSON OF THE ICIMICE 2023 .....</b>	<b>3</b>
<b>TABLE OF CONTENTS .....</b>	<b>4</b>
<b>VENUE .....</b>	<b>5</b>
<b>COMMITTEE .....</b>	<b>6</b>
<b>KEYNOTE SPEAKERS 1 .....</b>	<b>8</b>
<b>KEYNOTE SPEAKERS 2 .....</b>	<b>9</b>
<b>KEYNOTE SPEAKERS 3 .....</b>	<b>10</b>
<b>SCOPE .....</b>	<b>11</b>
<b>PLENARY SESSION .....</b>	<b>12</b>
<b>GUIDELINES ICIMICE 2023.....</b>	<b>13</b>
<b>PARALLEL SESSION .....</b>	<b>15</b>
<b>AUTHOR LIST .....</b>	<b>16</b>
<b>ICIMICE 2023 ABSTRACT LIST .....</b>	<b>21</b>



# VENUE

## Live From Gedung Dekanat Unwahas Lt. 6

Jl. Menoreh Tengah X No. 22, Sampangan, Kec. Gajahmungkur,  
Kota Semarang, Jawa Tengah 50232





# COMMITTEE

## Advisory Board

**Ferry Jie, Ph.D, FCES, FCILT**

Assoc Prof of Edith Cowan University, Australia

**Willie Buclatin, Ph.D**

Assoc Prof of Cavite State University, Philipina

**Prof. Ito Kohzo**

Department of Applied Chemistry, University of Tokyo

**Assoc. Prof Watanabe Katsuaki**

Energy process engineering – Kyoto University, Jepang

**Assoc. Nakagawa Kyuka**

Separation Engineering – Kyoto University, Jepang.

**Dr. Wahyu Caesarendra, M.Eng**

(Manufacture and Robotika – Brunei Darussalam University, Brunei Darussalam)

**Prof. Dr. Ir. Richardius Eko Indrajit, M.Sc., M.B.A.,MPhil.,MA.,**

Pradita Institute, Indonesia

**Prof. Ir. Rochmadi, SU., Ph.D.,**

Universitas Gadjah Mada, Indonesia

**Prof. Dr. Didik Nurhadianto ST. MT.,**

Universitas Negeri Yogyakarta, Indonesia

**Prof. Dr. Agus Zainal Arifin, S.Kom., M.Kom,**

Institut Teknologi Sepuluh Nopember, Indonesia

**Prof. Dr. Moh. Djaeni, ST., M.Eng.,**

Universitas Diponegoro, Indonesia

**Dr. Ir. R. Rizal Isnanto, S.T., M.M., M.T., IPU, ASEAN Eng.**

Universitas Diponegoro, Indonesia



## Scientific Committee

**Prof. Dr. Ir. Slamet Riyadi,**

Universitas Katolik Soegijapranata, Indonesia

**Prof. Dr. rer. nat, Achmad Benny Mutiara, Q.N S.Si., S.Kom.**

Universitas Gunadarma, Indonesia

**Prof. Dr. rer. nat, Ir. Athanasius Priharyoto Bayuseno, M.Sc.**

Universitas Diponegoro, Indonesia

**Prof. Ir. Andri Cahyo Kumoro, ST, MT, PhD, IPU**

Universitas Diponegoro, Indonesia

**Prof. Dr. Purnomo, ST., M.Eng,**

Universitas Muhammadiyah Semarang, Indonesia

**Dr. Muhaji, ST., MT,**

Universitas Negeri Surabaya, Indonesia

**Dr. Rifky Ismail, ST., MT.,**

Universitas Diponegoro, Indonesia

**Dr. Supari, ST., MT.,**

Universitas Semarang, Indonesia

**Dr. Lamatinulu, ST., MT.,**

Universitas Muslim Indonesia, Indonesia

**Dr. Ir. Arifin Sanusi, MT**

Universitas Nusa Cendana Kupang, Indonesia

**Dr. Amin Suharjono, ST., MT.**

Politeknik Negeri Semarang, Indonesia

## Organizing Committee

Chairman : **Arief Hidayat**

Co-Chairman : **Agung Nugroho and Darmanto**

Members: **Indah Hartati, Fandy Indra Pratama and M. Dzulfikar**

# KEYNOTE SPEAKERS 1



## Ferry Jie, PhD, FCILT, FCES

**Ferry Jie is the Associate Professor in Supply Chain and Logistics Management, in the School of Business and Law. Ferry is currently a Secretary to the Chartered Institute Logistics and Transport (CILTA) Western Australia (WA) Committee. Ferry is also a part of the Supply Chain & Logistics Association of Australia (SCLAA) WA Committee.**

**Associate Professor Ferry Jie has maintained a high quality of research throughout his academic career including international scholarly leadership in the areas of supply chain management and logistics, including regularly being invited to be a keynote speaker and to give public lectures at symposiums and international conferences in Indonesia, Malaysia, Vietnam, China, UK, and Australia.**

**From 2017 to now, published more than 55 refereed journal articles—including 31 articles in Q1-ranked in the Scimago and 23 articles in Q2-ranked in the Scimago, and 10 refereed conference papers. Furthermore, Dr Jie has received research grants/awards adding up to over \$1.85 million between 2010 and 2022.**



## KEYNOTE SPEAKERS 2



**Prof. Ito Kohzo**

**Prof. Ito Kohzo is currently working as Professor, Graduate School of Engineering, Department of Applied Chemistry, The University of Tokyo, Japan. He has successfully completed his Administrative responsibilities as Professor. His research has included Organic chemistry, Polymer science, Material science.**

**Prof. Ito Kohzo have been investigating soft materials such as polymers, liquid crystals, biomolecules, and so on. In particular, we now focus on supramolecular systems of polyrotaxanes with topological architecture as slide-ring materials and molucular elektronics using conducting polymers**



## KEYNOTE SPEAKERS 3



**Willie Buclatin, Ph.D**

**A highly organized and detail – oriented ASEAN Engineer Register (AER) with seven (7) years' experience in the industry focusing on inventory management and control, warehousing, planning, material control, quality assurance, production systems, process analysis & improvement, and eighteen (18) years' experience in the academe as an Industrial Engineering faculty member (Associate Professor V), and a College Dean supervising one hundred fifty (150) faculty members and staff from different programs offered by the college. A PhD in Technology Management (PhD-TM) holder, an AACUP accreditor, CHED RQAT Member, an Internal Quality Auditor (ISO 9001:2015) and with knowledge on the assessment and evaluation of Outcomes-Based Education (OBE).**



# SCOPE

<b>INFORMATICS ENGINEERING</b>	<b>MECHANICAL AND MANUFACTURE ENGINEERING</b>	<b>CHEMICAL ENGINEERING</b>
<ol style="list-style-type: none"><li>1. Internet of Things</li><li>2. Telecommunication</li><li>3. Information Technology</li><li>4. Data Management</li><li>5. Computer Programming</li><li>6. Information Security</li><li>7. Cryptography</li><li>8. Networking</li><li>9. Information Technology Audit</li><li>10. Information System</li><li>11. Artificial Intelligence and Data Science</li><li>12. Internet of Things and Big Data</li><li>13. Machine Learning and Deep Learning</li></ol>	<ol style="list-style-type: none"><li>1. Applied Thermodynamics</li><li>2. Renewable Energy</li><li>3. Optimization Engineering</li><li>4. Material Engineering</li><li>5. Mechatronic System</li><li>6. Composites and Hybrid Materials</li><li>7. Heat Treatment</li><li>8. Computational Fluid Dynamic</li><li>9. Friction, Lubrication, and Tribology</li><li>10. Combustion Engineering</li><li>11. Multi-Phase Fluid</li><li>12. Coating Engineering</li><li>13. Mechanical Design and Construction</li></ol>	<ol style="list-style-type: none"><li>1. Biomass Conversion</li><li>2. Biotechnology and Bioprocess</li><li>3. Nanotechnology</li><li>4. Green Chemicals</li><li>5. Waste Treatment</li><li>6. Renewable Energy</li><li>7. Process System Engineering</li><li>8. Separation Technology</li><li>9. Chemical Engineering Modelling and Simulation</li><li>10. Food Engineering</li></ol>



# PLENARY SESSION

INTERNATIONAL CONFERENCE ON INFORMATICS, MECHANICAL, INDUSTRIAL AND  
CHEMICAL ENGINEERING (ICIMICE) 2023  
Wednesday, October 25<sup>th</sup> 2023 – Zoom Meeting

Time*	Activities	PIC
07.30-08.00	Virtual registration	Committee
08.00-08.05	Opening	MC
08.05-08.10	Recitation of Quran	Malik
08.10-08.15	The National anthem of Indonesia Raya	Committee
08.15-08.25	Welcoming speech by Dean of Engineering Faculty, Wahid Hasyim University <b>Dr. Sri Mulyo Bondn Respati, S.T., M.T.</b>	Dean
08.25-08.35	Opening speech by Rector, Wahid Hasyim University  <b>Prof. Dr. H. Mudzakir Ali, M.A.</b>	Rector
08.35-09.45	Pray	Committee
08.45-09.00	Session break and transition	Committee
09.00-12.00	Keynote Speech:	Committee/Moderator
	<b>1. Willie Buclatin, Ph.D</b> (Cavite State University, Philippines)	
	<b>2. Prof. Ito Kohzo</b> (Tokyo University, Japan)	
	<b>3. Ferry Jie, PhD, FCILT, FCES</b> (Edith Cowan University, Australia)	
	Moderator : <b>Dr. Indah Hartati, S.T., M.T.</b>	
12.00-13.00	Lunch Break	Committee
13.00-15.00	Parallel Session	Committee/Moderator
15.00-15.10	Closing	MC

\*Time is in local time using Waktu Indonesia Barat (WIB)/ Western Indonesia Time Zone



# GUIDELINES ICIMICE 2023

## (Keynote Speech Session)

1. Make sure your computer/laptop/mobile device is stable and connected to the internet.
2. Zoom application will be used for this ICIMICE is "Zoom Meetings". If not installed, please download it on playstore/appstore first. If using a computer, please download the application in <https://zoom.us/support/download>
3. The link zoom ICIMICE is [unwhs.id/zoom-icimice-snst](https://unwhs.id/zoom-icimice-snst)
4. Participants can join 30 minutes before the event starts, or started at 07:30 WIB. Participants cannot join the zoom, can follow the event via Youtube Live ([UnwahasTV](https://www.youtube.com/channel/UCUnwahasTV)).
5. Rename your account when joining a zoom room with the format : **ICIMICE\_Name** (for participant ICIMICE)
6. Participants who get access to the Zoom Meeting must dress modestly and behave politely when ICIMICE is held.
7. Participants are expected to install a virtual background [unwhs.id/vb-icimice2023](https://unwhs.id/vb-icimice2023)
8. Participants are requested not to activate the microphone feature during the ICIMICE activity, except those invited by the committee.
9. During the ICIMICE event, participants can ask questions to the resource persons by utilizing the Zoom/Youtube chat box with the format **Name\_Institution\_Question**
10. The keynote moderator will ask the speaker several questions because the time for discussion is limited.
11. Participants pay for the certificate get an E-Certificate that will be distributed to those who follow the event from the beginning to the end of ICIMICE.
12. Participants can to join in parallel sessions by choosing the breakout room that has been provided.
13. Attendance links are shared at the beginning and at the end of the ICIMICE event.



### (PARALEL SESSION)

1. Make sure your computer/laptop/mobile device is stable and connected to the internet.
2. Zoom application will be used for this ICIMICE is "Zoom Meetings". If not installed, please download it on playstore/appstore first. If using a computer, please download the application in <https://zoom.us/support/download>
3. The link zoom ICIMICE is [unwhs.id/zoom-icimice-snst](https://unwhs.id/zoom-icimice-snst) and will be split in breakout room.
4. Presenter can join 30 minutes before the event starts, or started at 07:30 WIB.
5. Rename your account Zoom when joining a room with the format : **ICIMICE\_ID ABSTRACT\_Name**  
(for presenter ICIMICE, example ICIMICE\_ABS-123\_Arief)
6. Presenter who get access to the Zoom Meeting must dress modestly and behave politely when ICIMICE is held.
7. Presenter are expected to install a virtual background [unwhs.id/vb-icimice2023](https://unwhs.id/vb-icimice2023)
8. Presenter are requested not to activate the microphone feature during the ICIMICE activity, except those invited by the committee.
9. Oral presentations will be in English and should cover the same material as your submitted paper.
10. The presentation file must be uploaded to [unwhs.id/file-presentation-icimice](https://unwhs.id/file-presentation-icimice), before October 23, 2023
11. The duration of the presentation is no longer than 10 minutes.
12. Each presenter will get an additional 5 minutes for Q&A after presentation
13. Room moderators have full rights to set ICIMICE classes.
14. E-Certificate of presenter will be distributed to speakers who have presented their papers and filled out the attendance.



# PARALLEL SESSION

INTERNATIONAL CONFERENCE ON INFORMATICS, MECHANICAL, INDUSTRIAL AND  
CHEMICAL ENGINEERING (ICIMICE) 2023  
Wednesday, October 25<sup>th</sup> 2023 – Zoom Meeting

TIME	ICIMICE 2023					
	ROOMS					
	ICIMICE 1	ICIMICE 2	ICIMICE 3	ICIMICE 4	ICIMICE 5	ICIMICE 6
13.00 - 13.10	ABS-8	ABS-34	ABS-47	ABS-72	ABS-46	ABS-1
13.10 - 13.20	ABS-9	ABS-35	ABS-50	ABS-74	ABS-48	ABS-6
13.20 - 13.30	ABS-10	ABS-37	ABS-52	ABS-76	ABS-49	ABS-7
13.30 - 13.40	ABS-12	ABS-38	ABS-55	ABS-77	ABS-51	ABS-17
13.40 - 13.50	ABS-14	ABS-39	ABS-56	ABS-78	ABS-53	ABS-29
13.50 - 14.00	ABS-18	ABS-40	ABS-57	ABS-80	ABS-54	ABS-31
14.00 - 14.10	ABS-20	ABS-41	ABS-61	ABS-81	ABS-58	ABS-36
14.10 - 14.20	ABS-21	ABS-42	ABS-62	ABS-82	ABS-59	ABS-75
14.20 - 14.30	ABS-26	ABS-43	ABS-66	ABS-83	ABS-60	ABS-79
14.30 - 14.40	ABS-27	ABS-44	ABS-68	ABS-92	ABS-63	ABS-89
14.40 - 14.50	ABS-28	ABS-45	ABS-69	ABS-93	ABS-64	ABS-91
14.50 - 15.00	ABS-33				ABS-65	ABS-94
15.00 - 15.10					ABS-67	ABS-95
15.10 - 15.20					ABS-73	ABS-96
15.20 - 15.30					ABS-85	



# AUTHOR LIST

PAPER ID	Authors	Title
<a href="#">ABS-1</a>	Nur Kholis, Helmy Purwanto, Muhammad Bagus Nuruddin and Agung Nugroho	Microstructure and Mechanical Properties of Friction Stir Welding Aluminum AA1100 with Pin Penetration Tool Parameters
<a href="#">ABS-6</a>	D. Darmanto, M. H. Naufudin, M. A. Wahid, R. Novriansyah and R. Ismail	Optimization of Single Radius System Design on Total Knee Arthroplasty for Indonesian's Need
<a href="#">ABS-7</a>	Rexy Igusti Redondo, Muhammad Dzulfikar and Tabah Priangkoso	The Effect of The Blade Profile On Thrust of Electric Ducted Fan
<a href="#">ABS-8</a>	Sehono and Ikbal Rizki Putra	Microstructure and Mechanical Performance of Friction Stir Spot Welding to Riveting Process Aluminum AA2024-T3 Plate: Effect of Tool Rotation Speed
<a href="#">ABS-9</a>	Solechan, Agus Suprihanto, Susilo Adi Widyanto and Joko Triyono	Analysis of Sintering Temperature Using Cold Isostatic Pressing Method on Polylactid Acid/Polycaprolactone/Nano Hydroxyapatite Biocomposites
<a href="#">ABS-10</a>	Yusuf Umardani, Dwi Basuki Wibowo, and Agus Suprihanto	Quantitative Morphology of Flexible Flat Foot of Young Adults From Scanning Of Foot
<a href="#">ABS-12</a>	Praneeth Galhena and Kongkiti Phusavat	Improving the Integration of Customer and Company Requirements through QFD for Solution Design and Supplier Selection
<a href="#">ABS-14</a>	Hozairi, Buhari, Rofiudin, Furqon Wahyudi and Syariful Alim	Application of Black Box Testing and PIECES Framework for Bakamla Messenger Application Development
<a href="#">ABS-17</a>	Agung Nugroho, Randy Cahya Kurnianto and Tabah Priangkoso	Optimizing Engine Efficiency: An Artificial Neural Network Approach for Fuel Consumption Reduction through Engine Remapping
<a href="#">ABS-18</a>	Murahartawaty Arief and Noor Azah Samsudin	Critical Product Features Identification In Online Reviews Using Sentiment Analysis and Kano Model For Product Quality Improvement
<a href="#">ABS-20</a>	Zizi Aida and Oksil Venriza	Utility Analysis Of The Use Of Hydrant Dispensers In The Aviation Fuel Distribution Process At The Pertamina SHIPS Unit
<a href="#">ABS-21</a>	Indrianto, Abdurrasyid and Meilia Nur Indah Susanti	Monitoring the Location of Visually Impaired People Using the Haversine Method
<a href="#">ABS-26</a>	Sunardi, Syahrul Humaidi, Marhaposan Situmorang and Marzuki Sinambela.	Convective Clouds Classification Based on Weather Forecast for Air Traffic Flow Management in Kualanamu Airport
<a href="#">ABS-27</a>	Agus Byna, Fadhiyah Noor Anisa and Nurhaeni	Improving Stunting Prediction in Children: Evaluating Ensemble Algorithms with SMOTE and Feature Selection
<a href="#">ABS-28</a>	Helisyah Nur Fadhillah, Amalia Nur Alifah and Vessa Rizky Oktavia	The Extended Kalman Filter Method for Covid-19 Spread Prediction in Indonesia and East Java
<a href="#">ABS-29</a>	Alfian Aulya Rachman, Avita Ayu Permanasari, and Muhammad Dzulfikar	Analysis of Furnace Tube Thickness in Steam Boiler
<a href="#">ABS-31</a>	Imam Syafaat, Miftah Andhika Shobirin, Agung Nugroho, Muchammad, Mohammad Tauviiqirrahman and Budi Setiyana	The Effect of Boundary Slip Condition on Cavitation Reduction in a Closed Pocket Hydrodynamic Thrust Bearing



PAPER ID	Authors	Title
<a href="#">ABS-33</a>	Sunardi, Dody Ariawan, Eko Surojo, Aditya Rio Prabowo, Hammar Ilham Akbar, Agung Sudrajad and Harjo Seputro	Study of Water Absorption of Polymer Composite Using Calcined Eggshell Particle as Green Filler
<a href="#">ABS-34</a>	Munaf Ismail, Jenny Putri Hapsari, Eka Nuryanto Budisusila and Dedi Nugroho	IoT-Based Gas Sensors for Monitoring Alcohol Levels Design and Build
<a href="#">ABS-35</a>	Riska Aprilia, Mohammad Hamim Zajuli Al Faroby, Muhammad Adib Kamali and Muhammad Dzulfikar Fauzi	Herb Compounds Screening as Meningitis Inhibitor Candidates using Neural Network and Random Forest Methods
<a href="#">ABS-36</a>	Nugroho Widiasmadi	Immunity Soil Improvement for Clay Land With Real Time Control Smart Bioisodam Ma-11 for Agroconservation System
<a href="#">ABS-37</a>	Eko Sasmito Hadi, M R C Putra Hadi, Ojo Kurdi, Rifky Ismail, and Mohammad Tauviqirrahman	Use of seawater as a lubrication medium for marine engineering equipment with a reciprocal movement system
<a href="#">ABS-38</a>	Sugeng Slamet, Rochmad Winarso, Suyitno and Indraswari Kusumaningtyas	The Effect of Composition and Pouring Temperature of Cu-Sn Alloys on Mechanical Properties with Investment Casting Method
<a href="#">ABS-39</a>	Diana Laily Fithri, Nita Andriyani, Sri Mulyani, Budi Gunawan and Fajar Nugraha	Empowering SMEs with Cloud Computing: Development of a Production Cost Calculation Application for Small and Medium Enterprises
<a href="#">ABS-40</a>	Moh. Hartono, Anggit Murdani and Ramadhan Araya Ismoyo	Product Mass Prediction with Artificial Neural Network Model Approach in Injection Plastic Molding
<a href="#">ABS-41</a>	Stephanus Ivan Goenawan	The Law Of Thermodynamics 2.1 Average Entropy In The Forward Direction Smaller Than The Backward Explaining The Direction Of Forward Time
<a href="#">ABS-42</a>	Muhammad Naufal Pratama, Panji Wisnu Wirawan, Edy Suharto, Beta Noranita and Khadijah	Gaps in Refactoring Duplicate Code Using Automated Refactoring Tool
<a href="#">ABS-43</a>	Dedy Kurniadi, Rahmat Gernowo and Bayu Surarso	Quality Evaluation on Higher Education Research Articles Publication using Artificial Intelligence
<a href="#">ABS-44</a>	Rafli Azra Virendra Azhari, Muhamad Khafidz Haikal, Muhamad Rizki Triyanto, Muhammad Naufal Pratama, Septian Luthfia Sanni, Aris Puji Widodo and Edy Suharto	Software Evolution Analysis Based on Software Changelog
<a href="#">ABS-45</a>	Nixon Daniel Hutahaeon, Irfan Jumadin Siregar, Agnes Sagita Lumbantobing, Parmonangan Rotua Togatorop, Humasak Tommy Argo Simanjuntak and Samuel Indra Gunawan Situmeang	Data Integration Automation from Heterogeneous Data Sources for Smart Farming Data Lake
<a href="#">ABS-46</a>	Nachnul Ansori, Satrio A Kasih and Rullie Annisa	Redesign of Work Facilities Based on Working Posture and Mental Workload to Reduce the Risk of Musculoskeletal Disorder (An Indonesian Case Study)
<a href="#">ABS-47</a>	M. Mujiya Ulkhaq and Daffa Adhimas Nuryawan	Hazard Identification, Risk Assessment, and Risk Control in an Alcohol Warehouse: A Case Study
<a href="#">ABS-48</a>	Wahyudi Agustiono, Khoirur Rifqi, Wahyudi Setiawan and Caroline Chan	Sequential Convolutional Neural Network for Multi-Varieties Rice Seeds Classification
<a href="#">ABS-49</a>	Kurniawan Eka Permana, Abdullah Basuki Rahmat, Eka Mala Sari Rochman, Aery Rachmad and Sigit Susanto Putro	Tourism Recommendation System using User Based Collaborative Filtering



PAPER ID	Authors	Title
<a href="#">ABS-50</a>	Bambang Robi'in, Wahyu Pujiyono, Siwi Purwanti and Jesicha Hety Manika	Serious Game Development for Children Learning to Read Using SAS Strategies
<a href="#">ABS-51</a>	Aeri Rachmad, Mohammad Syarief, Suci Hernawati, Eka Mala Sari Rochman, Husni and Kurniawan Eka Permana	Comparison of ResNet101V2 and ResNet152V2 Architectures in Microscopy-Based Tuberculosis Bacteria Identification
<a href="#">ABS-52</a>	Ibnu Athaillah, Moch. Kholil, Rafika Akhsani, Ismanto Ismanto, Heri Waspada and Muchamad Saiful Muluk	CheckJump: An Approach to Real-Time Pathfinding for 2D Grid-Based Platformer Games
<a href="#">ABS-53</a>	Muhammad Ali Syakur, Eka Mala Sari Rochman, Aeri Rachmad and Ryan Adhitama	Classification of Farmer Groups Using the Fuzzy Analytic Hierarchy Process Method
<a href="#">ABS-54</a>	Hermawan Bin Fauzan, Budi Satoto, Fika Hastarista Rachman, Husni, Eka Mala Sari Rochman and Aeri Rachmad	Conformity Assessment Software as a Service (SaaS) for Developing Supply Chain Management Applications in Small and Medium Enterprises (SMEs) Using Google Apps
<a href="#">ABS-55</a>	Ramadiani Ramadiani, Indah Fitri Astuti and Sri Nurmalasari Adawiyah	Indonesian Signal Language (BISINDO)
<a href="#">ABS-56</a>	Slamet Saefudin, Dini Cahyandari, Ilham Yustar Afif, Samsudi Raharjo, Purnomo and Muh Amin	Increasing the surface roughness of magnesium AZ31B using sandblasting for the preparation of biodegradable implant materials
<a href="#">ABS-57</a>	Fikri Muntaza and Yefry Handoko Putra	Geographic Information System to Determine Distribution and Suitability of Peatland for Pineapple Cultivation in Bengkalis Regency
<a href="#">ABS-58</a>	Eka Mala Sari Rochman, Retno Tri Lestari, Muhammad Ali Syakur, Hermawan Bin Fauzan. Kurniawan Eka Permana and Aeri Rachmad	Identification of Tuberculosis with the Fuzzy Sugeno Method and Diet Recommendations Using the Naive Bayes Method
<a href="#">ABS-59</a>	Budi Dwi Satoto, Achmad Yasid, Faroid, Aghus Setio Bakti, Muhammad Yusuf and Budi Irmawati	Garbage classification using Depthwise Separable Convolution with data augmentation
<a href="#">ABS-60</a>	Ika Oktavia Suzanti, Husni, Fika Hastarista Rachman and Pramintami Cahyaning Sri Mahendra	Enhanced Sorensen Dice Coefficient using POS Tagging for Similarity Detection System
<a href="#">ABS-61</a>	Radisa Hussien Rachmadi and Maria Seraphina Astriani	The Development of a Matchmaking System Through The Use of Reinforcement Learning For Pet Match (PATCH)
<a href="#">ABS-62</a>	Mohammad Hamim Zajuli Al Faroby, Yohanes Setiawan, Mochamad Nizar Palefi Ma'ady, Fitri Rayani Siahaan and Arini Pramesta Setyaningtitah	Stunting Tracking (StunTrack): UI/UX Design Prototype for Learning Childhood Syndrome through Triple Layer Business Model Canvas
<a href="#">ABS-63</a>	Achmad Jauhari, Devie Rosa Anamisa and Fifin Ayu Mufarroha	Implementation of Forecasting Ginger Harvest using Seasonal Autoregressive Integrated Moving Average Method
<a href="#">ABS-64</a>	Fifin Ayu Mufarroha, Devie Rosa Anamisa, Achmad Jauhari, and Triyas Septiyanto	Utilizing Single Exponential Smoothing for Early Detection and Forecasting of Stunting Cases in Madura
<a href="#">ABS-65</a>	Devie Rosa Anamisa, Fifin Ayu Mufarroha, Achmad Jauhari, Muhammad Yusuf, Normalita Eka Ariyanti and Muhammad Hanif Santoso	Performance Analysis of Naive Bayes and Fuzzy K-Nearest Neighbor Methods for Malnutrition Status Classification Systems
<a href="#">ABS-66</a>	Yoenie Indrasary, Metty Verasari and Ary Setijadi	Humanizing Anamnesis Through Information Technology



PAPER ID	Authors	Title
<a href="#">ABS-67</a>	Yeni Kustiyahningsih, Eza Rahmanita, Achmad Khozaimi, Yudha Dwi Putera Negara, Bain Khusnul Khotimah and Jaka Purnama	SCM-SCROM and K-Means approaches for clustering MSME Batik Bangkalan Madura Indonesia
<a href="#">ABS-68</a>	Suharjanto Utomo, Iswanto, Samsul Budiarto and Muhammad Syaiful Muhialhakim	Personnel Information System with FAST Method on Bandung Nurtanio University
<a href="#">ABS-69</a>	Ari Cahyo Nugroho, Ahmad Budi Setiawan, Amri Duna and Bambang Mudjiyanto	Transformation of Indonesian National Television Media: Implementation of Artificial Intelligence Presenters in News Delivery and Program Hosting
<a href="#">ABS-72</a>	Aep Saefullah, Muhammad Arief Noor and Fuad Gagarin Siregar	Effectiveness of Energy Conservation Program in the Industry Sector in Improving the Quality of Human Resources
<a href="#">ABS-73</a>	Wahyudi Setiawan, Haris Muhajir Al Fatih and Yoga Dwitya Pramudita	Transfer Learning for Diploid Haploid Corn Seeds Image Classification using Residual Network
<a href="#">ABS-74</a>	Eka Ardhianto, Veronica Lusiana, Priyo Wibowo, Eko Nur Wahyudi and Edy Supriyanto	A Review of opportunities for Developing Parallel Encryption with Digit Arithmetic of Coverttext Encryption Model
<a href="#">ABS-75</a>	Sri Mulyo Bondan Respati, Agung Nugroho and Syamsidar Ali	Wet Battery Voltage of Different Anode Cathode Materials With Separators Made From Zeolites-Tapioca Starch
<a href="#">ABS-76</a>	Fauziah, Nur Hayati and Lilik Prasetyo	Mapping of Hotspots and Burn Areas Based on QGIS in Relation to Peatland Fire Vulnerability on Sumatra Island
<a href="#">ABS-77</a>	Benyamin Langgu Sinaga, Sabrina Ahmad and Zuraida Abal Abas	On Using Instance Hardness Measures to Select Training Data for Software Defect Prediction
<a href="#">ABS-78</a>	Ade Yusupa, Agus Triarso, Olivia Maria Tumurang and Victor Tarigan	Development of Quiz, Strategy, Adventure and Puzzle Educational Games using the ADDIE (Analysis, Design, Development, Implementation and Evaluation) method by Pusdatin Kemendikbudristek
<a href="#">ABS-79</a>	Rony Wijanarko, Siti Maisyaroh Bakti Pertiwi and Akhmad Pandhu Wijaya	Digital Transformation of Health Services: Implementation of RFID Technology on Polyclinic Patient Cards
<a href="#">ABS-80</a>	Hesty Heryani , Antar Sofyan, Arif Rahman Hakim, and Panggih Prabowo Rona Saputra	Collaboration and Synergy between Regional Government, Universities, and DUDI in Producing Innovation for Commercialization
<a href="#">ABS-81</a>	Ilmam Fauzi Hashbil Alim, Risma Septiana, Erwin Adriono, Arseto Satriyo Nugroho, Agung Budi Prasetijo and Anhar	Pond Management Features in the Vannamei STP UNDIP Shrimp Pond ERP System
<a href="#">ABS-82</a>	Falahah	Conceptual Model of Smart Transportation Architecture for XYZ City
<a href="#">ABS-83</a>	M. Rinkanto, Himsar Ambarita and Farel H. Napitupulu	Analysis of the Effect of Floater Geometry on Lift Force, and Aircraft Drag Force using the Gudmundsson and CFD Methods
<a href="#">ABS-85</a>	Achmad Jauhari, Ika Oktavia Suzanti, Arifatul Maghfiroh, Amelia Nur Septiyasari, Devie Rosa Anamisa, and Fifin Ayu Mufarroha	A K-Medoids Clustering Approach to Controlling Assistance Fund Allocation in Madura
<a href="#">ABS-89</a>	Laeli Kurniasari, Mohammad Djaeni, and Andri Cahyo Kumoro	Ultrasound-Assisted Extraction of Sappan Wood-Kinetic Modeling
<a href="#">ABS-91</a>	Rita Dwi Ratnani, Ahmad Muhyi, Agus Ismanto and Forita Dyah Arianti	Potential Compound Content with Aphrodisiac Effects of Mangrove Plants for Herbal Therapy



PAPER ID	Authors	Title
<a href="#">ABS-92</a>	Sri Utami Handayani, Ojo Kurdi , Subkhi Abdurohman, Didik Ariwibowo, Angger Suryo Prastowo and Tri Yuliani	Design and Strength Analysis of Bracket Structure as Solar Panel Holder Using Finite Element Analysis (FEA) Method
<a href="#">ABS-93</a>	Ika Gita Lestari and Oksil Venriza	Analysis of the stockpiling process at Drum Yard PT. ABC Based on Sampling Aspects
<a href="#">ABS-94</a>	Indah Hartati, Vita Paramita, Farikha Maharani, Lusiana and Laeli Kurniasari	A Brief Review On Aging And Its Combination With Bibliometric Analysis On Cellular Senescence Elimination As Part Of Anti Aging Strategies
<a href="#">ABS-95</a>	Arief Hidayat, Agung Nugroho, Safa'ah Nurfaizin and Agung Riyantomo	Usability Testing on E-Learning using the System Usability Scale (SUS)
<a href="#">ABS-96</a>	Moch S. Mauludin, Zainal Arifin, Anom. R. Birawa, Farrell. J. Regannanta, Muhammad.S. Alfaridzi and Singgih D. Prasetyo	Government Building PLTS System Design Based on HOMER



**ICIMICE 2023**  
International Conference on Informatics, Mechanical, Industrial and Chemical Engineering

**FAKULTAS  
TEKNIK**  
UNIVERSITAS WAHID HASYIM

# ICIMICE 2023 ABSTRACT LIST



[ABS-1]

# **Microstructure and Mechanical Properties of Friction Stir Welding Aluminum AA1100 with Pin Penetration Tool Parameters**

Nur Kholis, Helmy Purwanto, Muhammad Bagus Nuruddin, Agung Nugroho

*Universitas Wahid Hasyim, Semarang, Indonesia*

## **Abstract**

Aluminum is a light metal that has high strength, is resistant to rust, is a fairly good conductor of electricity and aluminum is lighter than iron or steel. AA1100 series aluminum is an aluminum alloy mixed with other materials such as: copper, iron, chrome, manganese and zinc, with an aluminum content of 99.0%. One of the processes for joining aluminum alloys can be done by friction stir welding. This research aims to determine the strength of the physical and mechanical properties of aluminum 1100 after going through friction stir welding with variations in pin depth (plunge depth) of 3 mm 4 mm 5 mm and tool rotation speed of 1000 Rpm. Optical metallography testing is used to see the microstructure and Rockwell hardness testing and universal testing machines to test the mechanics of welded joints. From research conducted, the highest tensile strength occurred at a 5 mm pin depth variation, namely 94.44 MPa, while the lowest tensile strength occurred at a 3 mm depth variation, namely 72.58 MPa. And the highest hardness is found at a pin depth variation of 5 mm, namely 100 HRB, while the lowest hardness value occurs in welded joints with a pin depth variation of 3 mm, namely 47 HRB.

**Keywords:** Aluminium, Friction Stir Welding, pin depth.

**Topic:** Material Engineering



[ABS-6]

# Optimization of Single Radius System Design on Total Knee Arthroplasty for Indonesian's Need

D. Darmanto<sup>1, a)</sup>, M. H. Naufudin<sup>1, b)</sup>, M. A. Wahid<sup>1, b)</sup>,  
R. Novriansyah<sup>2, b)</sup>, R. Ismail<sup>3, b)</sup>

<sup>1</sup>Department of Mechanical Engineering, Faculty of Engineering,  
Wahid Hasyim University, Semarang, Central Java, Indonesia

<sup>2</sup>Department of Orthopaedic and Traumatology, dr. Kariadi Hospital,  
Semarang, Central Java, Indonesia

<sup>3</sup>Center for Biomechanics Biomaterials Biomechatronics and Biosignal processing (CBIOM3S), Diponegoro  
University, Semarang, Central Java, Indonesia

Author Emails

a) [darmanto@unwahas.ac.id](mailto:darmanto@unwahas.ac.id),

b) [hafiz@gmail.com](mailto:hafiz@gmail.com), [mabdulwahid@unwahas.ac.id](mailto:mabdulwahid@unwahas.ac.id), [novriansyahrobin@gmail.com](mailto:novriansyahrobin@gmail.com),  
[rifky\\_ismail@ft.undip.ac.id](mailto:rifky_ismail@ft.undip.ac.id),

## Abstract

Total Knee Arthroplasty abbreviated TKA has been widely used as a way to treat knee joint disorders. The development of a single radius system at TKA is expected to meet the needs of Asians, especially Indonesians. It's used to support religious, social and cultural activities. This study aims to determine the effect of the femoral condyle radius on the range of flexion angles, as well as the TKA stability on the gap difference abbreviated GD. This study uses references from previous study. Variations in the femoral condyle radius that are applied are 21.5 mm, 22 mm, 22.5 mm become reference model, 23 mm, and 23.5 mm. The most optimal TKA design is 23.5 mm on femoral condyle radius. This variant capable of achieving a flexion angle of 164.5 degrees, and stability of GD based shows 1.3 mm. The results of this study indicate a better design, and are expected to provide comfort for patients.

**Keywords:** TKA, Femoral, Single radius, Gap difference

**Topic:** Material Engineering



[ABS-7]

# The Effect Of The Blade Profile On Thrust Of Electric Ducted Fan

Rexy Igusti Redondo<sup>1\*</sup>, Muhammad Dzulfikar<sup>1</sup>, Tabah Priangkoso<sup>2</sup>

*Universitas Wahid Hasyim*

## Abstract

The blade profile for Electric Ducted Fan (EDF) is varied with the aim of knowing the effect of the shape of the blade profile on the thrust that can be generated by the EDF. The profiles used are FX 74-CL5-140, Naca 64(3)-418, and Naca 747A315 obtained from Airfoil Tools. The research method is to design and simulate the EDF with a variety of blade profiles that have been determined using the SOLIDWORKS 2021 software. The highest thrust results were obtained by the EDF with the Naca 747A315 blade profile variation, which is 31.5 Newton at 60000 RPM.

**Keywords:** Airfoil tools, Electric ducted fan, Thrust

**Topic:** Mechanical Design and Construction



[ABS-8]

# Microstructure and Mechanical Performance of Friction Stir Spot Welding to Riveting Process Aluminum AA2024-T3 Plate: Effect of Tool Rotation Speed

Sehono <sup>1, a)</sup> and Ikbal Rizki Putra <sup>1, b)</sup>

*Sekolah Tinggi Teknologi Kedirgantaraan, Yogyakarta, Indonesia*

## Abstract

Abstract. The Changes in the structure of material due to the processing process, and environmental influences can affect mechanical properties of material. Machining, casting, tempering, welding, and hardening processes are widely used to improve materials. Airplanes are a product of a joining process, namely riveting. In this study, the treatment used to perforate 2024-T3 aluminum plates was with Friction Stir Spot Welding Riveting (FSSWR) with variations of rotation of 1350, 1900, and 2500 rpm. The research will be carried out on shear strength, microstructure observations, hardness distribution, and macrostructure results from shear test fractures. The results showed that at 1350 rotation the shear strength value was higher, namely 361 MPa, but the hardness value was relatively the same. The highest Vickers value is in the HAZ section at 2500 rpm rotation, this is a change in the dendrite microstructure due to fast friction causing smaller grain boundaries.

**Keywords:** Friction Stir Spot Welding, AA2024-T3, tool rotation, riveting, microstructure

**Topic:** Material Engineering



[ABS-9]

# Analysis of Sintering Temperature Using Cold Isostatic Pressing Method on Polylactid Acid/Polycaprolactone/Nano Hydroxyapatite Biocomposites

Solechan<sup>(a,b\*)</sup>, Agus Suprihanto<sup>(a)</sup>, Susilo Adi Widyanto<sup>(a)</sup>, Joko Triyono<sup>(c)</sup>

<sup>a)</sup> Department of Mechanical Engineering, Faculty of Engineering, Diponegoro University, Semarang 50275, Indonesia- solechan@unimus.ac.id\*- agusm90@yahoo.com - susilo70@yahoo.com

<sup>b)</sup> Department of Mechanical Engineering, Universitas Muhammadiyah Semarang, Kampus Kedungmundu, Semarang, 50254, Indonesia

<sup>c)</sup> Department of Mechanical Engineering, Sebelas Maret University, Surakarta, 57126, Indonesia- jokotri5528@gmail.com (J.T.)

## Abstract

Internal fixation plates are used for fracture recovery so that they do not shift and deform. Placement of plates to stabilize until the bone heals. The current development of internal fixation plates is made of biocomposite as a substitute for metal materials. PLA+PCL/nHA biocomposite using the cold isostatic pressing method can increase density, decrease porosity, increase bending and tensile strength. One of the main factors affecting the mechanical strength of the internal fixation plate is the sintering temperature. The sintering temperature variations used were 140, 150, and 160oC with the PLA+PCL/nHA biocomposite composition of 80/20 wt%. The aim is to obtain an internal fixation plate with the characteristics and mechanical properties of the femur bone. FTIR test results for a mixture of PLA+PCL, and nHA did not form chemical bonds, this is because PLA has hydrophobic properties which makes it difficult for the matrix surface to bond between materials. There are no sharp crystal peaks and broad valleys, so the crystal structure formed is amorphous, indicating that the material is easily degraded. The sintering temperature of 150oC for the PLA+PCL/nHA blends from SEM photos shows a strong interfacial bond, this can increase the density value and decrease the porosity value. These results are consistent with the results of the bending and compressive tests which experienced an increase of 63.1 N and 20.72 N/mm<sup>2</sup>, but the results of the bending and compressive strength were still below the strength of the femur bone as an implant medium for plate internal fixation.

**Keywords:** internal fixation- nano-hydroxyapatite- bone- temperature

**Topic:** Material Engineering



[ABS-10]

# Quantitative Morphology of Flexible Flat Foot of Young Adults From Scanning of Foot

Yusuf Umardani <sup>1</sup>, Dwi Basuki Wibowo <sup>1</sup>, Agus Suprihanto <sup>1</sup>

*Department of Mechanical Engineering, Diponegoro University, Prof. Soedharto Street, Tembalang Semarang, Indonesia*

## Abstract

Flatfoot can be divided into two types, flexible and rigid flatfoot. Flexible flatfoot is characterized by the arch of the foot collapses during weight bearing. However, during a non-weight-bearing position, this arch can be seen. This study aims to evaluate flexible flatfoot (FFF), which was previously known qualitatively, using Cavanagh's AI. The degree of FFF deformity is done by comparing the AI 2D values of the static footprint results and the AI 3D results from the 3D foot scanner. The instrument footprint scanner is made by ourselves and has been awarded patent No. IDS0000002253, which can generate the AI-2D values. At the same time, the 3D Scanner uses Mini and Scansoft for Foot Orthotic made by Vismach Technology Ltd. China. From the results of the static footprints measurement of 87 subjects obtained, 33 subjects indicated flatfoot (AI up to 0.26) consisting of 27 males and six females, where the AI 2D average value was 0.31 between 0.04, both on the left and right feet. At the same time, the AI 3D average value of 33 subjects was 0.26 between 0.03, both on the left and right feet. Compared to the average AI 2D and AI 3D values, all subjects showed a significant decrease in AI, and there were 19 subjects whose degrees of flatfoot (DOFF) decreased to normal (AI=0.26 to 0.21). The results of this study show that a person with flatfoot with AI 2D between 0.26 until 0.36 (minor to severe) can change his foot type to normal when in an unloaded position (AI 3D average becomes 0.24 between 0.01).

**Keywords:** flexible flatfoot, Cavanagh AI, foot scanning, degrees of flatfoot

**Topic:** Mechanical Engineering



[ABS-12]

# Improving the Integration of Customer and Company Requirements through QFD for Solution Design and Supplier Selection

Praneeth Galhena<sup>1,a)</sup>, Kongkiti Phusavat<sup>1,b)</sup>

<sup>1)</sup>Department of Industrial Engineering, Kasetsart University, Thailand.

## Abstract

Continuous changing technology and customer requirements are challenging companies to be competitive in order to be ahead of business. QFD was identified as a tool that support companies identify customer requirements and convert them to design or product requirements, yet there are drawbacks in the model which makes it sophisticated and undesirable for certain business environments. The objective of the current research is to revise the traditional QFD by addressing its drawbacks and enabling stakeholder requirement identification, prioritization, technical requirement identification and supplier selection through a reliable decision making process, where the end goal is to encourage workplace learning by allowing the company employees to indulge in the revised QFD process and satisfy the stakeholder requirements by providing the best product, service or solution. The roadmap to achieving this target is proposed through an extended methodology that integrates the revised QFD, AHP and focus group discussion. AHP was identified as an ideal technique that can support requirement prioritization decision making by minimizing the subjectivity of individual decision making. This research has utilized an access control case illustration to validate the proposed framework stepwise. The findings were able to highlight the differences between the traditional and revised QFD. Furthermore, future works have been encouraged to improve the methodology, benefits and further development of modernized QFD. In conclusion, the main implication of this research is, utilization of the revised QFD framework for stakeholder requirement identification, solution design and supplier selection can enhance workplace learning, leading to a productive organization.

**Keywords:** QFD- AHP- Stakeholder Requirements- Workplace Learning- Supplier Selection

**Topic:** Information Industry and Management



[ABS-14]

# Application of Black Box Testing and PIECES Framework for Bakamla Messenger Application Development

Hozairi<sup>1,a)</sup>, Buhari<sup>1,b)</sup>, Rofiudin<sup>2,b)</sup>, Furqon Wahyudi<sup>2,b)</sup>, Syariful Alim<sup>2,b)</sup>

<sup>1)</sup>Department of Informatics Engineering, Universitas Islam Madura, Pamekasan, Indonesia

<sup>2)</sup>Department of Informatics Engineering, Universitas Bhayangkara Surabaya, Surabaya, Indonesia

## Abstract

The purpose of this research is to apply the Black Box testing method and the PIECES Framework to develop the Bakamla Messenger application. Black Box testing is used to test the input and output performance of applications that are built, while the PIECES Framework is used to measure the value of whether customers are satisfied with the services provided. The Bakamla Messenger application is built with ten application menus, including: (1) splash, (2) login, (3) register, (4) chat list, (5) group list, (6) contact, (7) message group, (8) private messages, (9) profiles, and (10) profile updates. The results of the Black Box Testing analysis obtained an average value of 96% running successfully and 4% not being successful, in general the application succeeded in achieving positive results. The majority of the app's functionality and features have been tested properly and run successfully. However, there are still several areas that need improvement or adjustment, namely the private and group chat sections when long pressed are unable to display the delete, copy, and reply to commands. While the results of the analysis of user satisfaction obtained an average of each PIECES Framework domain. Domain performance score of 4.51 (very satisfied), domain information and data value of 4.48 (very satisfied), domain economics value of 4.54 (very satisfied), domain control and security value of 4.44 (very satisfied), domain efficiency value of 4.45 (very satisfied), and domain service value of 4.38 (very satisfied) This means that overall, for all domains, the average value of user satisfaction is 4.47 (very satisfied). In general, the Bakamla Messenger application that has been built shows good performance, is reliable, and gives satisfaction to users.

**Keywords:** Bakamla Messenger, Black Box testing, PIECES Framework

**Topic:** Information Technology and System



[ABS-17]

# Optimizing Engine Efficiency: An Artificial Neural Network Approach for Fuel Consumption Reduction through Engine Remapping

Agung Nugroho\*, Randy Cahya Kurnianto, Tabah Priangkoso

*Wahid Hasyim University*

## Abstract

In the pursuit of reducing fuel consumption and carbon emissions, the automotive industry has been exploring ways to enhance engine efficiency. One popular technique is engine remapping, which involves modifying electronic engine settings to optimize performance and fuel efficiency. However, manual engine remapping can be complex, time-consuming, and may not always yield the desired efficiency improvements. As a result, the use of Artificial Neural Network (ANN) simulation has emerged as a promising alternative for optimizing engine remapping. This paper presents a study on the use of ANN simulation in engine remapping to achieve more efficient fuel consumption. The research aims to optimize fuel efficiency by predicting ignition timing mapping using ANN modeling. The study utilizes the TRAINGDA feed-forward backpropagation training method to develop an ANN model and achieve a 10% increase in mileage compared to standard data. The research builds upon previous studies that have demonstrated the effectiveness of ANN in improving fuel efficiency and engine performance. The methodology involves conducting tests on a chassis dynamometer to simulate highway driving conditions. The initial vehicle data is recorded, and fuel consumption tests are performed at various speeds. The fuel consumption results are then used as input data for the ANN program, which predicts optimal ignition timing values. The resulting ignition timing map is incorporated into the engine control unit (ECU) for further testing and evaluation. The study's results indicate that the ANN method effectively reduces fuel consumption at speeds ranging from 10 km/h to 40 km/h. By retarding the ignition timing by 2-730-, the fuel efficiency is improved compared to the standard map. However, at a speed of 50 km/h, the standard ignition timing data is found to yield optimal fuel consumption. The analysis demonstrates a strong correlation between predicted values from the ANN model and experimental measurements, as well as a significant relationship between ignition timing and vehicle speed. In conclusion, the use of ANN simulation in engine remapping offers a promising approach to optimize fuel efficiency and improve overall engine performance. The study highlights the potential benefits of ANN modeling in achieving fuel consumption reduction and suggests avenues for further research in this field.

**Keywords:** Engine efficiency, Fuel consumption, Engine remapping, Artificial Neural Network (ANN), Ignition timing, Chassis dynamometer.

**Topic:** Artificial Intelligence and Data Science



[ABS-18]

# Critical Product Features Identification In Online Reviews Using Sentiment Analysis and Kano Model For Product Quality Improvement

Murahartawaty Arief<sup>1,a)</sup> Noor Azah Samsudin<sup>1,b)</sup>

<sup>1)</sup> Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia, Persiaran Tun Dr. Ismail, Parit Raja, Batu Pahat, Johor, Malaysia.

## Abstract

Online reviews are considered a significant information resource for manufacturers to improve product quality. Integrating sentiment analysis and the Kano model was proposed to identify critical product features, classify customer sentiment, and transform the critical product features into Kano categories. The CRISP-DM methodology is presented in detail with process integration. The effectiveness of the proposed approach is validated by collecting online reviews from e-commerce platform (Amazon.com) and evaluating the performances of the SVM and Naive Bayes classifier under an experimental setup. Results show that SVM outperforms Naïve Bayes in classifying sentiment in online reviews with an accuracy of 79,59%. Noun and noun phrases are considered as the product features terms extracted based on POS Tagging. TF-IDF is applied to determine the weight of product attributes to feature prioritization and transform it into the Kano model. Finally, kano categories with critical product features correlating to customer satisfaction are presented.

**Keywords:** Critical Product Features- Product Quality Improvement, Online Reviews, Sentiment Analysis, Kano Model

**Topic:** Information Industry and Management



[ABS-20]

# Utility Analysis Of The Use Of Hydrant Dispensers In The Aviation Fuel Distribution Process At The Pertamina SHIPS Unit

Zizi Aida<sup>1,a)</sup>, Oksil Venriza<sup>1,b)</sup>

<sup>1)</sup>*Akamigas Energy and Minerals Polytechnic Cepu*

## Abstract

Air transportation is a transportation that is in great demand by the public, so there is an increase in the number of arrivals and departures of both domestic and international flights, especially at Soekarno-Hatta International Airport. This is a benchmark for the Pertamina SHIPS Unit in preparing Avtur filling facilities and facilities at each terminal, one of which is a hydrant dispenser. This study was conducted to know how each type of flight affects the use of hydrant dispensers and the usefulness of the hydrant dispenser. The data used for this study are historical Avtur thru data in the period April 2022-March 2023 and Daily Objective Throughput data for the period April 2022-March 2023. With these data the author can conduct an assessment using the ^Minitab^ software which involves 2 methods that are thought to examine the effect of aviation on hydrant dispensers for 1 year, namely regression and correlation. The results of the average utility of hydrant dispenser usage show that the use of hydrant dispensers in terminal 1 is 80%, terminal 2 is 93.33%, and terminal 3 has 100%. With this it can be concluded that there is excessive utilization that affects the distribution of Avtur.

**Keywords:** Hydrant dispenser, Regression, Correlation, Utility

**Topic:** Information Industry and Management



[ABS-21]

# Monitoring the Location of Visually Impaired People Using the Haversine Method

Indrianto <sup>(a\*)</sup>, Abdurrasyid <sup>(b)</sup>, Meilia Nur Indah Susanti<sup>(c)</sup>

*Faculty of Energy Telematics, Institut Teknologi PLN, Jakarta, Indonesia*

## Abstract

Many researchers make blind people the object of research to help them to provide solutions to the difficulties faced by these people, especially in carrying out daily activities. The oldest foundation that protects blind people in Indonesia is PERTUNI, as well as many other foundations such as the Karya Tunanetra Peduli Bangsa Foundation which has approximately 400 people with visual impairments spread across several regional coordinators in Jabodetabek d Bandung. One of the expectations of the foundation management is to be able to monitor the condition of its members when they are doing outside activities and be able to provide immediate assistance when such members face an emergency. This is the background of the problem that the researchers are trying to solve, by building a portal that can be integrated with visual aids, latitude, and longitude data for people who are registered in the portal, processed using the Haversine Method and Google Maps as support. The haversine formula is an equation that gives the distance of a large circle (radius) between two points on the surface of the sphere (Earth) based on longitude and latitude. Tests were carried out on the system using Blackbox and the accuracy of the haversine method using MAPE is 79% accuracy

**Keywords:** Visually Impaired- Haversine- MAPE- GPS- Location

**Topic:** Information Technology and System



[ABS-26]

# Convective Clouds Classification Based on Weather Forecast for Air Traffic Flow Management in Kualanamu Airport

Sunardi<sup>1, a)</sup>, Syahrul Humaidi<sup>1, b)</sup>, Marhaposan Situmorang<sup>1, b)</sup>, Marzuki Sinambela<sup>2, b)</sup>.

<sup>1</sup>*Department of Physics - Faculty of Mathematics and Natural Sciences,  
Universitas Sumatera Utara, Medan, Indonesia*

<sup>2</sup>*Politeknik Penerbangan Palembang, Sumatera Selatan, Indonesia*

## Abstract

Weather conditions are important information in flight. Extreme weather such as heavy rain, strong winds, and fog can disrupt flight activities, ranging from delays to plane crashes. This study aims to classify and predict extreme weather events at Kualanamu Airport as information for determining Air Traffic Flow Management (ATFM). ATFM is an air traffic management system that is oriented towards optimizing resources, which aims to improve safety, ensure smooth operation, deal with limitations, and harmonize flight operations and traffic. This research was conducted using the Weather Research and Forecasting (WRF) numerical model, Himawari 8 satellite imagery, and observation data from the Kualanamu Meteorological Station on a case study of heavy rain events on 17 January 2021. The results showed that the WRF model was able to predict extreme weather events so that they could be anticipated earlier by the airline traffic operator (Air Traffic Controller). The cloud growth observed in the Himawari 8 satellite image adds information to the location of extreme weather events in the short term.

**Keywords:** ATFM, weather forecasting, aviation safety

**Topic:** Artificial Intelligence and Data Science



[ABS-27]

# Improving Stunting Prediction in Children: Evaluating Ensemble Algorithms with SMOTE and Feature Selection

Agus Byna<sup>1,a)</sup>, Fadhiyah Noor Anisa<sup>2,b)</sup>, Nurhaeni<sup>1,b)</sup>

<sup>1</sup>Information System Department, Science and Technology Faculty, Universitas Sari Mulia, Jl. Pramuka no. 2, Banjarmasin, Indonesia

<sup>2</sup>Midwifery Department, Health Faculty, Universitas Sari Mulia, Jl. Pramuka no. 2, Banjarmasin, Indonesia

<sup>a)</sup>agusbyna@unism.ac.id

## Abstract

Childhood stunting presents a critical challenge to the welfare and health of numerous developing countries, Indonesia included. The phenomenon arises from various factors, including insufficient, excessive, or imbalanced intake of vital energy and nutrients crucial for proper child growth. To address this issue, our study endeavors to develop a predictive model utilizing Machine Learning (ML) techniques. We focus on evaluating three ensemble algorithms on the Banjarmasin Demographic Health dataset to forecast stunting in children under five accurately. To maximize prediction accuracy, we employ SMOTE (Synthetic Minority Over-sampling Technique) and Feature Selection techniques in conjunction with the three algorithms. By doing so, we aim to enhance the performance of our models and attain the most reliable results. Our dataset comprises 457 instances of stunted children, and we carefully select thirteen pertinent features to incorporate into twelve distinct models. Upon thorough analysis, we find that the Decision Tree model with SMOTE and Feature Selection emerges as the most accurate, achieving an impressive 90% accuracy score during testing on 70% of the training data. In contrast, the Random Forest model with SMOTE performs less effectively as the weakest predictor for stunting. As a result of our discoveries, we confidently assert that the Decision Tree model with SMOTE and Feature Selection outperforms the other eleven models utilized in this study to predict stunting status among children under five in Banjarmasin. We intend to expand our research by incorporating more features and data. Additionally, we will explore alternative models, potentially leveraging a combination of Machine Learning and Deep Learning techniques to enhance the predictive capabilities for childhood stunting further. These advancements promise to refine interventions and policy decisions to address this pressing issue and improve the well-being of young children in Indonesia and beyond.

**Keywords:** Stunting, Machine Learning, Decision Tree, SMOTE, Feature Selection

**Topic:** Artificial Intelligence and Data Science



[ABS-28]

# The Extended Kalman Filter Method for Covid-19 Spread Prediction in Indonesia and East Java

Helisyah Nur Fadhilah<sup>1,a)</sup>, Amalia Nur Alifah<sup>1,b)</sup>, Vessa Rizky Oktavia<sup>1,b)</sup>

<sup>1)</sup>Institut Teknologi Telkom Surabaya, Surabaya, Indonesia

## Abstract

The COVID-19 pandemic has caused significant loss of human life worldwide and presented unprecedented challenges to public health, food systems, work, and many other sectors. In this paper, we make short-term predictions beyond the actual data we have using the Extended Kalman Filter (EKF) method. Basically EKF has 2 stages in estimating, the prediction stage and the correction stage. To get short term prediction results, in this paper we make modifications at the correction stage. The COVID-19 mathematical model used in this paper is the SIRD model to see the effect of mobility restriction programs on infection cases. The simulation outcomes demonstrate that mobility restriction programs in Indonesia and East Java can lower infections.

**Keywords:** Extended Kalman Filter, SIRD Model, Covid-19

**Topic:** Artificial Intelligence and Data Science



[ABS-29]

## **Analysis Of Furnace Tube Thickness in Steam Boiler**

Alfian Aulya Rachman, Avita Ayu Permanasari, and Muhammad Dzulfikar

<sup>1</sup>*Department of Mechanical Engineering, Faculty of Engineering,  
Universitas Wahid Hasyim, Jl. Menoreh Tengah X/22 Sampangan, Semarang -Indonesia.*

<sup>2</sup>*Department of Mechanical Engineering, Faculty of Engineering, State University of Malang, Jl. Semarang 5,  
Malang 65145, Indonesia*

### **Abstract**

In the manufacturing industry, to support the operation of processing a product for mosquito coils, laundry soap and processed household products, a mechanical device is needed to produce steam or a steam boiler. The Steam Boiler is a Water Heater Tank type Steam Boiler, which functions to heat water by using heat from the combustion of fuel, the heat from the combustion results is then channeled into the water to produce steam (water vapor which has a high temperature). The problem that occurs is that the tube furnace is a central part because hot steam is often passed through so that it is necessary to check the thickness of the tube furnace to maintain the performance of the Steam Boiler. The purpose of the practical work is to carry out an inspection using the thickness measurement method by comparing the actual thickness with the initial thickness and the standard thickness according to ASME Section I Rules for Construction of Power Boilers Year 2010. The results obtained are initial thickness of 8.2 mm, tube furnace thickness of 4.49 mm with the results of calculating the thickness of the standard SA-192 material: 0.58 mm and SA-106 Gr.B material: 0.29 mm in accordance with the ASME Section I Rules for Construction of Power Boilers standard in 2010. Based on the results of the thickness measurement, the water heater tank steam boiler tube furnace is able to provide good performance in producing production steam needed by the manufacturing industry.

**Keywords:** Please Just Try to Submit This Sample Abstract

**Topic:** Mechanical Engineering



[ABS-31]

# The Effect of Boundary Slip Condition on Cavitation Reduction in a Closed Pocket Hydrodynamic Thrust Bearing

Imam Syafaat <sup>(a,b\*)</sup>, Miftah Andhika Shobirin <sup>(b)</sup>, Agung Nugroho <sup>(b)</sup>,  
Muchammad <sup>(a)</sup>, Mohammad Tauviqirrahman <sup>(a)</sup>, Budi Setiyana <sup>(a,c)</sup>

<sup>a)</sup> *Department of Mechanical Engineering, Faculty of Engineering, Universitas Diponegoro, Jl. Prof. Sudharto No.1, Tembalang, Semarang, Indonesia*

<sup>b)</sup> *Department of Mechanical Engineering, Faculty of Engineering, Universitas Wahid Hasyim, Jl. Menoreh Tengah X/22 Sampangan, Semarang, Indonesia*

*\*imamsyafaat@unwahas.ac.id*

<sup>c)</sup> *Laboratory for Surface Technology and Tribology, Faculty of Engineering Technology, Universiteit Twente, Enschede, The Netherlands*

## Abstract

Many textured bearing geometries have recently been developed to improve the resulting pressure and load support over conventional bearings. Texturing, on the other hand, will cause cavitation on the bearing surface, reducing its performance. The goal of this research is to use computational fluid dynamics to analyze the hydrodynamic pressure generated by thrust bearings. Closed pocket textured thrust bearings have slip in the location before the pocket and in the pocket area. To determine the maximum pressure generated, several variations of the lubricant's minimum film thickness are simulated. The study's findings revealed that the higher the minimum film thickness, the lower the resulting maximum pressure, and vice versa. When compared to the no slip condition, providing a slip at the pocket location has a benefit of between 42.8 and 98.6%. The increase in hydrodynamic pressure is greatest at a minimum film thickness of 50  $\mu\text{m}$ . Although the cavitation does not go away when the slip is inserted into the pocket, the cavitation pressure can be reduced. The formation of a slip position before the pocket has the advantage of significantly reducing cavitation.

**Keywords:** Slip, cavitation, surface texturing, hydrodynamic thrust bearing

**Topic:** Mechanical Design and Construction



[ABS-33]

## Study of Water Absorption of Polymer Composite Using Calcined Eggshell Particle as Green Filler

Sunardi Sunardi <sup>(a)</sup>, Dody Ariawan <sup>(a\*)</sup>, Eko Surojo <sup>(a)</sup>, Aditya Rio Prabowo <sup>(a)</sup>,  
Hammar Ilham Akbar <sup>(b)</sup>, Agung Sudrajad <sup>(c)</sup>, Harjo Seputro <sup>(d)</sup>

<sup>a)</sup> Department of Mechanical Engineering, Universitas Sebelas Maret, Surakarta, Indonesia  
\*dodyariawan@staff.uns.ac.id

<sup>b)</sup> Vocational School, Universitas Sebelas Maret, Surakarta, Indonesia

<sup>c)</sup> Department of Mechanical Engineering, Universitas Sultan Ageng Tirtayasa, Cilegon, Indonesia

<sup>d)</sup> Department of Mechanical Engineering, Universitas 17 Agustus 1945, Surabaya, Indonesia.

### Abstract

Eggshells are a waste that can be reused as a composite material. Eggshell particles have different characteristics when heated at different temperatures and times. Calcination is one of the processes to change the eggshell phase. This study used eggshells treated with calcination at different temperatures and times as filler composites. A particle size analyser (PSA) observed the particle size distribution of eggshells. The percentage of water absorption is one of the observed composite behaviours. The process of making composites is carried out using three stages of the process, namely cold pressing, hot pressing, and curing. The experimental results show that the composite using calcined eggshell particles has no significant effect. The percentage of water absorption is more influenced significantly by the eggshell content in the composite, both in a calcined or uncalcined condition.

**Keywords:** Water absorption- Eggshell- Calcination- Green filler

**Topic:** Material Engineering



[ABS-34]

# IoT-Based Gas Sensors for Monitoring Alcohol Levels Design and Build

Munaf Ismail <sup>1,a)</sup>, Jenny Putri Hapsari <sup>1,b)</sup>, Eka Nuryanto Budisusila <sup>1,b)</sup>, Dedi Nugroho <sup>1,b)</sup>

<sup>1)</sup>Universitas Islam Sultan Agung

## Abstract

Isopropyl ethanol and methanol belong to the same group of alcohols. The latter is usually used as an industrial solvent and not for personal use. Many traditional alcoholic beverage sellers often mix alcoholic beverages known as Oplosan which is a mixed drink that is very dangerous to humans if it contains methanol. Based on this problem it is necessary to construct a device that measures the amount of alcohol in a liquid to classify the type of alcohol. The design and methodology of a gas sensor-based alcohol classification system consists of a series of hardware and software applications. Research and design of an alcohol content measuring instrument using the MQ-3 sensor based on the Wemos mini ESP8266 have been carried out measuring alcohol level. The measurement error value that occurs in this tool is a maximum of 2.75% and a minimum of 0.34%.

**Keywords:** IoT, sensor MQ3, alcohol level

**Topic:** Information Technology and System



[ABS-35]

## Herb Compounds Screening as Meningitis Inhibitor Candidates using Neural Network and Random Forest Methods

Riska Aprilia<sup>1,b)</sup>, Mohammad Hamim Zajuli Al Faroby<sup>2,a)</sup>, Muhammad Adib Kamali<sup>1,b)</sup>, Muhammad Dzulfikar Fauzi<sup>3,b)</sup>

<sup>1)</sup>Information Technology Study Program, Faculty of Information Technology and Business, Institut Teknologi Telkom Surabaya, Indonesia

<sup>2)</sup>Data Science Study Program, Faculty of Information Technology and Business, Institut Teknologi Telkom Surabaya, Indonesia

<sup>3)</sup>Informatics Study Program, Faculty of Information Technology and Business, Institut Teknologi Telkom Surabaya, Indonesia

<sup>a)</sup>Corresponding author: [alfaroby@ittelkom-sby.ac.id](mailto:alfaroby@ittelkom-sby.ac.id)

### Abstract

Meningitis is an inflammation of the meninges that occurs in the protective lining of the brain and spinal cord caused by bacterial, viral, or fungal infections. This disease is difficult to recognize because it has initial symptoms like the flu where the patient has a fever and headache. Current efforts to prevent the disease by strengthening antibodies. Meanwhile, drug candidates for the treatment of this disease still have not found optimal results in reducing mortality due to meningitis. This study aims to find and analyses herbal compound candidates that might be inhibitors of meningitis. Compound data was acquired from a validated open database. The data acquired are smiles of the chemical bond structure of the compounds. In the data processing process, compound feature extraction is required by applying the concept of molecular fingerprint. The results of feature extraction are used as datasets to build classification models by applying the Multilayer Perceptron (MLP) and Random Forest algorithms. The two models are compared, and a more robust model is selected to be used as a prediction model for herbal compound search. The MLP model has a better accuracy of 0.97 compared to the Random Forest model. The results of screening using the MLP learning model obtained Symphytine, cis-Linalool oxide and 3-O-Methylcalopocarpin compounds have the highest probability compared to thousands of other herbal compounds. This candidate compound can be used as a recommendation for drug discovery to treat patients who contract Meningitis.

**Keywords:** Multilayer Perceptron- Random Forest- Herb Compound Screening- Meningitis- Molecular Fingerprint.

**Topic:** Artificial Intelligence and Data Science



[ABS-36]

# Immunity Soil Improvement For Clay Land With Real Time Control Smart Bioildam MA-11 For Agroconcervation System

Nugroho Widiasmadi

<sup>1</sup>Department of Mechanical Engineering, Faculty of Engineering,  
Universitas Wahid Hasyim, Jl. Menoreh Tengah X/22 Sampangan, Semarang -Indonesia.

## Abstract

This research was conducted on clay soils, especially for vegetable plantations, aimed to determine the ability of the soil layer to distribute nutrients and restore soil health and fertility due to the use of chemical fertilizers and pesticides. Through microbial activity that is controlled by spreading through a horizontal biohole, this study observes in real time through a micro controller the changes in soil acidity, infiltration rate, electrolyte conductivity levels and porosity levels through soil infiltration rates. Through simulations with the variable microbial population, it can be seen the level of EC and other parameters against the time of observation in real time. From the observations of graphs and EC standards, it can be seen that the ability of the soil to because until day 45 the soil fertility level has not reached = 1500 uS / cm with a microbial population = 10<sup>3</sup> / cfu. support the planting schedule both during the vegetative growth period and during the generative growth period, so that we will know when is the right time to do: soil recovery, initial planting and when the tubers / flowers / fruit begin to be conditioned. until cooked based on nutrient values observed through sensors that convert analog parameters by the micro controller into digital information transmitted by wifi inreal time. The initial condition before simulating the soil fertility value with the Electrolyte Conductivity (EC) parameter is 744 uS / cm, the simulation results are: Simulation 1: nutrient content for generative growth was achieved on day 27 with fertility level = 1525 uS / cm with Microbial Population 10<sup>8</sup> / cfu. Simulation 2: nutrient content for generative growth was achieved on day 42 at the fertility level = 1500 uS / cm with microbial population = 10<sup>5</sup> / cfu. Simulation 3: nutrient content for generative growth cannot be observed

**Keywords:** biohole , microbial , alluvial, micro controler, soil acidity, infiltration , electrolyte conductivity, bioildam

**Topic:** Mechanical Engineering



[ABS-37]

## **Use of seawater as a lubrication medium for marine engineering equipment with a reciprocal movement system**

Eko Sasmito Hadi <sup>(1),(2)\*</sup>, M R C Putra Hadi <sup>(1)</sup>, Ojo Kurdi <sup>(2)</sup>, Rifky Ismail <sup>(2)</sup>,  
and Mohammad Tauviqirrahman <sup>(2)</sup>

<sup>(1)</sup> *Department Naval Architecture, Faculty of Technology, Diponegoro University*  
\* [ekosasmito@ft.undip.ac.id](mailto:ekosasmito@ft.undip.ac.id)

<sup>(2)</sup> *Department Mechanical Engineering, Faculty of Technology, Diponegoro University*

### **Abstract**

The environmental issue has become one of the crucial points that must be seriously considered in marine engineering operations. There is a significant risk of leakage in the oil-lubricated propeller shaft bearings system or other equipment. This challenge continuous efforts are required to find more environmentally friendly alternatives by replacing oil as the primary lubricating medium. The solution proposed in this paper is an invention that utilizes water as the lubricating medium for marine engineering equipment with a reciprocal movement system at relatively low speeds. Using water as a lubricant can reduce the negative environmental impact, which often leads to damage to marine ecosystems and threats to marine life. This study investigates UHMWPE material's friction and wear characteristics when combined with AISI 316L, conducting wear tests in seawater lubrication conditions using a plate-on-disc tribometer. The findings indicated that the utilization of seawater lubrication led to a reduction in both friction and wear rates for the UHMWPE / AISI 316 pair.

**Keywords:** Water-lubricated bearings, UHMWPE, reciprocal movement system

**Topic:** Mechanical Engineering



[ABS-38]

# The Effect of Composition and Pouring Temperature of Cu-Sn Alloys on Mechanical Properties with Investment Casting Method

Sugeng Slamet <sup>1,a</sup>, Rochmad Winarso <sup>1,b</sup>, Suyitno <sup>2,c</sup>, Indraswari Kusumaningtyas <sup>3,d</sup>

<sup>1</sup> Mechanical Engineering, Universitas Muria Kudus, Gondang manis, PO. Box 53, Bae, Kudus, Indonesia

<sup>2</sup> Mechanical Engineering, Universitas Tidar, Jl. Kapten Suparman 39, Magelang, Indonesia

<sup>3</sup> Departement of Mechanical and Industrial Engineering, Universitas Gadjah Mada, Jl. Grafika No.2 Yogyakarta, Indonesia

## Abstract

Alloy composition and pouring temperature are important parameters that must be considered in the casting process. This study examines the effect of adding tin composition and casting temperature to the mechanical properties of hardness, tensile strength, and bending strength of CuSn alloys. Metal casting is carried out using the investment casting method. The material used is Cu (20, 22, 24)wt.%Sn with a pouring temperature of  $T_{p1}=1000^{\circ}\text{C}$  and  $T_{p2}=1100^{\circ}\text{C}$ . Specimens are produced through molds with wax patterns which are then coated with clay ( $\text{SiO}_2$ ). The dimensions of the mold have a length of 400 mm with variations in the thickness of the mold cavity 1.5, 2, 3, 4,5 mm. The addition of composition and pouring temperature can increase the hardness of the Cu-Sn alloy, while the tensile strength and bending strength decrease. This indicates that the ductility decreases with increasing hardness.

**Keywords:** Cu-Sn, investment casting, composition, pouring temperature, mechanical properties

**Topic:** Material Engineering



[ABS-39]

# Empowering SMEs with Cloud Computing: Development of a Production Cost Calculation Application for Small and Medium Enterprises

Diana Laily Fithri <sup>1,a)</sup>, Nita Andriyani <sup>1,b)</sup>, Sri Mulyani <sup>1,b)</sup>, Budi Gunawan <sup>1,b)</sup>,  
Fajar Nugraha <sup>1,b)</sup>

<sup>1)</sup>Universitas Muria Kudus

## Abstract

Significant improvements in information technology have opened up new opportunities for Micro, Small and Medium Enterprises (SMESs) to improve their operational efficiency. One important aspect in SMES management is the calculation of the Cost of Production (HPP), which plays a role in determining product selling prices. Despite this importance, many SMESs still face difficulties in calculating COGS accurately and efficiently, often leading to improper pricing and a negative impact on profitability. In this context, this study aims to develop an application based on Cloud Computing Software as a Service (SaaS) that can help SMESs calculate COGS more effectively. Cloud Computing SaaS provides the advantages of accessibility, scalability and low costs, which will be very beneficial for SMESs who generally have limited resources. The main objective of this research is to develop an application that makes it easier for SMEs to calculate COGS, with a focus on accuracy and efficiency. This application is designed to reduce technical barriers and knowledge limitations that are often faced by SMES owners in carrying out manual calculations. In addition, this study also aims to analyze the impact of using this application on the price decision-making process and the profitability of SMEs. The benefit of this research is to offer concrete solutions to overcome the obstacles faced by SMESs in calculating the COGS. With this Cloud Computing SaaS-based application, SMESs can access sophisticated calculation platforms without the need to invest significant time and resources. It is hoped that the use of this application will lead to more accurate pricing, increased profitability and sustainable growth for SMESs. This research method will adopt an iterative-based software development approach, with steps involving SMES needs analysis, application design, development, testing, and implementation. Data obtained from SMES participants using this application will be analyzed to evaluate its effectiveness and impact. Results It is hoped that the results of this study will be in the form of a Cloud Computing SaaS-based HPP calculation application that can be accessed by SMESs. The use of this application is expected to improve the accuracy of HPP calculations, reduce human error, and provide better guidance in making price decisions. In addition, it is hoped that there will also be an increase in the profitability of SMESs using this application.

**Keywords:** HPP, SMES, Cloud Computing, SaaS, Application Development.



[ABS-40]

# Product Mass Prediction with Artificial Neural Network Model Approach in Injection Plastic Molding

Moh. Hartono <sup>(a\*)</sup>, Anggit Murdani <sup>(a)</sup>, Ramadhan Araya Ismoyo <sup>(a)</sup>

<sup>a)</sup> *Department of Mechanical Engineering, State Polytechnic of Malang, Jl. Soekarno Hatta, No. 9, Malang 65141, Indonesia*

*\*moh.hartono@polinema.ac.id*

*anggitm@polinema.ac.id*

*rama.araya14@gmail.com*

## Abstract

Nowadays, the injection molding process is proliferating, which is characterized by the rise of standard equipment produced by injection molding, such as household appliances, carpentry tools, and medical equipment. Setting process parameters significantly affects product quality, especially packaging products that consider product mass. This study aims to minimize product mass and provide optimal parameter recommendations. The method built in this research is the Artificial Neural Network (ANN) model, which is one of the branches of Artificial intelligence (AI) with this modeling, several experiments were analyzed to predict the mass of products from an injection molding process accurately and precisely. The results of this study show that the ANN model can predict the mass of the product accurately with a low RMSE value. In addition, experiment III shows the results with the lowest product mass compared to experiments I and II.

**Keywords:** ann, optimal, injection, molding, model

**Topic:** Mechanical Engineering



[ABS-41]

# **The Law Of Thermodynamics 2.1 Average Entropy In The Forward Direction Smaller Than The Backward Explaining The Direction Of Forward Time**

Stephanus Ivan Goenawan

*Department of Industrial Engineering, Atma Jaya Catholic University Of Indonesia  
Cisauk BSD Highway, Tangerang Indonesia*

## **Abstract**

The Law of Thermodynamics 2.1 is a further development of the Law of Thermodynamics 2.0. The Law of Thermodynamics 2.1 states that the average value of total entropy in the working process of the forward system is less than or equal to the average value of the entropy in the active process of the backward system. Proving the Law of Thermodynamics 2.1 can be done mathematically using the calculus method, a multilevel sum of discrete data, and linear regression. The implication of the Law of Thermodynamics 2.1 shows that with the same temperature trace, the working process of the forward system will require smaller average energy than the work process of the backward system and this result is correlated to the direction of forward time.

**Keywords:** Thermodynamics- Entropy- Average Entropy

**Topic:** Mechanical Engineering



[ABS-42]

# Gaps in Refactoring Duplicate Code Using Automated Refactoring Tool

Muhammad Naufal Pratama <sup>(a)</sup> Panji Wisnu Wirawan <sup>(a)</sup> Edy Suharto <sup>(a)</sup> Beta  
Noranita <sup>(a)</sup> and Khadijah <sup>(a)</sup>

*(a) Departement of Computer Science/Informatics, Universitas Diponegoro, Indonesia*

## Abstract

Refactoring denotes a change to the software code's structure without changing the code's functionality. Software developers can perform refactoring either manually or by using tools. Although refactoring tools can help developers, recent research reveals that developers are still reluctant to use refactoring tools. This raises the question of why developers are still reluctant to refactor their code using tools. This study aims to specify the extent to which refactoring tools can perform refactoring so that from here, it can be seen the reasons why developers do not want to use refactoring tools. Refactoring tool developers and researchers can use the reasons acquired to create a more comprehensive refactoring tool that can meet the needs of refactoring tool users. Refactoring in this study was carried out on one hundred and two duplicate code sections distributed on eight different software source codes. The refactoring tools tested in this research are PhpStorm, Eclipse, and Komodo. This study's results indicate that out of 306 tests performed, the refactoring tool can fully automatically refactor 53 duplicate code sections, a combination of manual and automatic refactoring on 123 code sections, but failed in 130 code sections. This proves a gap between the need for refactoring from a software developer's point of view and the tool's capabilities. Another gap found in this research, i.e., existing refactoring tools, can only work in a few programming languages. Those are reasons why software developers are still reluctant to automate refactoring using refactoring tools. The results of this study can be used for refactoring tool developers and researchers in developing the features and capabilities of refactoring tools in the future so that later refactoring tools become tools that are used massively, not just tools made for use by a few users

**Keywords:** gap, refactoring, automatically, tool, duplicate code

**Topic:** Information Technology and System



[ABS-43]

# Quality Evaluation on Higher Education Research Articles Publication using Promethee II Algorithm

Dedy Kurniadi<sup>1,a)</sup>, Rahmat Gernowo<sup>1,b)</sup>, Bayu Surarso<sup>1,b)</sup>

<sup>1)</sup>Doctoral Information System, Universitas Diponegoro

## Abstract

Evaluating the quality of research article publications from universities is essential, given the sharp increase in international article publications. This quality assessment is a complex and critical process in the world of higher education to identify universities contributing to global-level research. One primary aspect of assessing university quality based on international publication output is the quantity of scholarly publications produced by the university. Universities that are actively engaged in research and produce numerous publications tend to have a greater contribution. However, it's important to note that a high quantity of publications does not necessarily guarantee high publication quality. Data for this research was collected from the Scopus database using the Application Programming Interface (API). To determine publication quality, a journal rank database was constructed using Integration Scimago Journal Rank data. The research utilized the Promethee II algorithm to identify the best alternatives among Indonesian universities, ranking them based on the quality of their international publications. The results of this research yielded an integrated system with Scopus and Scimago Journal Rank databases, ranking the top 25 universities in Indonesia. From the research, a total of 326,000 indexed articles from these 25 universities were obtained. Subsequently, Promethee II ranking was applied, resulting in the University of Indonesia securing the top position with a net flow value of 0.85. Following that, the University of Diponegoro ranked second with a net flow value of 0.15. The third position was held by Binus University with a net flow value of -0.0158267 among the 25 universities in Indonesia.

**Keywords:** Quality Systems, API, Promethee II, Net Flow, Rank

**Topic:** Artificial Intelligence and Data Science



[ABS-44]

## Software Evolution Analysis Based on Software Changelog

Rafli Azra Virendra Azhari<sup>1,a)</sup>, Muhamad Khafidz Haikal<sup>1,b)</sup>, Muhamad Rizki Triyanto<sup>1,b)</sup>, Muhammad Naufal Pratama<sup>1,b)</sup>, Septian Luthfia Sanni<sup>1,b)</sup>, Aris Puji Widodo<sup>1,b)</sup>, Edy Suharto<sup>1,b)</sup>

*Department Of Informatics, Faculty of Science and Mathematics, Diponegoro University  
Jalan Prof. Jacob Rais, Tembalang Semarang - 50275, Jawa Tengah, Indonesia  
a)rafliazra@students.undip.ac.id*

### Abstract

Evolution is phenomena that are difficult to predict, including in the field of software. The evolution of software involves numerous factors and variables, such as technological advancements, the acceleration of computing power, and the need to adapt to users' requirements in their respective eras. This can lead to exponential growth in the complexity of existing software. In order to help software developers in developing their software in conjunction with maintaining and evolving their software to become better software, this paper will analyze a software's development and evolution to illustrate its evolutionary history. The software history evolution can be caught from the software's changelog messages. The software evolution analysis is based on Chapin Model and Lehman's law. The result from this paper can be utilized for further software development.

**Keywords:** Changelog, Evolution, Maintenance, Redis, Software.

**Topic:** Artificial Intelligence and Data Science



[ABS-45]

## **Data Integration Automation from Heterogeneous Data Sources for Smart Farming Data Lake**

Nixon Daniel Hutahaean- Irfan Jumadin Siregar- Agnes Sagita Lumbantobing-  
Parmonangan Rotua Togatorop- Humasak Tommy Argo Simanjuntak- Samuel  
Indra Gunawan Situmeang

*Institut Teknologi Del*

### **Abstract**

Smart Farming combines Information and communication technologies (ICT) with traditional agricultural practices to improve the quality and quantity of agricultural products. These ICTs could be Unmanned Aerial Vehicles (UAVs) or drones, artificial intelligence, robots, and sensors. In Smart Farming systems, various data types are needed, such as food prices, sensors, weather, images, and video. The data can be structured, semi-structured, or unstructured. Therefore, a system that can integrate Smart Farming data with versatility characteristics is needed to empower various types of analysis. In this study, the authors suggested using a Smart Farming Data Lake System based on Apache Airflow as data integration automation technology, Hadoop Distribution File System (HDFS) as data storage technology, and Metabase as dashboard technology. The evaluation result shows that all the data lake system functionality can run smoothly. In addition, the experimental results show that the implemented system can operate stably and without crashes within a time range of 1 hour with process intervals every 5 minutes.

**Keywords:** Data Lake- Smart Farming- Big Data- Data Integration- Heterogeneous

**Topic:** Information Technology and System



ABS-46]

# Redesign of Work Facilities Based on Working Posture and Mental Workload to Reduce the Risk of Musculoskeletal Disorder (An Indonesian Case Study)

Nachnul Ansori, Satrio A Kasih, Rullie Annisa

*Universitas Trunojoyo Madura, Indonesia*

## Abstract

The work activity of the ventomatic rotary packer machine operator at PT. X is the packaging of the cement products which has both 40 kg and 50 kg weight. Technically, the operator installs the packaging by hooking the edge of the packaging to the hook of the ventomatic rotary packer machine in a short time (3 seconds) which is done during 7 working hours repetitively. The movements of the arm and finger segments on the left and right hands are not the same, however, it depends on the work activity. The length of work with repetitive movements and the static work postures makes the high risk of musculoskeletal disorders (MSDs). It also will have a serious level of boredom (mental load) experienced by workers. Therefore, this condition requires efforts to improve the operator's working posture. This research was conducted to redesign the work facility of the ventomatic rotary packer machine based on the results of the Rapid Upper Limb Assessment (RULA). The design of work facilities used CATIA V5 software. The mental load was evaluated based on the weighted workload of the National Aeronautics and Space Administration - Task Load Index (NASA-TLX). Two operators were involved to assess posture and workload in the workplace. The results of the posture evaluation showed that there was a high risk to the wrists, neck, and back when picking up the packaging. The mental workload experienced by workers showed a high category of mental workload. The high mental workload may be due to the low variety of work postures performed (too monotonous). Therefore, efforts to minimize physical and mental loads by designing the sit and stand chair with a seat seater feature that can rotate and can be adjusted in height, redesigning the packaging area with trolley wheels so it can be moved in position according to the operator. Last, there was an improvement in the posture performance of operators before and after the redesign of work facilities.

**Keywords:** MSDs, RULA, WWL, redesign, CATIA V5

**Topic:** Mechanical Design and Construction



[ABS-47]

# Hazard Identification, Risk Assessment, and Risk Control in an Alcohol Warehouse: A Case Study

M. Mujiya Ulkhaq and Daffa Adhimas Nuryawan

*Department of Industrial Engineering, Diponegoro University*

## Abstract

The alcohol warehouse at PT Phapros Tbk, Semarang, functions as a storage area for chemical raw materials-especially alcohol-used in a production process. In this sense, obviously, the warehouse has a high potential to cause a significant hazard because it contains flammable, reactive, and toxic materials. However, the company has not ever assessed the risk and hazard of the warehouse. Therefore, this study attempts to identify the potential hazard, to assess the associated risk, as well as to control the risk. The hazard identification, risk assessment and risk control (HIRARC) is used to achieve the objective of the study. This study highlights: hazard identification (including finding potential hazards), risk assessment (defining the risks and rating which is linked to the hazard based on severity and likelihood), and risk control (controlling of hazards and associated risks with the hazard). Three main activities in the warehouse, i.e., receiving, maintenance, and transferring materials, are evaluated. Result shows that in the receiving materials activity, about 3.45% of the potential risk is classified as an extreme risk and 37.93% of the potential risk is classified as high risk- while in the maintenance and transferring materials, respectively, about 44.44% and 54.17% of the identified risk are classified as high risk (no extreme risk is identified in these two activities). Finally, recommendations are provided to control the high and extreme risks to minimize hazards and associated risks.

**Keywords:** alcohol warehouse, HIRARC, hazard identification, risk assessment, risk control

**Topic:** Process System Engineering



[ABS-48]

# Sequential Convolutional Neural Network for Multi-Varieties Rice Seeds Classification

Wahyudi Agustiono, Khoirur Rifqi, Wahyudi Setiawan and Caroline Chan

*University of Trunojoyo madura*

## Abstract

Rice is one of the most significant staple foods worldwide that comes in a variety of textures, aromas, and flavors. Seed selection is the early step that can significantly impact the quality and yield pest resistance crop during rice cultivation. With the current climate changing patterns, farmers need to know which seed varieties offer resistance or tolerance to common pests and diseases in their region. However, it has been uneasy for farmers, especially those in resource-constrained or remote areas, have limited knowledge and access to information regarding seed selection. This research, therefore, aims to develop deep learning model for the rice seeds classification. The experiment made use of publicly available Koklu data, which included five classes and consist of 75,000 images. Because each class includes 15,000 images, the data is balanced. Data segmentation, pre-processing, and classification are all part of the research process. In the beginning, data was divided into 70:15:15 training, validation, and testing sets. Following that, image scaling to 175 was done as part of the preprocessing, and classification was done with a Sequential Convolutional Neural Network (CNN). Two Sequential CNN models were employed in this study: vanilla CNN and modified VGG16. The modified VGG16 performed best in the experiments, with an accuracy of 0.9960, precision of 0.9980, recall of 0.9980, and f1-score of 0.9955.

**Keywords:** Convolutional Neural Network, Modified VGG16, Rice Seeds, Classification, Vanilla CNN,

**Topic:** Machine Learning and Deep Learning



[ABS-49]

# Tourism Recommendation System using User Based Collaborative Filtering

Kurniawan Eka Permana, Abdullah Basuki Rahmat, Eka Mala Sari Rochman,  
Aery Rachmad, Sigit Susanto Putro

*Department of Informatic, Faculty of Engineering, University of Trunojoyo Madura*

## Abstract

This study investigates the design and evaluation of a tourism recommendation system based on user-based collaborative filtering. The study makes use of the Indonesia tourism destination dataset obtained from Kaggle, which includes user ratings for a diverse range of tourist destinations around Indonesia. The dataset, which includes ratings from 300 users on a scale of 1 to 5, serves as the foundation for the proposed methodology. The approach is made up of several key stages, beginning with data loading and transformation into a matrix format. To improve suggestion accuracy, user ratings are normalized based on the average rating of each user, taking into consideration individual rating tendencies. Then, cosine similarity measurements are used to identify people with similar tastes, with missing values addressed before calculating similarity scores. The method suggests tourism destinations to users during the recommendation phase using a weighted average of user similarity scores and place ratings. The performance of the recommendation system is evaluated by calculating Root Mean Square Error (RMSE) and analyzing prediction accuracy. Several scenarios are thoroughly investigated, each with a different number of top neighbors considered for predictions. Surprisingly, the scenario containing the top 20 neighbors produces the best results, with the lowest RMSE of 0.3646, showing much improved prediction accuracy. The methodology has potential for additional developments in tourism recommendation systems, with the RMSE metric confirming the system's effectiveness

**Keywords:** Recommendation System- Collaborative Filtering - User Based Collaborative Filtering

**Topic:** Artificial Intelligence and Data Science



[ABS-50]

# Serious Game Development for Children Learning to Read Using SAS Strategies

Bambang Robi'in, Wahyu Pujiyono, Siwi Purwanti, Jesicha Hety Manika

*Universitas Ahmad Dahlan*

## Abstract

Reading and writing at the elementary school level are part of language skills. Based on a survey at SD Muhammadiyah Ambarketawang 3 and SDN Balirejo in Yogyakarta, we found problems in elementary schools: more than 60% of grade 1 students could not read, and grade 2 students could not read fluently. The problems are due to the lack of attention and guidance from parents at home, lack of interest in student learning, at least the duration of student learning hours, and not maximally fulfilling student learning needs due to the COVID-19 pandemic, so learning strategies and learning styles change. Many game applications have been developed, but only some are effective and suitable for improving students' reading learning. Student learning styles are heavily influenced by gadget technology that has features to support game applications. Educational games can increase students' knowledge because they provide learning that can be adapted to students and provide automatic feedback, thereby increasing learning motivation. The analysis results show that two factors influence game-based learning: the gameplay factor (how to play) and the storyline (game story). In developing games that effectively improve children's reading skills, it is necessary to adopt appropriate learning techniques to design content, gameplay, and storylines. One of these techniques is SAS. The learning strategy using the Synthetic Analytical Structure method is an effective method to improve the ability to learn to read and write initially. This research focuses on developing 'alfabeta' games using SAS strategies to learn to read in a fun way.

**Keywords:** Serious Game- SAS- Learn to read- GDLC- Alfabeta

**Topic:** Information Technology and System



[ABS-51]

# Comparison of ResNet101V2 and ResNet152V2 Architectures in Microscopy-Based Tuberculosis Bacteria Identification

Aeri Rachmad<sup>\*</sup>, Mohammad Syarief, Suci Hernawati, Eka Mala Sari Rochman, Husni, Kurniawan Eka Permana

*University of Trunojoyo Madura*

## Abstract

Tuberculosis (TB) is a preventable and treatable infectious disease, but it remains a serious problem in countries at risk, such as those with poverty and limited access to healthcare services. Caused by the bacterium *Mycobacterium tuberculosis*, TB can be fatal without proper treatment. Accurate early identification is challenging, despite prevention efforts being made. The primary method for detecting TB is by identifying bacteria in sputum samples using a microscope, but there are weaknesses such as varying interpretations and inconsistent image quality. Convolutional Neural Networks (CNN) have shown potential in improving the accuracy of identifying TB bacteria in microscopic images. This study compares the performance of two CNN architectures, ResNet101V2 and ResNet152V2, in identifying TB bacteria in microscopic images. ResNet152V2 shows better results with an accuracy of 83.86%, precision of 100.00%, recall of 66.39%, and an F1-score of 80.00%. Despite requiring longer computational time, efficiency remains high, demonstrating strong potential for medical applications. Future research can explore variations in architecture and parameters for even more optimal results.

**Keywords:** Tuberculosis, Convolutional Neural Networks, ResNet101V2 and ResNet152V2

**Topic:** Machine Learning and Deep Learning



[ABS-52]

## CheckJump: An Approach to Real-Time Pathfinding for 2D Grid-Based Platformer Games

Ibnu Athaillah<sup>1,a)</sup>, Moch. Kholil<sup>1,b)</sup>, Rafika Akhsani<sup>1,b)</sup>, Ismanto Ismanto<sup>1,b)</sup>,  
Heri Waspada<sup>1,b)</sup>, Muchamad Saiful Muluk<sup>1,b)</sup>

*Department of Multimedia  
Akademi Komunitas Negeri Putra Sang Fajar Blitar  
Jl. Dr. Sutomo 29, Blitar 66133, Indonesia*

### Abstract

This research proposed a solution for game developers that are building a 2D grid platformer game that requires characters that are able to intelligently find a way to navigate levels through various movements. This research is based on an unannounced platformer game that is currently under development and uses the defined input handling and jump mechanics. The pathfinding task is done by utilizing the A\* algorithm and movement sequence with Finite State Machine. Vertical movement predictions can be made with precision by using the built-in Physics system to replicate physics-affected movements outside of the real-time frame. This solution is tested on varied levels, each with a different size and complexity. In terms of capability, NPC has been shown to be capable of performing a sequence of horizontal or vertical movements in order to reach its target. In terms of performance, there isn't any noticeable impact on memory usage. However, the number of extra frames required for mapping is proportional to the number of cells in the level. Fortunately, this is a task that can be done sparingly without impacting functionality. The pathfinding process itself, including the NPC movement, does not have any noticeable performance impact. This technique has the flexibility of real-time adjustments to changes in the level layout and can be used as an option for developers looking for a platformer pathfinding solution.

**Keywords:** Platformer Game- Non-Player Character- Pathfinding-

**Topic:** Artificial Intelligence and Data Science



[ABS-53]

# Classification of Farmer Groups Using the Fuzzy Analytic Hierarchy Process Method

Muhammad Ali Syakur, Eka Mala Sari Rochman, Aeri Rachmad, Ryan Adhitama

*Departement of Informatics, Faculty of Engineering, University of Trunojoyo Madura, Bangkalan, Indonesia*

## Abstract

Abstract, Agriculture is a sector that has an important role in the economy in Indonesia. The location of the State of Indonesia itself is on the equator which makes the land fertile and suitable as agricultural land. To increase agricultural productivity, the role of farmer groups is needed. Farmer groups with a high class have the opportunity to produce high productivity as well. Farmer group classes are divided into four, namely beginner, advanced, intermediate, main. To determine the class of each farmer group, it is necessary to select from the Department of Agriculture with assessment indicators, namely planning, organizing, implementing activities, evaluating and reporting as well as leadership. With so many indicators used, the Fuzzy Analytic Hierarchy Process method was chosen as the weighting and checking of weight consistency. The results of this study are a system that can measure the performance of farmer groups based on existing criteria and produce a final score which will be a benchmark in determining the class of the farmer group to be beginner, advanced, intermediate and primary. Out of a total of 131 farmer groups, 5.3% were in the beginner class, 26.7% in the advanced class, 66.4% in the middle class and 1.5% in the main class. This system also produces a fairly high accuracy value of 94.65%.

**Keywords:** Classification, Farmer Group Performance Transfer, Fuzzy Analytic Hierarchy Process

**Topic:** Machine Learning and Deep Learning



[ABS-54]

# Conformity Assessment Software as a Service (SaaS) for Developing Supply Chain Management Applications in Small and Medium Enterprises (SMEs) Using Google Apps

Hermawan Bin Fauzan, Budi Satoto, Fika Hastarista Rachman, Husni, Eka Mala Sari Rochman, Aeri Rachmad

*Trunojoyo University of Madura*

## Abstract

Software as a Service (SaaS) represents a prominent cloud computing platform utilized to facilitate the efficient development of software applications via the internet. Given the constraints that Small and Medium Enterprises (SMEs) face with regard to limited infrastructure, operational expenditures, and IT resources, these enterprises can derive substantial benefits from the SaaS offerings furnished by Google Apps to enhance their operational efficiency. In this study, we employ the Agile Software Development Life Cycle (ASDLC) process stages to systematically construct Supply Chain Management applications tailored to SMEs, harnessing the diverse array of SaaS functionalities provided by Google Apps. To measure the quality of development process, we present the performance metrics through the examination of various Software Quality (SQA) and also form the quality of application outcome use Technology Acceptance Model (TAM) variables. This assessment takes into account the utilization of the manifold SaaS component features offered by Google Apps within the ASDLC framework where it has resulting in exceptionally high quality and satisfactory values, making it suitable for testing and implementation for SMEs.

**Keywords:** Software as a Service (SaaS), Agile Software Development Live Cycle (ASDLC), Small Medium Enterprises (SMEs), Supply Chain Management (SCM), Google Apps, Software Quality (SQA), Technology Acceptance Model (TAM).

**Topic:** Information Technology and System



[ABS-55]

## Indonesian Sign Language (BISINDO)

Ramadiani Ramadiani, Indah Fitri Astuti, Sri Nurmalasari Adawiyah

*Informatics Department, Engineering Faculty of Mulawarman University*

### Abstract

Sign language is a tool used to communicate with other deaf people by using hand movements, gestures, and bodies that make symbols that mean a letter or term. Indonesian Sign Language (BISINDO) is the language promoted by the Indonesian Deaf Welfare Movement and developed by the deaf community so that BISINDO becomes an easy and effective communication system because BISINDO was born by the deaf themselves. The purpose of this study is to apply User-Centered Design to the website-based basic level Indonesian Sign Language learning application at the Association of Deaf Children Samarinda to be able to communicate and as a medium for learning sign language so that they can discuss with the deaf. The method used is User Centered Design, which is a system design method that focuses on user needs. The data used consisted of 77 basic-level words, namely 26 letters (A-Z), 10 numbers (1-10), 8 greeting words, 6 question words, 9 color words, 5 taste words, and 13 family words. In this website-based sign language application, community users can find out about the Association of Deaf Children Samarinda, Indonesian Sign System, and Indonesian Sign Language. In addition, community users can learn a dictionary of letters, numbers, greeting words, question words, colors, tastes, and families as well as practice sign language. The results of usability testing and black box testing show that all features and functions on the website run as expected.

**Keywords:** Indonesian Sign Language, User-Centered Design, Deaf People

**Topic:** Information Technology and System



[ABS-56]

# **Increasing the surface roughness of magnesium AZ31B using sandblasting for the preparation of biodegradable implant materials**

Slamet Saefudin, Dini Cahyandari, Ilham Yustar Afif, Samsudi Raharjo,  
Purnomo, Muh Amin

*Universitas Muhammadiyah Semarang*

## **Abstract**

The development of implant biomaterials has become the focus of research in the fields of materials engineering and medicine. Magnesium-based biomaterial AZ31B has been identified as a potential candidate for making bone implants that can speed up the healing process. However, its smooth surface characteristics need to be improved to increase binding strength and interactions between tissues so as to increase biocompatibility. Increasing the surface roughness of AZ31B magnesium also plays an important role in increasing the adhesion of the protective layer. One method that has been proven effective in increasing the roughness of metal surfaces is sandblasting. This research discusses the sandblasting process to increase the roughness and changes in properties that occur on the surface of AZ31B magnesium as a preparation for implant biomaterial. Variations in pressure, distance, angle and abrasive material are the main parameters in the sandblasting process. Variations in the sandblasting process were analyzed by testing roughness, hardness, scanning electron microscope (SEM) and Energy Dispersive X-ray Spectroscopy (EDX). The research results show that variations in sandblasting parameters have a significant effect on the roughness and morphology of the sample surface.

**Keywords:** Implant, Magnesium AZ31B, Sandblasting, Surface Modification

**Topic:** Material Engineering



[ABS-57]

# Geographic Information System To Determine Distribution And Suitability Of Peatland For Pineapple Cultivation In Bengkalis Regency

Fikri Muntaza<sup>(a\*)</sup>, Yefry Handoko Putra<sup>(b)</sup>

*<sup>a)</sup> Departement Magister Sistem Informasi  
Universitas Komputer Indonesia  
Bandung, Indonesia*

*fikri.75120007@mahasiswa.unikom.ac.id*

*<sup>b)</sup> Departement Magister Sistem Informasi  
Universitas Komputer Indonesia  
Bandung, Indonesia  
yeffryhp@unikom.ac.id*

## Abstract

Abstract- The Bengkalis Regency has highly flammable peat soil, especially during the dry season. One of the precautionary measures that can be taken is cultivating pineapples to protect the peatland from fires. Currently, the peatland in Bengkalis Regency covers a vast area of 800,017.67 hectares. Based on observations of plantations on peatland and various studies on this soil type, properly managed peat soil in Bengkalis Regency holds significant potential as a resource for pineapple cultivation. The method employed in this research involves an object-oriented approach, and for its development, a prototype method is utilized. The results indicate that Geographic Information Systems (GIS) can serve as a visualization tool, effectively combining graphical (spatial) data with textual (attribute) data to map suitable areas for pineapple cultivation.

**Keywords:** PleaGeographic Information System, Peatland, Pineapple Cultivati  
This Sample Abstract

**Topic:** Information Technology and System



[ABS-58]

# Identification of Tuberculosis with the Fuzzy Sugeno Method and Diet Recommendations Using the Naive Bayes Method

Eka Mala Sari Rochman, Retno Tri Lestari, Muhammad Ali Syakur, Hermawan Bin Fauzan, Kurniawan Eka Permana, Aeri Rachmad

*University of Trunojoyo Madura*

## Abstract

The development of tuberculosis, according to the World Health Organization (WHO) in 2014, stated that it was estimated to affect 9.6 million people, with 12% of them being HIV-positive. Tuberculosis is a directly communicable disease caused by the tuberculosis bacterium (*Mycobacterium Tuberculosis*). Tuberculosis bacteria can be transmitted through physical contact, the air, the sputum of patients, and so on. Currently, many people are unaware of the early symptoms and dangers of tuberculosis, so an expert system is needed to diagnose tuberculosis early and provide dietary recommendations that can help expedite patient treatment. In this disease diagnosis expert system, the Fuzzy Sugeno method is used to make decisions by answering questions related to symptoms. Additionally, to ensure that patients have good nutritional status, dietary recommendations are provided using the Naive Bayes method to tailor diets according to the nutritional needs of tuberculosis patients. Using the Fuzzy Sugeno method for disease diagnosis resulted in an accuracy rate of 85.35%, and the Naive Bayes method for dietary habit recommendations produced the highest accuracy rate of 89.28% in k-fold = 3, with an average accuracy rate calculated across all folds of 78.57%.

**Keywords:** *Mycobacterium Tuberculosis*, Naive Bayes method, Fuzzy Sugeno, expert system

**Topic:** Artificial Intelligence and Data Science



[ABS-59]

## Garbage classification using Depthwise Separable Convolution with data augmentation

Budi Dwi Satoto<sup>(a\*)</sup>, Achmad Yasid<sup>(a)</sup>, Faroid<sup>(a)</sup>, Aghus Setio Bakti<sup>(a)</sup>,  
Muhammad Yusuf<sup>(a)</sup>, Budi Irmawati<sup>(b)</sup>

*<sup>(a)</sup> Information system department  
University of Trunojoyo Madura  
Bangkalan, East Java, Indonesia  
budids@trunojoyo.ac.id*

*<sup>(b)</sup> Informatics Engineering Department  
University of Mataram  
West Nusa Tenggara, Indonesia  
budi-i@unram.ac.id*

### Abstract

Tourism destinations are often beautiful and valuable natural areas. Good waste management helps maintain the cleanliness and beauty of the natural environment, minimizes negative impacts on the ecosystem, and ensures the sustainability of tourist destinations. Additionally, waste management creates opportunities for the recycling industry. By separating, collecting, and processing recyclable waste, such as paper, plastic, metal, and glass, this industry creates jobs and produces products that can be sold. Tools are needed to facilitate visually sorting waste in tourism areas. It can be done with the help of deep learning. The contribution is to use a combination of Depthwise Separable Convolution architectural concepts, hoping that computing will be lighter, maintain accuracy, and remain stable. The model is relatively small, which makes it suitable for mobile devices with limited computing power and storage. The dataset consists of six classes: Cardboard, glass, metal, paper, plastic, and trash. Because of data limitations, augmentation techniques are used. The test results show an average model accuracy of 98.29% with a training computing time to obtain a model of 45 minutes. MSE 0.0343, RMSE 0.1852, and MAE 0.0229. Testing with new experimental data takes an average of 1-2 seconds

**Keywords:** Garbage classification, Deep learning, Depthwise Separable Convolution, Data augmentation

**Topic:** Artificial Intelligence and Data Science



[ABS-60]

## **Enhanced Sorensen Dice Coefficient using POS Tagging for Similarity Detection System**

Ika Oktavia Suzanti, Husni, Fika Hastarita Rachman and Pramintami Cahyaning  
Sri Mahendra

*Departement of Informatics, Faculty of Engineering, University of Trunojoyo Madura*

### **Abstract**

The existence of similarity in the ideas, concepts and content of an article is something that often occurs during news writing and to detect it, one of the ways that is often done is by doing similarity detection. The method that can be used to detect the similarity value of text is the sorensen dice coefficient method. Previous research used this method, but it has weaknesses, namely the non-use of stemming during the preprocessing process so that the resulting term form is not efficient and the ambiguity of words that affect the meaning and labelling of words can affect the similarity value. Based on these problems, stemming and POS tagging are needed in the text preprocessing process. Stemming itself will be used to overcome the inefficient n-gram form and POS tagging is used to overcome word ambiguity. From the results of research conducted with data in the form of tourism articles from the Detik (dot) com Website, a total of 110 tourism articles with several test scenarios regarding n-gram, POS tagging, and stemming, the best RMSE value is 0.00729 using quint-gram with a preprocessing process using POS Tagging without stemming.

**Keywords:** Sorensen Dice Coefficient

**Topic:** Information Technology and System



[ABS-61]

# The Development of a Matchmaking System Through The Use of Reinforcement Learning For Pet Match (PATCH)

Radisa Hussien Rachmadi<sup>1,a)</sup> and Maria Seraphina Astriani<sup>1,b)</sup>

<sup>1)</sup>Computer Science Department, School of Computing and Creative Arts, Bina Nusantara University, Jakarta, Indonesia 11480

## Abstract

Pets are sometimes considered as an extended family- they deserve all the love and attention just as they show to their owners. During the Covid-19 pandemic, there was a surge in pet adoptions as research shows that pets can help with depression and loneliness. Now that the pandemic has slowly faded, and people are coming out of their homes more often, pets are often left neglected which is why it is needed to create a solution to cater to connecting pets for either breeding purposes or playdate purposes. The author and his team decided to develop a mobile application that will serve as a platform to connect pet owners through a matchmaking style application integrated with machine learning. Developed using Neural Networks and Proximal Policy Optimization (PPO) to predict user's best possible matches based on the user's swipes.

**Keywords:** reinforcement learning, pet, matchmaking, machine learning

**Topic:** Artificial Intelligence and Data Science



[ABS-62]

# **Stunting Tracking (StunTrack): UI/UX Design Prototype for Learning Childhood Syndrome through Triple Layer Business Model Canvas**

Mohammad Hamim Zajuli Al Faroby, Yohanes Setiawan, Mochamad Nizar  
Palefi Ma'ady, Fitri Rayani Siahaan, Arini Pramesta Setyaningtitah

*1 Department of Data Science, Institut Teknologi Telkom Surabaya, Surabaya, Indonesia*

*2 Department of Information Technology, Institut Teknologi Telkom Surabaya, Surabaya, Indonesia*

*3 Department of Information System, Institut Teknologi Telkom Surabaya, Surabaya, Indonesia*

## **Abstract**

Indonesia ranks 115th in the world, with the highest prevalence of stunting in Southeast Asia. Stunting has caused cognitive impairment, learning difficulties, increased susceptibility to diseases, and disruptions in the immune system for most of children. Thus, it is crucial to design a system that makes people easier for having first examination of stunting detection. This paper proposes UI/UX prototype design of StunTrack, an AI-powered mobile application that employs the Triple Layer Business Model Canvas (TLBMC) and helps reduce the incidence of stunting. TLBMC is a practical tool for integrating economic, environmental, and social issues from a holistic perspective regarding business models and new approaches for business model development. This approach provides a global picture of the business model in a relatively simple visual format and being able to be used to support innovative business models focused on the future. Triple Layer Business Model Canvas Economic, Environmental, and Social is the result of research. Using these results, we can design UI/UX for a variety of applications, such as website logos, information access websites, medical innovation websites, website monitoring websites, and website registration websites. In brief, StunTrack is used to identify stunting and track child nutrition development and anticipated that TLBMC expansion will aid in the development of the application.

**Keywords:** Stunting, StunTrack, UI, UX, Triple Layer Business Model Canvas

**Topic:** Information Technology and System



[ABS-63]

# Implementation of Forecasting Ginger Harvest using Seasonal Autoregressive Integrated Moving Average Method

Achmad Jauhari, Devie Rosa Anamisa and Fifin Ayu Mufarroha

*University of Trunojoyo Madura*

## Abstract

Herbal plant farming is one of the holders of an essential role in the economy of Madura. Therefore, the Madurese government is very concerned about ginger farmers developing ginger production to meet market demand so that the Madurese economy increases. In addition, 2019 data from the Central Statistics Agency show that the herbal farming sector in Madura has been achieved by ginger farming with the most significant number of commodities compared to other herbal plants. However, in recent years, ginger yields have not been able to meet the very high market demand. Therefore, to meet consumer demand for the availability of ginger, this study uses forecasting analysis. The method used in this study is the Seasonal-Autoregressive Integrated Moving Average (SARIMA) hybrid method. This method is a pretty good method for modeling forecasting. The data used in this study are data on ginger production and harvested area from January 2015 to December 2019. And the results of this study are in the form of yield forecasting data for the following year. The test results with a data range of five produce small MAPE and RMSE, namely 43.94% and 14579.338. This shows that the SARIMA method has been able to predict future crop yields and can be used as a reference for the government in determining crop yields according to market demand.

**Keywords:** Forecasting, Ginger, SARIMA, Madura

**Topic:** Artificial Intelligence and Data Science



[ABS-64]

# Utilizing Single Exponential Smoothing for Early Detection and Forecasting of Stunting Cases in Madura

Fifin Ayu Mufarroha, Devie Rosa Anamisa, Achmad Jauhari, and Triyas Septiyanto

*University of Trunojoyo Madura*

## Abstract

Stunting is still a serious public health concern in Indonesia. Stunting can have a negative impact on children's health and development, as well as their productivity and learning abilities as adults. Efforts to eliminate stunting in Indonesia have been made in recent years, however there are still many cases that were not identified early and were not appropriately treated. Predicting the health of stunted individuals is thus one approach to this problem. Forecasting can benefit from the Single Exponential Smoothing technique. This method may be useful for diagnosing cases of stunting early and providing appropriate preventative actions. The purpose of this research is to create a prediction model for the number of stunted patients using the Single Exponential Smoothing method. This study relied on nutritional status data for children from 2018 to 2021. The Single Exponential Smoothing technique is used to anticipate future data by taking patterns in past data into consideration. The alpha value chosen was 0.5 by repeating the method and 0.1 as the second alpha value. This has caused the error value to drop by 10%. The outcomes of this study are expected to help connected parties design programs to address nutritional concerns more effectively and efficiently, enhance the quality of local community health, and aid in future planning and decision making in efforts to eliminate stunting.

**Keywords:** Forecasting, Stunting, Single Exponential Smoothing, Madura

**Topic:** Artificial Intelligence and Data Science



[ABS-65]

# Performance Analysis of Naive Bayes and Fuzzy K-Nearest Neighbor Methods for Malnutrition Status Classification Systems

Devie Rosa Anamisa, Fifin Ayu Mufarroha, Achmad Jauhari, Muhammad Yusuf, Normalita Eka Ariyanti, and Muhammad Hanif Santoso

*University of Trunojoyo Madura*

## Abstract

Malnutrition Status is a nutritional measurement of toddlers<sup>^</sup> nutritional needs as indicated by age, weight, upper arm circumference, height, and health status resulting from a balance between daily nutritional needs and intake. Toddlers require adequate nutritional intake in quantity and quality because young children usually have high physical activity levels. Apart from that, efforts to reduce malnutrition status are a top priority in the Health Development program in Indonesia. Therefore, the Government needs a system that can help identify the nutritional status of toddlers early for prevention and treatment based on the classification of their nutritional status, thereby making it easier to collect data on toddlers who experience stunted nutritional status to provide education on increasing stunting nutritional levels. In this study, we classify nutritional status in toddlers by comparing the Naive Bayes (NB) and Fuzzy K-Nearest Neighbor (FKNN) methods. The performance of the two methods was compared to find out which method performed better in classifying malnutrition status. Based on the research results, comparing the performance between the FKNN and NB methods with testing using accuracy as the main benchmark for malnutrition status classification performance. The results showed that the FKNN method was superior in accuracy with a quite large margin of 7.5%. The conclusion is that in classifying toddlers<sup>^</sup> nutritional status, the FKNN method outperforms NB.

Keywords:

**Topic:** Artificial Intelligence and Data Science



[ABS-66]

# Humanizing Anamnesis Through Information Technology

Yoenie Indrasary- Metty Verasari- Ary Setijadi

*Institut Teknologi Bandung, Mercu Buana, Politeknik Negeri Banjarmasin*

## Abstract

Technological transformation in the health sector has provided many advances for the process of improving patient health. But on the other hand, there are fears that the existing technology will have a dehumanizing effect on the health care process. This paper proposes a technological approach to the history taking process, a process that is believed to be the starting point for communication and interaction between patients and doctors. By using a 4 layer smart system approach and NLP artificial intelligence techniques, technology is expected to be positioned more as a doctor's partner and no longer something that threatens the existence of doctors in the medical world.

**Keywords:** Anamnesis- Emphaty- Smartsystem- NLP

**Topic:** Information Technology and System



[ABS-67]

## SCM-SCROM and K-Means approaches for clustering MSME Batik Bangkalan Madura Indonesia

Yeni Kustiyahningsih<sup>1,a)</sup>, Eza Rahmanita<sup>1,b)</sup>, Achmad Khozaimi<sup>1,c)</sup>, Yudha Dwi Putera Negara<sup>1,d)</sup>, Bain Khusnul Khotimah<sup>1,e)</sup> and Jaka Purnama<sup>2,f)</sup>

<sup>1</sup>Department of Informatics engineering, University of Trunojoyo Madura

<sup>2</sup>Department of Industrial Engineering, Universitas 17 Agustus 1945, Surabaya

### Abstract

MSMEs in Indonesia have a National Gross Domestic Product (GDP), which in 2014 was 5.40%, experienced an increase in 2015 of 6.46% and in 2016 it became 6.86% based on the Central Statistics Agency at current prices. MSMEs in Bangkalan Madura Indonesia make a large contribution to the Indonesian economy, as proven by absorbing 210,003 workers from 166,768 MSMEs. The urgency of research, related to the grouping of MSMEs and competition in the industrial world, is the main challenge for cooperatives and MSMEs in carrying out their production activities. The cooperative and MSME departments are required to think creatively in implementing government programs, improving production quality and competitiveness strategies by producing higher quality. For this reason, Batik supply chain management (SCM) mapping is needed in order to increase competitiveness and consumer loyalty. This research discusses batik mapping based on measuring SCM performance using the Supply Chain Operation Reference (SCOR) approach. The SCOR approach indicators consist of five processes, namely Plan, Source, Make, Delivery, and Return with general dimensions, namely Reliability, Responsiveness, Flexibility, Cost, and Asset. The aim of the research is to cluster Batik MSME data using the K-Means method based on the same data characteristics, making it easier for the cooperative department to determine future development strategies. This research method is SCOR-CRM, data pre-processing, K-Means clustering, SSE and entropy. The K-Means method can group data into several clusters. The entropy method is used to determine feature weights, and determine the features that have the most influence on clustering. Based on the trials carried out, the most optimal cluster results are cluster K=3, which consists of 53.40% of MSMEs in Cluster 1, 15.50% of MSMEs in cluster 2 and 31.1% of MSMEs in Cluster 3

**Keywords:** SCOR-CRN- K-Means- Entropy- SSE- MSMEs Batik

**Topic:** Information Technology and System



[ABS-68]

## **Personnel Information System with FAST Method on Bandung Nurtanio University**

Suharjanto Utomo, Iswanto, Samsul Budiarto, Muhammad Syaiful  
Muhialhakim

*Universitas Nurtanio Bandung*

### **Abstract**

Personnel is one of the important parts in institute because it relates to the management of human resources in the institute. The current 4.0 industrial era is an era where all data management must be computerized, including the management of employee data in an institute. However, in practice, there are many obstacles in managing the data, due to the data processing that is not optimal. So we need a means to make the management of the data become easier. One of the means that can be used is personnel information system. The personnel information system is a system that used to manage employee data and support employee operational activities, especially the staffing department operational. This research is intended to create a web-based staffing information system that can manage employee data, integrate existing attendance databases so the staffing department does not need to manually check attendance and make it easier for employees to report late arrivals or an absences and to facilitate staffing department for calculating salaries and making payslips. The programming language that used in the development is PHP programming language using the CodeIgniter 4 framework and MySQL as its DBMS (Database Management System). This personnel information system developed using the FAST methodology.

**Keywords:** Personnel Information System, Attendance, FAST

**Topic:** Information Technology and System



[ABS-69]

# Transformation of Indonesian National Television Media: Implementation of Artificial Intelligence Presenters in News Delivery and Program Hosting

Ari Cahyo Nugroho<sup>1,a)</sup>, Ahmad Budi Setiawan<sup>1,b)</sup>, Amri Dunan<sup>1,b)</sup>,  
Bambang Mudjiyanto<sup>1,b)</sup>

*National Research and Innovation Agency*

## Abstract

In the rapidly evolving digital era, television media has undergone a fundamental transformation in response to contemporary demands. This transformation is reflected in the application of AI Presenters, which combine traditional television elements with AI technology to create interactive experiences. The concept of mediamorphosis emphasizes the changes in the form and content of media as responses to evolving technology and culture. The utilization of AI Presenters brings about changes in content format and presentation, delivering a more personalized and responsive experience. New Media theory highlights the active role of users within the media ecosystem. AI Presenters introduce a new dimension of interaction, where the audience can engage with AI technology, fostering deeper engagement. Thus, this research focuses on how the implementation of AI Presenters mirrors the fundamental transformation in Indonesian national television media through the lens of these theories. Employing qualitative methods and theoretical analysis, this study investigates changes in content production, news presentation, and interactions between humans and AI technology. By observing these changes within the context of Media Convergence theory, mediamorphosis, and New Media, this research strives to comprehend the dynamics of change in Indonesian national television media. The outcomes of this research provide profound insights into how media transformation through AI Presenter implementation influences television's image, human-AI interaction, and broadcasting industry dynamics. The cultural, social, and economic implications of these changes are also examined within the framework of these theories. This study holds the potential to contribute significantly to the understanding of media changes in an increasingly complex and dynamic digital era.

**Keywords:** Television Media Transformation- Artificial Intelligence Presenters- News- Program Hosting

**Topic:** Artificial Intelligence and Data Science



[ABS-72]

# Effectiveness of Energy Conservation Program in the Industry Sector in Improving the Quality of Human Resources

Aep Saefullah <sup>1,a)</sup>, Muhammad Arief Noor <sup>1,b)</sup>, Fuad Gagarin Siregar <sup>1,b)</sup>

<sup>1)</sup> STIE Ganesha Jakarta

Jalan Raya Legoso No 31, Pisangan, Ciputat Timur, Tangerang Selatan 15412, Indonesia

<sup>a)</sup> aep@stieganessa.ac.id

## Abstract

Energy conservation is critical in the industrial sector to maintaining the balance among the availability of energy and environmental protection. The effectiveness of energy-saving initiatives in the industrial sector has yet to be fully assessed, particularly with regard to the level of human resource quality. The study's goal is to analyze the efficacy of vitality conservation programs in the mechanical division in enhancing the human resources quality. The investigate was conducted for 4 months from April to July 2023 to 100 individuals working in the industrial sector in Indonesia who implemented the energy conservation program. This investigation utilized an expressive qualitative approach. Information was collected through a literature survey, observation and discussions. The results show that an effective energy conservation program can make strides in the quality of human assets in the industrial segment. The program influences employees' awareness and skills in using energy efficiently, thus benefiting both the environment and the company's productivity. Company management support is a major factor within the victory of the vitality preservation program. The study was limited to 100 employees and the conclusions cannot be generalized. The implication of the ponder is that the execution of vitality preservation programs in the industrial sector not only provides benefits in energy savings and reduces environmental impacts, but can also improve the quality of human resources. Industrial companies should continue to encourage and support effective energy conservation programs to create employees who are environmentally minded and contribute positively to the sustainability of the industry

**Keywords:** Energy Conservation- Industry- Human Resources

**Topic:** Information Industry and Management



[ABS-73]

# Transfer Learning for Diploid Haploid Corn Seeds Image Classification using Residual Network

Wahyudi Setiawan, Haris Muhajir Al Fatih, Yoga Dwitya Pramudita

*Department of Information System, University of Trunojoyo Madura, Jawa Timur*

## Abstract

The corn seed breeding program is the initial stage of getting quality plants. It also aims to increase corn growth production and productivity. Actually, corn seeds have two types: diploid and haploid. Almost all corn seeds are naturally diploid, and less than one percent are haploid. However, haploid seeds can be the forerunner of double haploid (DH) corn seeds produced by biotechnological engineering. DH seed just need two to three generations of breeding, in contrast to manual crossbreeding, which can take up to eight generations. During the corn harvest, diploid and haploid seeds mix. Carrying out the separation manually requires more effort and needs to be improved by visual limitations and human energy. In this study, we classified diploid and haploid corn seeds. Data uses public sources with 3,000 images consisting of 1,230 haploid and 1,770 diploid images. This research uses Residual Network 50 with transfer learning. Initialization of hyperparameter values consists of learning rate 0.001 & 0.0001, epoch 64, batch size 64, and Stochastic Gradient Descent optimizer. In the training process, k-fold cross-validation is used with a value of  $k=5$  to divide the train data and validation data. This research has a test scenario: two different models (resnet-50 with and without transfer learning). Based on testing results, using the resnet-50 with transfer learning has an accuracy 95.55%, precision 97.12%, recall 95.29%, and f1-score 96.19%.

**Keywords:** Corn Seeds, Image, Classification, Residual Network, Transfer Learning

**Topic:** Machine Learning and Deep Learning



[ABS-74]

# A Review of opportunities for Developing Parallel Encryption with Digit Arithmetic of Coverttext Encryption Model

Eka Ardianto <sup>(a\*)</sup>, Veronica Lusiana<sup>(a)</sup>, Priyo Wibowo<sup>(b)</sup>, Eko Nur Wahyudi<sup>(c)</sup>,  
Edy Supriyanto<sup>(a)</sup>

<sup>(a)</sup> Faculty of Information Technology and Industry, Universitas Stikubank, Jl. Tri Lomba Juang No. 1,  
Semarang, Indonesia

\* [ekaardhianto@edu.unisbank.ac.id](mailto:ekaardhianto@edu.unisbank.ac.id)

<sup>(b)</sup> Faculty of Medical Laboratory Technology, Politeknik Katholik Mangunwijaya, Jl. Sriwijaya No. 104,  
Semarang, Indonesia

<sup>(c)</sup> Faculty of Vocational, Universitas Stikubank, Jl. Tri Lomba Juang No.1, Semarang, Indonesia

## Abstract

Digital data is now used in many company activities. Some of this data can be confidential and important. An encryption mechanism needs to be implemented to protect confidential company data. Common techniques used to maintain data confidentiality are steganography and cryptography. One encryption model that adopts steganography and cryptography techniques in a single process is known as Parallel Encryption with Digit Arithmetic of Coverttext (PDAC). This model has undergone several modifications. This research aims to review PDAC development, aspects of PDAC development, and research opportunities for PDAC development. The research method used is a systematic literature review. The results obtained are that the current PDAC encryption model has experienced improvements in several aspects of information security, and there are still several opportunities for developing PDAC encryption models both in terms of development models and implementation models in many activities.

**Keywords:** PDAC- Encryption- Informatin Security.

**Topic:** Information Technology and System



[ABS-75]

# **Wet Battery Voltage Of Different Anode Cathode Materials With Separators Made From Zeolites-Tapioca Starch**

Sri Mulyo Bondan Respati, Agung Nugroho, Syamsidar Ali

*Universitas Wahid Hasyim*

## **Abstract**

Cathode and anode materials affects voltage. The cathode and anode are separated by a separator. This separator is a ceramic made from zeolites-tapioca starch. A natural zeolite-tapioca starch ceramic separator has a ratio of 98% zeolites and 2% tapioca starch and is sintered at 900 °C for 4 hours. This ceramic separator needs to be maximized using several electrodes. The electrodes on a battery have two poles, namely the cathode and anode. The cathode and anode materials in this study were varied. Anodes and cathodes made of copper, tin and aluminum are connected in series. The results were that the copper anode and tin cathode produced an electrical voltage of 3.79 volts, the copper anode and aluminum cathode produced an electrical voltage of 3.66 volts while the tin anode and aluminum cathode produced an electrical voltage of 1.42 volts.

**Keywords:** battery, cathode, anode, copper, tin, aluminum, separator, ceramic

**Topic:** Material Engineering



[ABS-76]

# Mapping of Hotspots and Burn Areas Based on QGIS in Relation to Peatland Fire Vulnerability on Sumatra Island

Fauziah<sup>1</sup>, Nur Hayati<sup>2</sup>, Lilik Prasetyo<sup>3</sup>

<sup>12</sup> Department of Information Technology Nasional University, South Jakarta, Indonesia

<sup>3</sup> Department of Forest Resources Conservation and Ecotourism, IPB University, Bogor, 16680, Indonesia

## Abstract

Based on satellite image interpretation, the extent of peatland in Indonesia is estimated to be 10.8% of the total land area, distributed across Kalimantan, Papua, and Sumatra. According to research conducted by the World Agroforestry Center in North Sumatra, peatlands have a high capacity to retain water, serving as hydrological buffers for surrounding areas and preventing floods and droughts. Mismanagement of peatland conservation has led to frequent wildfires in Indonesia. In 2015, forest and land fires in Sumatra resulted in hazardous haze affecting the health of 100,300 people in Indonesia, Malaysia, and Singapore. Indonesian peatlands can store up to 57 billion tons of carbon, making it difficult to extinguish fires when they occur underground. One effort to prevent wildfires is to map hotspots and burn areas to identify vulnerable regions. In this study, the time frame for hotspot data from VIIRS and burn area data from MODIS used for analysis is from 2015 to 2019 in the Sumatra Island, which is the largest peatland area in Indonesia. The results of hotspot analysis include the number of high-confidence points for each year, which are 9,085- 416- 109- 613- and 3,590, respectively. Meanwhile, the results of burn area analysis for each year are 4,583.65 km<sup>2</sup>- 845.73 km<sup>2</sup>- 82.96 km<sup>2</sup>- 419.96 km<sup>2</sup>- and 20.70 km<sup>2</sup>, respectively. The analysis reveals that the region with a tendency to be prone to wildfires is Riau, where Riau consistently has a significant number of hotspots and a large burn area compared to other peatland regions. The percentages for hotspot and burn area in Riau are 6.26%, 92.31%, 36.70%, 90.70%, and 23.70% for hotspots and 22.45%, 79.13%, 67.54%, 80.01%, and 24.37% for burn areas.

**Keywords:** peatland, hotspot, burn areas, image interpretation

**Topic:** Information Technology and System



[ABS-77]

# On Using Instance Hardness Measures to Select Training Data for Software Defect Prediction

Benyamin Langgu Sinaga <sup>(1, 2, \*)</sup>, Sabrina Ahmad <sup>(2)</sup>, Zuraida Abal Abas <sup>(2)</sup>

<sup>1)</sup> *Department of Informatics Universitas Atma Jaya Yogyakarta, Jalan Babarsari 43 Yogyakarta, Indonesia 55281*

<sup>2)</sup> *Fakulti Teknologi Maklumat dan Komunikasi, Universiti Teknikal Malaysia Melaka, Hang Tuah Jaya, 76100 Durian Tunggal Melaka, Malaysia*

*\*) benyamin.sinaga@uajy.ac.id*

## Abstract

The software defect prediction model has been a popular solution to allow the software quality assurance team to focus closely on testing the highly defect-prone modules. However, directly using cross-project datasets to learn the prediction model results in an unsatisfactory predictive model. As a result, the selection of training data is critical. Most training data selection occurs at the instance level, using kNN and the Euclidean distance to measure the similarity between source and target data. Such an approach, however, is susceptible to noise. Defect datasets are complex due to class imbalance, noisy datasets, and class overlaps. However, selection criteria are predominantly based on the distance between the source and target datasets while ignoring those data complexity-related factors. It causes several machine learning algorithms to underperform. This study proposed a filter for selecting training data instances considering the complexity factors. The filter is constructed utilizing four instance hardness measures related to defect dataset complexity factors: noisy instances and the overlapping character of instance classes on cross-project data. The proposed system was evaluated using 14 datasets and six classification algorithms. The findings indicate that using instance hardness measures for data selection can improve the prediction performance of the defect prediction model.

**Keywords:** Training data selection, software defect prediction, instance hardness measures

**Topic:** Machine Learning and Deep Learning



[ABS-78]

# Development of Quiz, Strategy, Adventure and Puzzle Educational Games using the ADDIE (Analysis, Design, Development, Implementation and Evaluation) method by Pusdatin Kemendikbudristek

Ade Yusupa, Agus Triarso

*Universitas Sam Ratulangi  
Pusdatin Kemendikbudristek*

## Abstract

This research discusses the educational games developed by the Center for Data and Information Technology (Pusdatin) of the Ministry of Education, Culture, Research and Technology (Kemendikbudristek). The purpose of these two documents is to serve as a reference for the Pusdatin production team in developing game-based multimedia learning programs. This educational game is aimed at all levels of education in Indonesia, from PAUD to vocational school and primary and secondary education levels. The development process for educational game-learning multimedia uses the ADDIE model procedure (Analysis, Design, Development, Implementation and Evaluation). In the analysis process, the teacher respondents presented are spread across all Indonesian provinces from Aceh to Papua. In the needs analysis, the total number of respondents was 4567, consisting of 1698 (37.18%) men and 2869 (62.82%) women and student respondents spread across all Indonesian provinces from Aceh to Papua. The total number of respondents was 15759, consisting of 5630 (35.73%) men and 10129 (64.27%) women. Teacher respondents were dominated by smartphone users, reaching 42.2%. In comparison, laptop usage was 40.38%, and student respondents were dominated by smartphone users, almost 79%. The Waterfall Method is a systematic approach to the application development process, starting from the system requirements stage and moving on to the analysis, design, and coding stages. Testing/verification and maintenance. This is excellent input for developing educational games for the Ministry of Education and Culture's Pusdatin. The educational game presentation formats teachers and students suggested are Quiz, Strategy, Adventure and Puzzle types.

**Keywords:** Educational games, Multimedia learning programs, ADDIE model, Waterfall Method

**Topic:** Information Technology and System



[ABS-79]

# Digital Transformation of Health Services: Implementation of RFID Technology on Polyclinic Patient Cards

Rony Wijanarko<sup>1\*)</sup>, Siti Maisyaroh Bakti Pertiwi<sup>2)</sup> and Akhmad Pandhu  
Wijaya<sup>1)</sup>

*Wahid Hasyim University*

## Abstract

Healthcare systems play a critical role in the economy and public health of every nation. This study suggests a system for implementing a smart patient management, monitoring, and tracking procedure that hospitals may utilize to automate and arrange their information management. Each patient will receive a special identification number from the system that will allow the health information system to recognize them. This ID is then connected to all vital sign recordings for the patient and stored in a database for later analysis and historical reference. While a patient is being treated in a hospital's emergency and critical care unit, the system will also offer real-time patient monitoring of vital signs. If there is any anomaly, it also notifies hospital staff. If an anomaly is found, it also alerts hospital staff. By creating a distinctive ID, radio-frequency identification (RFID) technology is utilized to track patients. This ID will be used to retrieve patient data from the database. The system will offer a practical way to raise the management of medical records' dependability, privacy, and security. The system's low cost is an intriguing aspect, made possible by readily available equipment and sensors that may be purchased and used in our area.

**Keywords:** Healthcare, RFID, Patient, Unique ID, RFID tag

**Topic:** Information Technology and System



[ABS-80]

## Collaboration and Synergy between Regional Government, Universities, and DUDI in Producing Innovation for Commercialization

Hesty Heryani <sup>1,a)</sup>, Antar Sofyan <sup>2,b)</sup>, Arif Rahman Hakim <sup>3,b)</sup>, and Panggih Prabowo Rona Saputra <sup>3,b)</sup>

*aDepartment of Agro-industrial Technology, Faculty of Agriculture, University of Lambung Mangkurat, Banjarbaru 70714, Indonesia*

*bDepartment of Agro-Ecotechnology, Faculty of Agriculture, University of Lambung Mangkurat, Banjarbaru 70714, Indonesia*

*cDepartment of Sociology, Faculty of Social and Political Sciences, University of Lambung Mangkurat, Banjarmasin 70123, Indonesia*

### Abstract

Collaboration and synergy among innovators, regional government, university, and the worlds of business and industry (DUDI) are very important in achieving commercialization. The aim of the research was to measure the role of each actor to produce an innovation up to IRL 3 to IRL 4. The method applied began with equalizing perceptions of innovation terminology, interviews and FGDs, characterization of innovation results by innovators both owned by the government and university, carrying out Dissemination with DUDI and analyzing the needs of DUDI as a User and then carrying out a Sweet Spot Ideation analysis. The results obtained showed that 38% of respondents had a different understanding of the meaning of innovation, the characteristics of innovation produced were mostly at TKT level 3-4 with IRL level 1-2. The results of Dissemination with DUDI provided a positive response to Innovators and the innovation results obtained with the emphasis DUDI required up to the level of standardization. The results of Sweet Spot Ideation showed desirability met customer needs. The Viability results showed more than 85% of the innovations produced continued to be improved and developed in various aspects. The Feasibility developed must reach a measurable level of innovation maturity, as well as Integrity where the innovation must be accepted for environment and be licensed.

**Keywords:** Keywords: Business and Industrial World (DUDI), IRL, Sweet Spot Ideation, TKT

**Topic:** Information Industry and Management



[ABS-81]

# **Pond Management Features in the Vannamei STP UNDIP Shrimp Pond ERP System**

Ilmam Fauzi Hashbil Alim, Risma Septiana, Erwin Adriono, Arseto Satriyo  
Nugroho, Agung Budi Prasetijo, Anhar

*Department of Computer Engineering, Universitas Diponegoro, Semarang, Indonesia*

## **Abstract**

The vannamei shrimp pond industry in Indonesia, especially at STP UNDIP Jepara, is a fast-growing fisheries sector. Efficient management of pond ponds is the key to achieving optimal and sustainable production. Enterprise Resource Planning (ERP) systems have proven effective in supporting complex business operations such as shrimp ponds. This study develops pond management features in the ERP system for vannamei shrimp ponds at STP UNDIP using the Laravel and Tailwind CSS frameworks. The Waterfall method is used in the development of this system, including requirements analysis, design, implementation, testing, and maintenance. Pond management features include pond condition monitoring, feeding, sampling, treatment, harvesting, and energy use. This development is expected to increase the productivity and sustainability of the vannamei shrimp pond industry as well as become the basis for ERP development related to agriculture and aquaculture.

**Keywords:** ERP System, Waterfall Method, Pond Management, Vannamei Shrimp

**Topic:** Information Technology and System



[ABS-82]

# Conceptual Model Of Smart Transportation Architecture For XYZ City

Falahah

*Telkom University*

## Abstract

Smart transportation become an important pillar on smart cities program. It expected to address the problem in transportation. Implementation of smart transportation need carefully plan and architecture concept. The design of architecture should base on existing City capabilities and constraints. Our research is focusing on studying the possibilities of implementing smart transportation solution for XYZ Smart City Program. The result of research is proposing the conceptual architecture of smart transportation. The architecture was build using NASSCOM & Accenture Smart City ICT Framework and the main concept is integrating the existing transportation mode: online transportation, public car/busses transportation and water transportation. The proposed architecture consists of four layers which are application layer, data layer, network layer and sensor layer. In application layer, we propose five potential mobile application such as: route-planning, payment/ticketing, traffic safety, travel information, and transport data collection

**Keywords:** smart city, smart transportation, smart architecture, integration

**Topic:** Information Technology and System



[ABS-83]

# Analysis of the Effect of Floater Geometry on Lift Force, and Aircraft Drag Force using the Gudmundsson and CFD Methods

M. Rinkanto <sup>(a\*)</sup>, Himsar Ambarita <sup>(a)</sup>, Farel H. Napitupulu<sup>(a)</sup>

<sup>(a)</sup> *Department of Mechanical Engineering, Universitas Sumatera Utara, Medan, Indonesia.*

\* *erikrinkanto@gmail.com*

## Abstract

This journal discusses the analysis of the effect of floater geometry on the lift force, and drag force of aircraft using CFD and the gudmundsson method. researchers focus on modified geometry angles, namely 18o ,23o , and 37o . This study aims to determine the value of Coefficient of Lift (CL), Coefficient of Drag (CD) on the Floater of the DHC-6 Twin Otter float plane using the gudmundsson formula and CFD, knowing the drag and buoyancy force on the floater of the DHC-6 Twin Otter float plane gudmundsson and CFD, and Knowing the take off time of the aircraft using the gudmundsson formula. The results found are the Coefficient of Lift 18o is 0.000698057, 23o is 0.00072031, and 37o is 0.000881377. the result of cd 18o is 0.000320813, cd 23o is 0.000320866, cd 37o is 0.000321282. Conclusion is 2. The greater the geometry angle, the higher the lift force, and the smaller the geometry angle, the smaller the drag force.

**Keywords:** Sea Plane, Gudmundsson, CFD, Floater Geometry

**Topic:** Mechanical Engineering



[ABS-85]

## **A K-Medoids Clustering Approach to Controlling Assistance Fund Allocation in Madura**

Achmad Jauhari, Ika Oktavia Suzanti, Arifatul Maghfiroh, Amelia Nur Septiyasari, Devie Rosa Anamisa, and Fifin Ayu Mufarroha

*University of Trunojoyo Madura*

### **Abstract**

Stunting is a condition in which the body does not develop optimally in children as a result of chronic starvation. Stunting is a serious health issue in Madura, with a relatively high frequency. As a result, the local government gives support finances to families experiencing these difficulties. The goal of delivering humanitarian finances is to enhance children's health and avoid future stunting in youngsters. Aside from that, the stunting assistance financing program in Madura is projected to help overcome the problem of stunting in children while also improving the community's health and welfare. However, aid finances must be properly classified and administered in order to deliver the greatest benefit to families in need. As a result, the K-Medoids Clustering approach was used to categorize recipients of stunting aid finances in Madura. To address stunting in Bangkalan Regency, data on 14 qualifying criteria for obtaining relief funding was utilized. K-Medoids clustering is used to classify patients based on their stunting status. This simple and convergent method divides data points into clusters, allowing for efficient allocation of funds. This approach helps identify priority groups for interventions to reduce malnutrition rates and helps identify clusters and locations for providing assistance funds. The K-Medoids Clustering approach tries to divide the population into two groups: the cluster not receiving assistance (C1) and the cluster receiving assistance (C2). As a result, 3 sub-districts were declared unfit to receive assistance and 9 sub-districts were recipients of assistance.

**Keywords:** Stunting, Clustering, K-Medoids, Assistance Fund

**Topic:** Artificial Intelligence and Data Science



[ABS-89]

# Ultrasound-Assisted Extraction of Sappan Wood-Kinetic Modeling

Laeli Kurniasari, Mohammad Djaeni, Andri Cahyo Kumoro

*Universitas Wahid Hasyim, Universitas Diponegoro*

## Abstract

Secang or sappan wood (*Caesalpinia sappan* L) contains many phytochemical compounds and has been used in foods, beverages and also in medicinal industries. Secang contains Brazilin, the main phytochemical compound and also contains xanthone, sappanchalcone and coumarin. Ultrasound-Assisted Extraction (UAE) is a recent extraction method that is considered suitable for taking phytochemical compounds and kinetic of extraction process is one important point to study. This research investigate kinetic models of sappan wood UAE process. There are four kinetic model observed, pseudo first order, second order, peleg model and power model. Extraction was conducted from 4-60 min in 50°C using ethanol 60% as solvent. Result shows that UAE reduce the extraction time and increase extraction yield. All four models has high conformity with experimental data ( $R^2 > 0.95$ ). Moreover, second order and peleg model are better fit with  $R^2$  0.9798, while pseudo first order has lowest  $R^2$  0.9539

**Keywords:** sappan wood, UAE, kinetic model, peleg model, second order

**Topic:** Chemical Engineering



[ABS-91]

# Potential Compound Content with Aphrodisiac Effects of Mangrove Plants for Herbal Therapy

Rita Dwi Ratnani, Ahmad Muhyi, Agus Ismanto, Forita Dyah Arianti

*Department of Chemical Engineering, Wahid Hasyim University, Semarang, Indonesia*

*Department of Medical education, Wahid Hasyim University, Semarang, Indonesia*

*Applied Zoology Research Center of National Research and Innovation Agency (BRIN), Cibinong, Bogor 16911, Indonesia*

*Research Center for Sustainable Production System and Life Cycle Assessment, National Research and Innovation Agency (BRIN), Jakarta 10340, Indonesia*

## Abstract

Erectile dysfunction is something that men are very afraid of. One of the causes of erectile dysfunction is suffering from diabetes mellitus. The search for plant-based herbal medicines has become a priority in this modern era. This is sought after because it is identified as having the least side effects compared to chemical drugs. Aphrodisiac or libido booster due to erectile dysfunction can be obtained from mangrove plants. This study aims to explore more in-depth information from previous research on the content of active aphrodisiac compounds in the mangrove species *Avicenna marina*, *Avicennia officinalis*, *Acanthus ilicifolius*. The results of the study show that this species has great potential to provide libido-generating bioactive compounds. This is because it contains alkaloids, flavonoids and saponins. These compounds are found in almost all parts of the plant, including the leaves, fruit, skin, stems and roots. Further research to examine in more depth the effects of aphrodisiacs as well as optimal formulations and superior processing methods is needed. This is in the hope of finding nature-based herbs.

**Keywords:** Aphrodisiac, *Avicenna marina*, *Avicennia officinalis*, *Acanthus ilicifolius*, flavonoids.

**Topic:** Chemical Engineering



[ABS-92]

# Design and Strength Analysis of Bracket Structure as Solar Panel Holder Using Finite Element Analysis (FEA) Method

Sri Utami Handayani- Ojo Kurdi - Subkhi Abdurohman- Didik Ariwibowo-  
Angger Suryo Prastowo- Tri Yuliani

*Universitas Diponegoro*

## Abstract

Typically, mining areas operate in remote regions, necessitating the presence of tower lamps with energy sources other than sunlight. This is because mining locations far from the electrical grid require an independent power supply with high illumination capabilities, particularly for nighttime activities. Therefore, the primary requirement for this tower lamp is ease of mobility to adapt to the locations where mining activities also occur at night. The solar panel on the Hybrid Tower Lamp is designed to fold 180 degrees for compactness. Based on this, the author has designed a solar panel bracket that functions to lock when folding (closing) and reopening. This research aims to design and analyze the structural strength of the bracket for mobile solar panels. To analyze the structural strength of the solar panel bracket, Ansys Structural software is used. Based on the analysis using Ansys Structural software for 6 design variations of brackets used to open the solar panel and 2 design variations of brackets for closing the solar panel, the best bracket designs are bracket 4 for the open position and bracket 8 for the closed position. The load received by bracket 4 in the open position is 1650 N, resulting in a maximum stress of 166.74 MPa and a safety factor of 1.49. Meanwhile, the load received by bracket 8 in the closed position is 4950 N, resulting in a maximum stress of 184.66 MPa and a safety factor of 1.35.

**Keywords:** bracket, finite element method, safety factor, stress, strain, displacement

**Topic:** Mechanical Design and Construction



[ABS-93]

# Analysis of the stockpiling process at Drum Yard PT. ABC Based on Sampling Aspects

Ika Gita Lestari <sup>1,a)</sup> and Oksil Venriza <sup>1,b)</sup>

*<sup>1)</sup>Program Studi Logistik Minyak dan Gas, Politkenik Energi dan Mineral Akamigas, Jl. Gajah Mada 38, Cepu Blora, Jawa Tengah, 58312, Indonesia*

## Abstract

PT. ABC, in maintaining the stock of raw materials, especially additives, stockpiles additives in the drum yard. Drum stockpiles in drum yards are very abundant and make annual sampling difficult. This additive annual sampling does not pay attention to number production batch so that additives of the same type in one shipment are considered to have the same quality. To find out the cause of problems, this method uses a fishbone diagram. The large number of additives with slow moving and non moving movements makes the annual sampling process more extensive. When stock data does not include production batch number, annual sampling will not pay attention to this. The annual sampling process will be carried out randomly and three samples will be taken per locator without paying attention to differences in available batch numbers. This random sampling check means that dead stock additives will be completely eliminated. When sampling can be carried out according to the standards, it can minimize the number of offspec additives and these additives can be reused when the quality control results are onspec.

**Keywords:** Additive, Stockpiling, Drum yard, FSN (Fast, Slow, Non moving), Sampling.

**Topic:** Chemical Engineering



[ABS-94]

# A Brief Review On Aging And Its Combination With Bibliometric Analysis On Cellular Senescence Elimination As Part Of Anti Aging Strategies

Indah Hartati<sup>1a)</sup> Vita Paramita<sup>2b)</sup> Farikha Maharani<sup>1c)</sup> Lusiana<sup>3d)</sup> Laeli Kurniasari<sup>1e)</sup>

<sup>1</sup>Department of Chemical Engineering, Faculty of Engineering, Wahid Hasyim University, Indonesia

<sup>2</sup> Department of Industrial Chemical Engineering Technology Vocational School, Diponegoro University, , Indonesia

<sup>3</sup>Department of Physical Education, Health and Recreation, Faculty of Teaching and Education, Wahid Hasyim University, Indonesia

## Abstract

It is estimated that in 2050, the growth of the aging population in the world is growing faster than the one of the younger age people. Consequently, the high growth rate of elderly population has become a major challenge due to its strong correlation on social and economics condition. Therefore in this work, the definition of aging, hallmarks of aging, aging theory, as well as anti aging strategies are reviewed. The review was combined with bibliometric analysis on publication having ^anti aging strategies^ as well as ^senolytics and cellular senescence^ keywords. Aging, a process of cellular deterioration, is associated with oxidative stress and the accumulation of toxic peroxidation products. The developments of the aging hallmarks proposed are summarized. Regarding the aging theory exist there are Chinese medicine based theory as well as modern theory. Among the aging theory proposed, free radical theory plays a significant role in the aging process. Bibliometric analysis of anti aging strategies informs that cellular senescence is emphasized while dasatinib, fisetin, quercetin, and navitoclax as the four senolytics agents appear on the network visualization of keyword occurrence in publication with ^senolytics and cellular senescence^ keywords. Among the four senolytics agents, two natural based compounds of senolytics agent i.e quercetin and fisetin. Due to the varied sources, both of fisetin and quercetin would play a great role in the development of senolytics agent obtained from natural resources. The development of isolation methods will also emphasize further research, especially in the finding green chemicals and green separation and isolation routes.

**Keywords:** aging, cellular senescence, anti aging, review, bibliometric

**Topic:** Chemical Engineering



[ABS-95]

## Usability Testing on E-Learning using the System Usability Scale (SUS)

Arief Hidayat, Agung Nugroho, Safa<sup>^</sup>ah Nurfa<sup>^</sup>zin, Agung Riyantomomo

*Universitas Wahid Hasyim*

### Abstract

The need for e-learning to support the learning process in Vocational High Schools is very high, including at NU Al Hidayah Kudus Vocational School. E-learning at the school is already running but has not been evaluated and tested for effectiveness, comfort and usefulness for users, in this case students. In this research, the quality of e-learning that will be measured by users, namely students of SMK NU Al Hidayah Kudus, is based on measuring the quality of e-learning using the System Usability Scale (SUS). Evaluation of the usability of e-learning was carried out to collect opinions from various respondents regarding the usefulness of e-learning. In accordance with these problems, it is necessary to evaluate the usability of e-learning to determine the suitability of the system, whether e-learning is easy for students to use, how quickly students can easily understand and use e-learning, whether students still experience many obstacles or difficulties. in using e-learning. Based on the results of distributing questionnaires to 50 students from different study programs and classes as e-learning users to obtain the level of student satisfaction with the e-learning system, a score of 71.15 was obtained, which is in the C category, which is within the Acceptable range. With these values, the e-learning system at SMK NU Al Hidayah Kudus is considered good and suitable for use by students.

**Keywords:** usability, e-learning, SMK, SUS

**Topic:** Information Technology and System



[ABS-96]

# Government Building PLTS System Design Based on HOMER

Moch S. Mauludin, Zainal Arifin, Anom. R. Birawa, Farrell. J. Regannanta,  
Muhammad.S. Alfaridzi, Singgih D. Prasetyo

*Department of Informatics Engineering, Wahid Hasyim University, Semarang 50236, Indonesia*

## Abstract

The primary force behind human civilisation is energy. The development of renewable energy as an alternative energy source, including solar energy, is encouraged by the rising depletion of fossil fuels and the numerous negative effects that follow. The goal of this study is to examine the growth of solar power plants (PLTS) as a source of electrical energy in public buildings in numerous Indonesian cities, including Semarang, Bandung, Surabaya, Jakarta, and Yogyakarta. The Hybrid Optimization Model for Electric Renewable (HOMER) software was used to simulate and optimize the design. The research was designed with an assumed electricity load of 3002.87 kWh/day and the project was assumed to run for 25 years. It was found that the city with the most potential with this design configuration was Semarang City. The initial investment cost required to configure this system is IDR 4,329,377,867.29. This city is able to produce electricity of 1,037,881 kWh/year, while total electricity consumption reaches 963,762 kWh/year. In addition, the NPC value of around IDR 27,543,680,000.00 and the COE value of around IDR 1,256.87 indicate good investment feasibility, with BEP in the 15.90th year.

**Keywords:** HOMER, renewable energy, PLTS, design, cost analysis, Indonesia

**Topic:** Information Technology and System