



3rd International Conference
on Information and Computing Research (iCORE)

FUTURE EARTH: TECHNOLOGY'S ROLE IN SHAPING SUSTAINABLE OUTCOMES

JULY 19 - 20, 2024
NATIONAL UNIVERSITY
Mall of Asia Philippines

Organized By:



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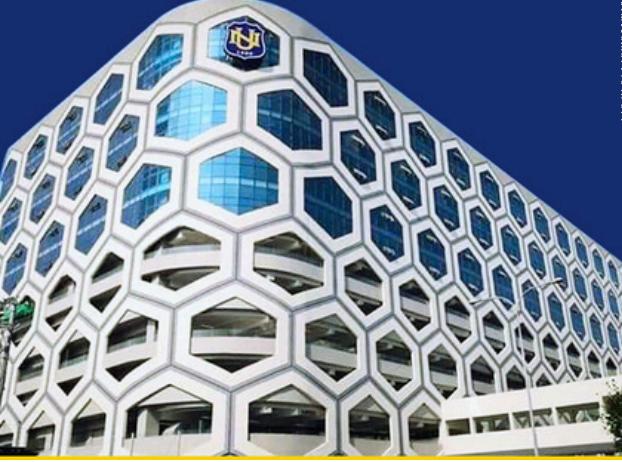


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About Us

Innovating Boundaries with iCORE

iCORE is more than a conference. It's a catalyst for advancing knowledge, fostering global collaborations, and driving real-world technological innovations.

Our story

iCORE's Academic Odyssey

Where knowledge sets sail, and innovation takes flight.

The International Conference on Information and Computing Research (iCORE) is a significant event in the field of computer science, information technology, and related areas. Year after year, iCORE brings together a diverse array of academics, researchers, practitioners, and industry experts from across the globe, creating a vibrant platform for exchanging cutting-edge ideas and advancements in the ever-evolving field. This conference is a convergence of the latest research findings, technological breakthroughs, and theoretical frameworks, shaping the future of computing research.

At the heart of iCORE lies a commitment to fostering interdisciplinary collaboration and pushing the boundaries of knowledge. The conference's scope encompasses a broad spectrum of topics, reflecting the multifaceted nature of the field. From foundational algorithms and data structure principles to emerging technologies like computing for social good, artificial intelligence, machine learning, and the Internet of Things. The event serves as a forum for presenting original research and facilitates insightful discussions on the societal implications and ethical considerations associated with the rapid advancements in technology.

One of the hallmarks of iCORE is its rigorous peer-review process, ensuring that only the highest quality and most impactful research finds its way to the conference program. Both seasoned and emerging researchers vie for the opportunity to present their work to a discerning audience, seeking feedback, validation, and collaboration. The conference papers cover many themes, from theoretical contributions that redefine the conceptual underpinnings of computing to applied research with immediate practical implications for industries and communities. This diversity in content mirrors the dynamic nature of the field, where theoretical abstraction and real-world applications coalesce.

The keynote speakers at iCORE are luminaries in their respective fields, providing attendees with insights into the forefront of research and development. These keynotes serve not only to inspire but also to contextualize the broader impact of the work being presented at the conference. Attendees gain a holistic understanding of the field's current state, its challenges, and the potential avenues for future exploration. The interactive sessions that follow keynote presentations foster a sense of community, where researchers can engage in meaningful dialogues, cross-pollinate ideas, and forge collaborations that transcend geographical and institutional boundaries.

Beyond the formal sessions, iCORE offers a plethora of opportunities for networking and collaboration. Poster sessions, workshops, and panel discussions allow researchers to showcase their work in an informal setting, encouraging one-on-one interactions and in-depth discussions. The conference fosters a sense of camaraderie, where attendees share not only their successes but also the challenges and setbacks, they encountered in their research journeys. This spirit of openness and collaboration contributes to the collective growth of the community, propelling the field of information and computing research forward.

In addition to its academic focus, iCORE is attuned to the practical implications of research in the real world. Industry partnerships, technology demonstrations, and exhibitor booths allow attendees to explore the latest innovations and applications firsthand. This bridge between academia and industry is a testament to iCORE's commitment to driving technological advancements that have a tangible impact on society. Collaborations forged at iCORE have led to breakthroughs in various domains, from healthcare and finance to energy and transportation, illustrating the transformative power of interdisciplinary research.

The international dimension of iCORE adds a rich layer of cultural diversity to the conference. Researchers from different continents converge to share their perspectives, bringing a global context to the discussions. The cross-cultural exchange enriches the intellectual fabric of the conference and fosters a sense of global citizenship among the participants. It is not uncommon for collaborations to extend beyond the conference, resulting in joint research projects, international partnerships, and collaborative initiatives that transcend borders.

The impact of iCORE reverberates far beyond the confines of the conference venue, influencing the trajectory of research, industry practices, and societal norms. In its commitment to excellence, collaboration, and innovation, iCORE remains at the forefront of advancing the frontiers of knowledge, pushing the boundaries of what is possible in the dynamic intersection of computer science, information technology, and technology as a whole.

CALL FOR PAPERS

Future Earth: Technology's Role in Shaping Sustainable Outcomes

The 3rd International Conference on Information and Computing Research (iCORE) 2024 is a significant event in the field of computer science, information technology, and related areas. Year after year, iCORE brings together a diverse array of academics, researchers, practitioners, and industry experts from across the globe, creating a vibrant platform for exchanging cutting-edge ideas and advancements in the ever-evolving field.

Submission Guidelines

Authors are encouraged to submit original, unpublished research papers using the [iCORE format](#) through the conference submission system. The [Easychair Submission link](#) will open on March 30, 2024. Submissions will go through a rigorous peer-review process by an expert panel. Accepted papers will be presented and published in the conference proceedings.

Track 1 - Sustainability and Social Good

- Systems for Social Good
- Responsible AI
- Explainable AI
- Generative AI
- Societal Implications of Technology

Track 3 - Hypermedia

- Animation
- Multimedia Systems
- Interactive Systems
- Game & Simulations
- Meta & Realities

Track 2 - AI and Machine Learning

- Human Language Technology
- Intelligent Computing Applications
- Computer Vision

Track 4 - Emerging Technologies

- Education in Engineering and Technology
- Data Science, Computing Technologies & Algorithms
- Communications Networking
- Information & Security
- Internet of Everything
- Smart Computing
- Green Computing

PROGRAMME

DAY 1 | JULY 19, 2024

TIME	EVENT
8:00 - 9:00	Registration
9:00 - 10:10	Conference Inauguration & Special Messages: Welcome Remarks Dr. Vladimir Mariano General Chair, iCORE2024
	Special Message Dr. Renato Carlos H. Ermita President/CEO, National University Philippines
	Special Message Dr. Jessie Barrot AVP, Research & Development Office of National University
	Messages from University Partners Prof. Xu, Yong - Anhui University of Finance and Economics Prof. Marilou Jamis - NU – MOA Fr. Jesuraj Anthoniappen - University of San Carlos
	Video Messages Anhui Xinhua University Bicol University University of Cordilleras Don Mariano Marcos Memorial University Laguna State Polytechnic University Jiangxi V&T College of Communications
10:10 - 10:30	NU Chorale Presentation
10:30 - 11:15	Coffee Break Keynote Address: Dr. Simon See Professor, NTU, Coventry University and University of Newcastle Global Head Nvidia AI Technology Centre NVIDIA Executive Director of ASEAN Applied Research Centre, Professor
11:15 - 12:00	Keynote Address: Dr. Vladimir Mariano Lead Faculty for Technology and Innovation, YSEALI Academy of Fulbright University Vietnam
12:00 - 1:00	Lunch Break
1:00 - 1:30	Industry Talk by Alibaba Cloud JV Roig Senior Solutions Architect at Alibaba Cloud
1:30 - 4:45	Parallel Sessions
4:45 - 5:00	Day 1 Synthesis Session Chairs
5:00 - 5:30	Claiming of Certificates

PROGRAMME

DAY 2 | JULY 20, 2024

TIME	EVENT
8:00 - 9:00	Registration
9:00 - 12:15	Parallel Sessions
12:15-1:30	Lunch Break
1:30 - 2:15	Industry Talk: Google Julian Salazar Senior Research Scientist on Perception Team, Google Research
2:15 - 3:00	Industry Talk: IBM Phaedra Boinodiris Global Leader for Trustworthy AI, IBM Consulting
3:00 - 3:20	Coffee Break
3:20 - 3:45	Industry Talk by SAS Beatrix Palomar Fraud and Security Intelligence Practice Lead
3:45 - 4:15	Awarding Ceremony Best Paper Best Presentations
4:15 - 4:30	Closing Keynote Dr. Vladimir Mariano General Chair, iCORE2024
4:30 - 5:00	Claiming of Certificates
	Master of Ceremonies Dr. Mark Kristian Ledda & Dr. Angie Ceniza - Canillo

PLENARY SPEAKERS



SIMON SEE

Senior Director, Chief Solution Architect and Global Head, NVIDIA AI Technology Center

Professor See is currently involved in a number of International computational, mathematical science projects and national AI initiatives. Recently Dr Simon has been appointed as the Executive Director of the ASEAN Applied Research Centre (AARC). His research interests are in the area of High-Performance Computing, Big Data, Artificial Intelligence, Machine Learning, Computational Science, Applied Mathematics and Simulation Methodology.

PHAEDRA BOINODIRIS

Global Leader for Trustworthy AI, IBM Consulting



Phaedra Boinodiris, based in Morrisville, North Carolina, stands at the forefront of responsible AI leadership and innovation. Currently serving as IBM Consulting's Global Leader for Trustworthy AI, she brings over 13 years of experience to the field. Phaedra is renowned for her expertise in scaling AI responsibly, working to mitigate risks for clients through a comprehensive offering that addresses cultural adoption, AI engineering, and governance. As an acclaimed author of 'AI for the Rest of Us' and a prolific public speaker, Phaedra is deeply committed to advancing AI ethically. Her notable accolades include the United Nations Woman of Influence in STEM and Inclusivity Award in 2019, the Social Innovator Award by IBM in 2018, and being recognized as one of the Top 100 Women in the Games industry by Women in Games International in 2007.

PLENARY SPEAKERS



DR. VLADIMIR MARIANO

Lead Faculty for Technology and Innovation, YSEALI Academy of Fulbright University Vietnam.

Dr. Vladimir Mariano (Vlad) is the Lead Faculty for Technology and Innovation at the YSEALI Academy of Fulbright University Vietnam. Vlad graduated with a Ph.D. in Computer Science and Engineering at the Pennsylvania State University, with research interests in machine learning and computer vision.



JULIAN SALAZAR

Senior Research Scientist on Perception Team, Google Research

Julian Salazar is a Senior Research Scientist on the Perception team at Google Research, where he is technical lead for a generative AI effort in speech and dialogue. Prior to this he spent over five years at AWS AI Labs, where he developed language models, acoustic models, and novel text adaptation capabilities for Amazon Transcribe. His research centers around large speech and language models, low-resource NLP, non-autoregressive ASR, and most recently speech audio generation. Julian grew up in the Philippines and Canada and has a degree in Mathematics from Harvard University.

PLENARY SPEAKERS



JV ROIG

Senior Solutions Architect at Alibaba Cloud

V Roig has been an IT practitioner for nearly 20 years, with his most recent area of expertise being the Cloud and generative AI. He has 21 cloud certifications across 5 different clouds, and five of these certifications are related to data and AI. Currently, he is a Senior Solutions Architect at Alibaba Cloud, helping customers improve their cost-efficiency, security and reliability in the cloud, as well as helping them reap the benefits of generative AI through Alibaba Cloud's comprehensive genAI services.



BEATRIX PALOMAR

**Fraud and Security Intelligence
Practice Lead**

Beatrix Palomar is a technical consultant working in analytics particularly in banking and telecommunications risk, fraud and security intelligence space. Has experience in model development and designing and building RDL, including curation of data into DIP to meet business priorities. Has skills in aml solution delivery, sas, python, data visualization and storytelling.



iCore 2024

3rd International
Conference on Information and Computing Research (iCORE)

FUTURE EARTH: TECHNOLOGY'S ROLE IN SHAPING SUSTAINABLE OUTCOMES

LagipAR: An Augmented Reality Based Mobile Application for Cultural Preservation of Musical Instruments in the Cordillera

Xhyple Au Limmong (University of the Cordilleras), **Lei Aries Jb Gapuz** (University of the Cordilleras), **Francheska Louise Serrano** (University of the Cordilleras) and **Melinda Beninsig** (University of the Cordilleras).

ABSTRACT:

The intersection of globalization, media, and technology presents both challenges and opportunities for the preservation of local cultures, particularly in fields like music. In this digitally interconnected world, emerging technologies such as Three-Dimensional (3D) technology and Mixed Reality (MR) offer promising solutions for safeguarding cultural heritage. This paper discusses the development of an Android mobile application, LagipAR, aimed at preserving indigenous musical instruments in the Cordillera through Augmented Reality (AR). Employing the Scrum Methodology for project management, the researchers conducted interviews, document analysis, and utilized various software development tools. LagipAR's architectural framework follows the 4+1 Architectural View Model, comprising Logical, Process, Physical, and Development views, along with an extended Scenario view. Key features of LagipAR include See and Read Articles, View in AR, Instrument Sound for users, and an Admin Dashboard for administrators. The study underscores the importance of organizational understanding, detailed instrument information, system requisites, and library services for successful application development. The holistic approach and clear architectural framework position LagipAR as a potent tool for cultural preservation and dissemination. Recommendations for future research include deploying cloud database storage for larger media assets and creating instructional animations for playing the instruments.

Analysis of the Application Effect of Neural Networks in the Classification of Tomato Disease and Pest Images

Bingjie Liu (National University, Philippines) **and Vladimir Mariano** (National University, Philippines).

ABSTRACT:

Vegetable diseases and pests pose a serious threat to human food security. This study addresses the challenges of tomato disease and pest image classification and recognition by employing machine learning techniques. Specifically, three different neural network models, CNN, VGG, and AlexNet are utilized, and transfer learning is introduced to mitigate the issue of insufficient training data for small sample sizes. Researchers conducted a comprehensive comparison and analysis of the models' accuracy, precision, and recall. The result of experimental show that the VGG model exceeds the others, achieving an accuracy rate of 92.36% and recall of 89.67%. This research provides empirical support for using machine learning in agricultural pest and disease management, contributing significantly to enhancing crop yield and ensuring food safety.

Design and Development of a Portable Beam Deterioration Detection System using Impulse Radar with CNN for Efficient Bridge Management

Rosanne Andaluz (Surigao del Norte State University), **Vrian Jay Ylaya** (Surigao del Norte State University), **Wearl Webster Donoso** (Surigao del Norte State University) and **Ece Van Baclay** (Surigao del Norte State University).

ABSTRACT:

The study aims to create a user-friendly and portable solution that leverages AI and impulse radar technology to detect beam deterioration in bridges with precision. It meticulously outlines the project's design, emphasizing a user-centric approach to developing a portable system that seamlessly integrates AI and impulse radar, ensuring effective and efficient bridge health monitoring for real-world applications. Researchers use impulse radar technology to capture and organize data, use artificial intelligence for decision-making and cross-referencing, and a well-trained AI model to ensure accuracy in assessing bridge structural integrity for final analysis. The development of an impulse radar system for investigating concrete beam deterioration involved essential components such as the impulse radar, transmitter and receiver antennas, SMA connectors, a USB cable connector, and a Windows laptop with PicoR 5.0 software, data collection is focused on reinforced concrete deterioration types, categorizing samples into cracks, voids, and healthy sections, resulting in a dataset of 1,272 images and Convolutional Neural Network (CNN) algorithm, designed using Python in Jupyter Lab, achieved an overall accuracy of approximately 91% for deterioration detection, supported by a graphical user interface (GUI) for user-friendly analysis. Deployed onto bridge infrastructure, the system promises to enhance maintenance practices, integrating with existing processes for improved bridge safety and longevity through real-time assessment and proactive management.



Classification of Pneumonia in Radiology Images Using Neural Networks

Jianlan Ren (National University, Philippines) and **Vladimir Mariano** (National University, Philippines).



ABSTRACT:

Pneumonia is a long-standing disease that poses a serious threat to human health. Modern medicine uses CT images to assess the condition of pneumonia, but manual identification methods are outdated and inefficient. Therefore, this study adopts a machine learning method for classifying and recognizing pneumonia CT images. In this study, two classic convolutional neural networks, including CNN, SqueezeNet and ResNet, were used to build experimental models. To improve the ability to extract features from images, an SE attention mechanism was added to the models. The experiments showed that all three experimental models achieved good classification results, with the ResNet model achieving the highest precision of 92.50%. The experiments demonstrated that neural networks can effectively improve the efficiency of pneumonia CT image recognition, which is helpful for the diagnosis and treatment of pneumonia.

Classification on Three Phases of Vermicomposting Using VGG-16 Implemented in Impulse Radar

Lucilyn Borja (Surigao del Norte State University), **Vrian Jay Ylaya** (Surigao del Norte State University), **Arrianne Mae Angob** (Surigao del Norte State University) and **Glanestly Abarca** (Surigao del Norte State University).

ABSTRACT:

This study proposes a method utilizing impulse radar technology and a pre-trained convolutional neural network model for classifying three phases of vermicomposting. Traditionally, assessing vermicomposting phases required subjective and time-consuming manual procedures. The study approach forces impulse radar technology to analyze pH levels and moisture content, while the pre-trained convolutional neural network architecture supports phase classification with high accuracy rates, across Pre-Decomposition, Curing, and Maturation phases. This implementation demonstrates significant advancements in monitoring composting stages, offering insights into composting progression and quality. Furthermore, integrating impulse radar and pre-trained convolutional neural network models presents enhanced efficiency and precision in vermicomposting management, showcasing its potential to promote environmental sustainability and agricultural productivity.

Spouse-YOLOv8 Students 'After-class Learning Distraction Behavior Detection Model Deployed on Mobile Devices

Zhendan Sun (College of Computing & Information Technologies of National University of Manila) and **Vladimir Y. Mariano** (College of Computing & Information Technologies of National University of Manila).

ABSTRACT:

Primary and secondary school students are prone to distracted behaviors after class, which leads to the decline of learning efficiency. Therefore, it is necessary to detect and remind them to concentrate on learning in real time. Due to the large CNN, KNN and CPM behavior recognition algorithms, the real-time performance and accuracy of distracted behavior recognition are insufficient in the complex family environment. To solve this problem, this paper proposes an improved learning distraction behavior detection model Spouse-YOLOv8 based on a data enhancement mechanism and lightweight YOLOv8n, simplifying convolution calculation and reducing mobile terminals' computing resource consumption. In addition, the front-image data enhancement module is combined with increasing data diversity, strengthening the neural network to extract key features of distracted behavior, reduce data volume dependence, and further improve real-time detection performance and recognition accuracy. The verification results on a data set of 1450 images of 10 kinds of distractor behaviors show that Spouse-YOLOv8 has a mAP50 (0.961) and an FPS processing speed of 147.1/s, which is better than the original model and existing methods in terms of accuracy and speed.

Alertrash: A Web-based Reporting System for Waste Disposal Violations

Stefany Mae Caliao (University of the Cordilleras), **Aldith Faith Mirador** (University of the Cordilleras), **Melinda Beninsig** (University of the Cordilleras) and **Lovely Jenn Reformado** (University of the Cordilleras).

ABSTRACT:

Since 2019, Baguio City, Philippines generates more than 400 tons of garbage daily, causing an annual expenditure of 230 Million Pesos on Solid waste management and incessant waste disposal violations. To address these concerns, Alertrash was created. Alertrash is a web-based reporting system that allows users to submit detailed reports on waste disposal violations and engages the community to be part of the city's waste management process. The researchers used Scrum as the Software development methodology to identify the essential requirements, architecture framework, and features of the system. The results of this study concluded that a) account creation is necessary to submit valid reports; b) the Model-View-Control framework is the ideal architecture framework for the system; c) the primary features of the system included geotagging waste report violations, report statistics and generation, collection areas and schedules, zero-waste practices, waste management events and ordinances; and d) With an overall weighted mean average of 6.047 from the USE questionnaire, the users perceive Alertrash as useful, easy to use, easy to learn, and satisfactory, thus proving that Alertrash is relevant and viable in shaping the city's incorporation of technology in its waste management.

presQRx: A Mobile Application for QR-Code Prescriptions

Lhorexcel Bombarda (University of the Cordilleras), **Agnes Nazarro** (University of the Cordilleras), **Earl Alexus Serafica** (University of the Cordilleras) and **Melinda Beninsig** (University of the Cordilleras).

ABSTRACT:

The illegibility of handwritten prescriptions poses a significant problem in healthcare, leading to medication errors and compromising patient safety. Previous literature indicates high patient preference for electronic prescribing systems. This project aims to develop presQRx, a mobile application leveraging QR code technology, with the objectives of improving prescription accuracy and enhancing collaboration among patients, licensed physicians, and pharmacists. presQRx employs Feature-Driven Development (FDD) methodology, emphasizing iterative cycles for efficient software development. The methodology includes problem validation through structured interviews with healthcare professionals and patients, ensuring diverse perspectives in the development process. The extent of usability of the study was evaluated through the administration of the USE questionnaire survey. The evaluation yielded an overall mean level of agreement of 6.45, 6.16, and 6.36 respectively among patient respondents, licensed physician respondents, and pharmacist respondents, indicating that users strongly agree that presQRx is a user friendly mobile application. The study concludes by stating that presQRx emerges as a user-friendly and effective solution, demonstrating its potential to address prescription-related challenges in the healthcare industry. Recommendations for future research include further exploration of user data Sequence Diagram, integration of notification features for medication reminders, and expansion of sample sizes to enhance data precision.

Design and Comparison of Vivaldi Antennas for Impulse Radar

Robert Bacarro (Surigao del Norte State University), **Darwin Mangca** (Surigao del Norte State University), **Vrian Ylaya** (Surigao del Norte State University), **Merlinda Pabinguit** (Surigao State College of Technology) and **Junrich Escabal** (Surigao del Norte State University).

ABSTRACT:

The escalating demand for ultra-wideband radar systems in the Philippines is challenged by the high cost and limited availability of commercial Vivaldi antennas, essential in applications like non-destructive testing and medical imaging where high performance and wide bandwidth are imperative. This study aims to design, simulate, and compare Vivaldi antennas for use in radar applications. The design process involves optimizing the antenna dimensions and shapes to achieve the desired frequency range and parameters. The performance of the designed Vivaldi antennas is evaluated using simulation software, and the results are compared to the commercially available Vivaldi antenna. The comparison includes several performance metrics: VSWR, gain, frequency, and physical dimensions. The findings show that the commercial antenna and the three custom-designed antennas both exhibit better performance, as they both have no significant difference in VSWR or width. And in terms of a higher gain, the custom-designed 1 shows no significant difference from the commercial antenna, and the rest comes with a slight gap between the two custom-designed antennas. The other custom-designed antenna does not yet match the high specifications of the commercial antenna. This study provides a starting point for further research and improvement, as there are many potential designs to explore that could meet the high specifications.

Readiness Of Vermicomposting Soil Conditioner Using Impulse Radar

Romy Jun Sunico (Surigao del Norte State University), **Vrian Jay Ylaya** (Surigao del Norte State University), **Ferie Ann Dumaguit** (Surigao State College of Technology) **and Mary Jessebel Clavero** (Surigao del Norte State University).

ABSTRACT:

The necessity to enhance agricultural efficiency and sustainability motivates this study, focusing on the vermicomposting process, a key component in organic waste management and soil enrichment. Traditional methods for assessing the maturity of vermicomposting rely heavily on subjective evaluations that are time-consuming, require specialized knowledge, and often yield inconsistent results. These limitations highlight the need for a more precise and efficient approach to monitor vermicomposting maturity. To address this issue, this research utilizes impulse radar and deep learning algorithms to develop a device capable of estimating the maturity of vermicomposting soil conditioners. This novel approach integrates hardware assembly, impulse radar research, vermicomposting setup, data collection, data separation, and actual testing with deep learning algorithms. The system offers an effective and dependable method for monitoring soil conditioner maturity, crucial for enhancing agricultural and gardening practices. The use of impulse radar technology and deep learning algorithms enables the accurate prediction of vermicomposting maturity. The system's performance was evaluated by conducting a series of tests on various phases of vermicomposting, with a graphical user interface (GUI) that achieved an overall accuracy rate ranging from 70% to 80% in correctly identifying the maturity stages. This integration of impulse radar and artificial intelligence into vermicomposting maturity assessment provides a transformative approach that significantly improves the management of organic waste and the quality of soil conditioners used in agriculture. This advancement has the potential to make sustainable practices more accessible and effective, contributing to enhanced agricultural productivity and global food security.



Tracking Of Leaffolder and Stem Borer On Rice Plant Using Deep Learning Through UAV

Catherine Verallo (Surigao del Norte State University), **Vrian Jay Ylaya** (Surigao del Norte State University), **Scott Diaz** (Surigao del Norte State University) and **Jivson Cala** (Surigao del Norte State University).

ABSTRACT:

The need for efficient pest management in rice cultivation is crucial due to the significant damage caused by pests like leaffolders and stem borers. Conventional methods, which involve manual inspection and sensory detection, are not only labor-intensive but also often inaccurate, leading to delayed and ineffective pest control measures. This study developed a system that uses UAV and deep learning algorithms to track the leaf folder and stem borer in rice fields. This system makes it possible for farmers to track the leaf folder and stem borer effectively and reliably without having to physically inspect their entire field to determine whether a disease is present. The methods involved in obtaining the system are collecting data using pictures, creating a program using a deep learning algorithm, train the program using classified data, retrain the program if the standard is not met, implement the model if accuracy is obtained, and test the model on actual settings. The developed system tracked the disease 75% using 5 different groups with 10 tests per group. The integration of UAV technology and deep learning for pest detection in rice fields offers a promising solution to the challenges of traditional agricultural pest management. By enabling faster and more accurate detection, this technology can significantly enhance the efficiency of pest control strategies, leading to increased crop yields and more sustainable farming practices. This study not only demonstrates the effectiveness of the system but also opens avenues for further research and application in other areas of precision agriculture.

Design and Implementation of Web-base with Mobile Application for Water Quality Monitoring

Analyn Morite (Surigao del Norte State University), **Vrian Jay Ylaya** (Surigao del Norte State University), **Geraldine Roldan** (Surigao del Norte State University) and **Jude Michael Bautista** (Surigao del Norte State University).

ABSTRACT:

Efficient and accurate water quality monitoring is crucial in aquaculture, particularly for species like Nile Tilapia that require stable environmental conditions. Traditional methods, reliant on manual sampling and lab testing, are not only cumbersome but also prone to inaccuracies due to human error. These methods inadequately address the need for timely interventions, which are essential for maintaining optimal aquatic environments. This study aims to bridge the technological gap in real-time water quality monitoring by developing and implementing an IoT-based system, enhancing the responsiveness and precision of environmental management in aquaculture. We designed an IoT system employing multi-parameter sensors to monitor key water quality metrics—pH, temperature, ORP (Oxidation-Reduction Potential), TDS (Total Dissolved Solids), and humidity. Data acquisition was facilitated through a web-based application and a smartphone interface, ensuring accessible, real-time data for fishpond operators. The system was deployed at the SNSU Mainit Campus, with continuous monitoring conducted to evaluate fluctuations in water parameters over a specified period. Figures illustrating the data collected include pH levels around 6.80, temperatures between 31-32°C, humidity consistently within 74-76%, TDS readings from -150 to -170 ppm, and ORP values fluctuating between 0 and -120 mV. The implementation showcased the system's capability to provide detailed and immediate water quality readings, enabling proactive management practices. Usability assessments conducted with end-users—farmers and faculty—resulted in high satisfaction ratings: 4.25 for usability, 4.124 for operability, and 4.0 for functionality. The deployment of the IoT-based monitoring system significantly improved the management of water quality in aquaculture environments. By offering real-time, accurate data on critical water parameters, the system allows for swift adjustments, ensuring the health and growth of Nile Tilapia. Our findings suggest that such technological integrations can revolutionize aquaculture practices, making them more sustainable and less reliant on labor-intensive processes.

Design and Implementation of IoT-based Microclimate Monitoring System with Wireless Sensor Networks

Darwin Mangca (Surigao del Norte State University), **Robert Bacarro** (Surigao del Norte State University), **Vrian Jay Ylaya** (Surigao del Norte State University), **James Paul Degamon** (Surigao del Norte State University) and **Vincent Nicole Dihayco** (Surigao del Norte State University).

ABSTRACT:

Microclimate is the environment of a specific location which is important to monitor. It has a great impact on understanding environmental factors such as temperature, humidity, soil moisture, and light intensity. Traditional monitoring system lacks precision and timeliness leading to false data. The development of IoT-based microclimate monitoring systems employing Wireless Sensor Networks (WSNs) holds great promise for upgrading agricultural methods. This research project aimed to design, implement, and evaluate a system customized exclusively for farming contexts. The study had three main goals: design and create a new WSN optimized for microclimate monitoring, collect critical data on microclimate factors to guide hardware needs, and evaluate the system's effectiveness in actual agricultural areas. The findings showed promising accuracy compared to microclimate data from the Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA). Temperature readings achieved accuracy with a percentage difference of 16%, demonstrating the system's capacity to track temperature swings within agricultural microclimates influenced by changing weather conditions. Similarly, humidity measurements reached a percentage difference of 12% result. The findings for the correlation of soil moisture and light intensity resulted in an R-value of 0.194265 which indicates a low correlation value between the two. Despite these successes, the study underscores the need for ongoing refinement and validation against established meteorological data sources to enhance system reliability and accuracy.



Design and Development of Poultry Automation System for the Gallus Gallus Domesticus

Leopoldo Besinio Jr. (Surigao del Norte State University), **Vrian Jay Ylaya** (Surigao del Norte State University), **Edgar Gardose** (Surigao del Norte State University) and **Tulip Menor** (Surigao del Norte State University).

ABSTRACT:

Poultry farms play a crucial role in the agricultural industry, specializing in the rearing and production of poultry, particularly chickens for meat and eggs. These farms are designed to provide a controlled environment that supports the growth, health, and welfare of poultry birds. Modern poultry farms often incorporate advanced technologies and automation systems to optimize production efficiency, monitor environmental conditions, and ensure optimal care for the birds. However, maintaining environmental conditions is quite challenging; these challenges include fluctuations in temperature and humidity levels, ammonia gas accumulation, and inadequate ventilation. These environmental issues can lead to heat stress, respiratory problems, reduced egg production, and overall discomfort for the poultry birds, ultimately affecting their health and productivity. Our study introduces a user-friendly poultry farm automation system powered by Raspberry Pi. The system focuses on improving poultry health and farm management by monitoring critical environmental factors. Sensors integrated with Raspberry Pi continuously measure the coop's temperature, humidity, and ammonia levels. Additionally, the system incorporates egg-detection technology. All collected data is transmitted wirelessly to a user-friendly web application, providing farmers real-time insights into their flock's environment. This data is transmitted wirelessly to a web application, providing real-time insights to farmers. The system leverages push notifications to alert farmers on their phones about any critical changes in the coop environment, enabling prompt intervention. This automation improves observation accuracy and minimizes labor by reducing manual monitoring and alerting. By promoting remote management and efficient resource utilization, this system offers a cost-effective and scalable solution for small to medium-sized poultry farms.



IoT- Enabled Piggery Automation System

Darwin Mangca (Surigao del Norte State University), **Robert Bacarro** (Surigao del Norte State University), **Vrian Jay Ylaya** (Surigao del Norte State University), **Russel Asilo** (Surigao del Norte State University) **and Fernando Yabo** (Surigao del Norte State University).

ABSTRACT:

The enhancement of piggery environments through automation and precise control of parameters such as temperature, humidity, and ammonia levels is critical for improving animal welfare and operational efficiency. Current piggery management practices are typically labor-intensive and do not adequately leverage modern IoT technologies, which can lead to inefficiencies and suboptimal living conditions for livestock. Existing solutions often lack integration and real-time response capabilities, necessitating the development of more advanced systems. This study focuses on creating and implementing an automation system for IoT-enabled piggery farms, utilizing the Raspberry Pi 4 platform, Internet of Things (IoT) technology, and cloud computing. The system incorporates modern sensors such as the DHT22 for temperature and humidity readings, and the MQ137 for detecting NH₃ ammonia gas within the piggery environment. Data collected by the Raspberry Pi 4 Model B microprocessor is transmitted to a web application for storage. The research adopts a systematic approach, including piggery investigation, situation analysis, online and field research, data gathering, system design, programming, project building, field testing, and evaluation. The IoT-enabled piggery automation system has achieved its objectives by effectively utilizing MQ137 and DHT22 sensors to monitor key parameters such as ammonia levels, temperature, and humidity in the piggery facility. The system notifies users through a GUI website interface in real-time if preset thresholds are exceeded, facilitating prompt action by pig farmers. Notably, if ammonia levels surpass 25 ppm, the system triggers a solenoid relay to wash out pig manures after a one-minute delay, ensuring a clean environment for the pigs and minimizing disease risks. This ultimate objective will enhance pig welfare, economic viability, and sustainability through technological innovation and automation. The IoT-enabled system demonstrated a significant improvement in managing piggery environments, enhancing animal welfare and operational efficiencies. The integration of sensor data and automated controls represents a scalable solution that could be adapted to various agricultural settings, promoting sustainability and economic viability.

Soil Moisture Analysis implemented using FMCW through USRP 2932

Robert Bacarro (Surigao del Norte State University), **Darwin Mangca** (Surigao del Norte State University), **Vrian Jay Ylaya** (Surigao del Norte State University), **Sorene Castones** (Surigao del Norte State University) and **Mercy Penarejo** (Surigao del Norte State University).

ABSTRACT:

In the context of agriculture and hydrology, accurate soil moisture assessment is critical for effective water resource management and crop productivity. Traditional methods often involve invasive techniques, which may not be practical over large or inaccessible areas. There remains a need for a non-invasive, cost-effective, and reliable method to monitor soil moisture across extensive agricultural landscapes, ensuring minimal environmental disruption while maintaining high spatial resolution. This paper presents a novel approach to soil moisture analysis utilizing Frequency Modulated Continuous Wave (FMCW) radar technology integrated with the Universal Software Radio Peripheral (USRP) 2932. By employing FMCW radar principles, the system gauges soil moisture levels via radar signal reflections, facilitated by the USRP 2932 for signal generation, transmission, reception, and data processing. This configuration enables real-time, contactless monitoring of soil moisture over extensive areas with fine spatial resolution, providing valuable data for hydrological modeling and agricultural management. The system's affordability, adaptability, and minimal environmental impact render it a promising solution for soil moisture assessment and sustained monitoring applications. The evaluation revealed consistent results with a variation of 6 cm in elevation and distance between measurements. Upon scrutiny, the Soil Moisture Analysis utilizing FMCW via USRP 2932 exhibited commendable consistency and accuracy, closely aligning with results obtained using Arduino. The FMCW radar system integrated with USRP 2932 proves to be an effective tool for soil moisture analysis, offering significant advantages in terms of adaptability, cost, and environmental impact. These attributes make it a viable alternative for sustainable agricultural practices and hydrological research, warranting further exploration into its potential applications.

Maturity Assessment Of Lactuca Sativa Using Image Processing Based On Morphological Analysis And Convolutional Neural Network

Emman Brenzo Tero (Department of Computer Information Sciences and Mathematics University of San Carlos Cebu City, Philippines), **John Robert Tiempo** (Department of Computer Information Sciences and Mathematics University of San Carlos Cebu City, Philippines) and **Christian Maderazo** (Department of Computer Information Sciences and Mathematics University of San Carlos Cebu City, Philippines).

ABSTRACT:

Lettuce is an important dietary vegetable, which is primarily consumed fresh in salads. Consumption of lettuce has some health benefits attributed to the presence of Vitamin C, phenolic compounds, and fiber content. The aim of this study is to create a system using image processing and convolutional neural networks that will assess the maturity of lactuca sativa or lettuce by analyzing its morphological features (height, width, color, shape and formation of leaves). A portion of the lettuce images collected will be used to train a convolutional neural network that can assess the maturity of lettuce into three categories (not ready for harvest, ready for harvest and too late for harvest). The goal of the study is to create a system that can assess the maturity of lettuce (lactuca sativa) just by sight alone. The outcome of this system will be very beneficial to both experienced and inexperienced plant growers as this system helps determine the optimal time of harvest of planted lettuce.



Web-Based Microclimate Monitoring System

Darwin Mangca (Surigao del Norte State University), **Robert Bacarro** (Surigao del Norte State University), **Vrian Jay Ylaya** (Surigao del Norte State University), **Vance Rey Najera** (Surigao del Norte State University) and **Rolyn Mae Duque** (Surigao del Norte State University).



ABSTRACT:

Accurate and localized weather data is crucial for effective agricultural management and environmental monitoring, yet most available data cover broad regions, which may not reflect local microclimates accurately. This discrepancy can lead to suboptimal agricultural practices and environmental assessments. The general forecasting models, like those provided by PAGASA, fail to deliver precise weather data for specific localities, such as campuses or small-scale farms, which are significantly influenced by localized climatic conditions. To address this, the study developed a Web-Based Microclimate Monitoring System utilizing IoT technology. The system employs sensors including DHT22, BMP280, and a rain sensor, interfaced with a Raspberry Pi to capture real-time data on temperature, humidity, and atmospheric pressure. Data management is facilitated through storage in CSV format and real-time visualization via Grafana. The system demonstrated high accuracy in real-time weather monitoring, showing close alignment with PAGASA's regional forecasts yet providing more detailed, localized data. This system effectively filled the gap in specific area monitoring, offering substantial improvements in localized data accuracy. The Web-Based Microclimate Monitoring System proves to be a reliable and effective tool for localized weather monitoring. Its implementation can significantly enhance decision-making in agriculture and environmental management by providing precise, real-time data tailored to specific locations. This study underscores the potential of IoT in enhancing the granularity and accuracy of environmental monitoring systems.



Price Forecasting Model for Selected Agricultural Commodities in the Philippines

Hannah Dorothy Morales (Don Mariano Marcos Memorial State University - Mid La Union Campus), **Raymond Tabafunda** (Don Mariano Marcos Memorial State University - Mid La Union Campus), **Loreen Caud** (Don Mariano Marcos Memorial State University - Mid La Union Campus), **Sydrick Lois Roque** (Don Mariano Marcos Memorial State University - Mid La Union Campus) and **Alvin Malicdem** (Don Mariano Marcos Memorial State University - Mid La Union Campus).

ABSTRACT:

This study focuses on crafting an accurate price forecasting model and user-friendly system tailored for predicting agricultural commodity prices in the Philippines. It involves evaluating various statistical techniques and machine learning algorithms specifically for the Philippine agricultural market context. Specifically, the objectives of the study aim; to create a regression model to predict the retail prices of agricultural commodities using CRISP-DM; to develop a web-based price forecasting system integrating the regression model; and to evaluate the usability of the system through the System Usability Scale (SUS). Assessment criteria such as Mean Absolute Error (MAE), Root Mean Square Error (RMSE), and correlation coefficients are employed to rigorously evaluate the performance of the forecasting model. In addition to model development, the study encompasses the creation of an intuitive web-based forecasting system. This system integrates the developed model, offering an accessible interface for users to access dependable price predictions. Continuous updates ensure the system's adaptability and precision. Moreover, the research evaluates system usability through the System Usability Scale (SUS) methodology, utilizing user feedback to enhance user-friendliness and efficacy. The researchers were able to develop a Price Forecasting Model for Selected Agricultural Commodities in the Philippines using Gradient Boosting Regressor model; integrate the selected model with a developed price forecasting system; and evaluate the system usability, interpreted as excellent with a SUS score of 82.44.



OSCAre: Senior Citizen Management System with Data Visualization

Shieh Carambias (Don Mariano Marcos Memorial State University), **Charles Andrei Aspuria** (Don Mariano Marcos Memorial State University), **Jo-Ana Enriquez** (Don Mariano Marcos Memorial State University), **Roland John Gracias** (Don Mariano Marcos Memorial State University) and **Sheena Sapuay-Guillen** (Don Mariano Marcos Memorial State University).



ABSTRACT:

As the senior citizen population grows steadily, addressing their needs becomes increasingly crucial. Challenges such as social isolation and limited access to services persist, requiring innovative solutions. Information Systems (IS) play a pivotal role in modern organizations, emphasizing the need for digital solutions to enhance efficiency and decision-making. This study aimed to develop OSCAre, a web-based Senior Citizen Management System with Data Visualization, utilizing Extreme Programming principles. Through a combination of descriptive research and Focus Group Discussions (FGDs), key performance indicators (KPIs) were identified to guide system development. OSCAre offers comprehensive features tailored to streamline administrative tasks, improve communication, and reduce manual data management efforts. Evaluation using the Post-Study System Usability Questionnaire (PSSUQ) revealed high user satisfaction across dimensions of system usefulness, information quality, and interface quality. Overall, OSCAre represents an innovative solution for optimizing senior citizen management processes, promoting efficient service delivery, and enhancing the quality of life for elderly individuals.

Analysis of Spatio-temporal Data Characteristics and Modeling with LSTM Networks for Traffic Flow Prediction

 Wei Xu (13870896975), Eric Blancaflor (9158794156) and Mideth Abisado (9158794156).

ABSTRACT:

This study focuses on the prediction of traffic flow in Beijing through deep learning models to reduce urban traffic congestion. By combining historical traffic data, meteorological information and special event data, we successfully built advanced algorithms based on RNNS, LSTMS and attention mechanisms. These algorithms are designed to provide highly accurate and reliable prediction results to optimize traffic management in Beijing. In this study, the data processing is particularly detailed, including feature screening, model training and validation, and the performance is compared with traditional prediction techniques. Although limited by environmental factors unique to Beijing, this study provides a new perspective on smart city traffic management and promotes multi-party collaboration to find lasting solutions.



Research on Dish Recognition Based on Deep Learning

Yi Yu (University of San Carlos), **Archival Sebial** (University of San Carlos) and **Angie Ceniza** (University of San Carlos).



ABSTRACT:

With the development of new retail, unmanned settlement systems in smart restaurants can effectively reduce labor costs and improve operational efficiency. The core of an unmanned settlement system is the accurate identification of dishes. To solve this problem, deep learning methods were used to recognize images from Chinese dish databases. YOLO-v4, Faster R-CNN, and DenseBox neural networks were selected for training deep learning models, and their recognition results were compared and analyzed. The experimental results show that the Faster R-CNN network model performs the best, can automatically extract image features, has a recognition rate of 95.4% for dishes, a recall rate of 82%, and an F1 value of 88.2%. This study provides a reliable foundation for the intelligent recognition of dishes and the application of smart catering.



Research on Pose-guided Occluded Unsupervised Person Re-Identification

Jianbo Liang (College of Computing and Information Technologies, National University) and **Abisado Mideth** (College of Computing and Information Technologies, National University).

ABSTRACT:

Person Re-identification (ReID) refers to the method of identifying and tracking the same person by using multiple cameras to retrieve and judge different pedestrians in different scenes given a required pedestrian image. Aiming at the occlusion problem of pedestrian re-identification, this paper proposes a re-ID model to alleviate the occlusion problem of unsupervised models. Firstly, a pose-guided branch was introduced to extract the key point information of the person. Then, the global features extracted from the backbone network and the pose features extracted from the pose-guided branch were fused into the unsupervised system. Finally, the experimental results show that the proposed method has achieved great performance improvement in solving the problem of occluded pedestrian recognition.

Analysis of the application of NLP in the field of tunnel fire rescue

Xiaobing Liu (Jiangxi Communications Vocational and Technical College China) and **Rodolfo C. Raga Jr.** (College Of Computing And Information Technologies, National University Philippines).

ABSTRACT:

This study conducts an in-depth quantitative analysis of the application of NLP technology in the field of tunnel fire rescue. It screened 401 documents from Scopus, Web of Science, and PubMed covering the years 2012 to 2023. Through a systematic review and meta-analysis (PRISMA) process, 89 articles were excluded, resulting in a final analysis of 322 documents. Utilizing the ECharts tool for analysis and visualization, the study presents key insights into research dynamics, relevance, and collaboration networks. The article further discusses the potential and considerations for adopting NLP artificial intelligence technology to pave new avenues for research in the tunnel fire rescue domain, aiming to promote scientific development and technological innovation in this field.

Research on orange disease recognition model based on feature fusion four-branch parallel convolutional neural network

Xuefeng Yang (National University Philippines or Jiangxi College of Applied Technology China), **Vladimir Mariano** (YSAELI Academy at Fullbright University) and **Mideth Abisado** (National University Philippines).

ABSTRACT:

Data published by the Food and Agriculture Organization of the United Nations (FAO) in 2022 revealed that citrus ranks first in terms of planted area and total production. Currently, research on orange disease identification is still scarce, in order to achieve efficient, rapid and accurate location and identification of orange diseases, this paper focuses on the situation of orange diseases with similar shapes, which leads to unsatisfactory identification results, based on the feature fusion to construct a four-branch parallel convolutional neural network structure of the orange disease identification model (ODC-FFN). The inputs of the four branches are orange disease size, orange disease color, orange disease shape, and orange disease texture images, and ResNet-18 is used as the feature extractor of the four branches, and the features obtained from the four branches are fused to enhance the feature expression ability of orange disease images. Through the comparison experiments conducted by different training methods, different layer fusion methods, network models constructed by different branches and different recognition models, it is verified that the ODC-FFN model effectively avoids the interference of the similarity of different orange diseases, and improves the accuracy of orange disease classification.

An Integrated Management System with Descriptive Analytics for National University Research Department

Gabrielle David (National University (Manila, Metro Manila)), **Jhon Louie De Leon** (National University (Manila, Metro Manila)), **Cassandra Maria Heyu Dumpit** (National University (Manila, Metro Manila)), **Frank Vincent Gesmundo** (National University (Manila, Metro Manila)), **Aries John Teves** (National University (Manila, Metro Manila)) and **Emeliza Yabut** (National University (Manila, Metro Manila)).

ABSTRACT:

Technology has had a significant impact on the learning and instructional processes of educational institutions as a whole. Although most campuses in the Philippines procure the development of computer-based platforms to automate student-related services and store research materials, more developed systems were needed to digitize faculty performance measurements to boost the morale of university professors. The lack of a computer system and the intricate nature of the Tool for Research Achievement and Competency Evaluation (TRACE) catalyzed the development of an Integrated Management System for the National University Research Department. This paper aims to develop a web and mobile application to systematize the department's performance metric, including content and communication features such as forum and event, provide a profiling panel for professional and research information, and preset generated reports for administrators to use. With the Agile Model as the implementing method for the study, the researchers were able to develop the necessary functionalities and modules for the integrated system. In turn, the system will enhance the evaluation of research accomplishments and offer a more thorough method of managing data of this profession.

FLOOD WATCH: Flood Monitoring and Early Warning System in the City of San Fernando, La Union

Hortizuela Manny (Don Mariano Marcos Memorial State University), **Monica Estrada** (Don Mariano Marcos Memorial State University), **Chenie Ann Boado** (Don Mariano Marcos Memorial State University), **Hannah April Archeta** (Don Mariano Marcos Memorial State University) and **Jervin Balcita** (Don Mariano Marcos Memorial State University).

ABSTRACT:

Floods pose a significant threat to lives and livelihoods worldwide, highlighting the crucial need for effective early warning systems. Specifically, the study aims to achieve the following objectives: develop a device for flood monitoring and early warning system; evaluate the level of validity of the developed device using the Technology Assessment Protocol (TAP-TEEPS); develop software for flood monitoring and early warning system using prototyping model; and evaluate the system using ISO/IEC 25010 in terms of software quality standards. This paper employed developmental and descriptive methods of research for flood monitoring and early warning systems that leverage real-time data and SMS notification to enhance community preparedness and response. Using the prototyping model, a device and web system for flood monitoring and early warning with SMS notification was developed. For findings, there was a total of 42 respondents that evaluated the constructed Flood Watch device and garnered an overall mean rating of 4.57 with a descriptive interpretation rating of “very highly valid” and the developed Flood Watch system obtained an overall mean rating of 4.33 with a descriptive interpretation rating of “very highly acceptable”.

Application of I3D Networks in Speed Climbing: A Study on Single Climber Training Videos

 **Yafei Xie** (National University) and **Vladimir Mariano** (National University).

ABSTRACT:

This study investigates the application of Inflated 3D (I3D) convolutional networks in the analysis of speed climbing training videos. Utilizing a dataset of 251 meticulously annotated single climber training videos, we implemented I3D networks to analyze the spatiotemporal data of climbing movements. The I3D model demonstrated a high test accuracy of 96.58%, significantly outperforming traditional video analysis methods. Key performance metrics, including accuracy, precision, recall, and F1 score, confirmed the robustness and reliability of the I3D approach. The findings underscore the potential of advanced deep learning techniques in sports analytics, offering valuable insights for improving training and performance in speed climbing. This research contributes a comprehensive methodological framework and a valuable dataset to the field, paving the way for future studies and practical applications in various sports disciplines.

A Research Review of High-Dimensional Dataset Prediction Models

Jue Zhao (National University) and Vladimir Mariano (National University).

ABSTRACT:

In this paper, we present a comprehensive survey of the research progress in prediction models for high-dimensional datasets and discuss their applications and challenges across various fields. With the advent of the big data era, artificial intelligence, machine learning, pattern recognition, and other technical domains have experienced rapid development, propelling human society into the era of smart economy. In such a context, prediction models for high-dimensional datasets play a crucial role in numerous sectors including finance, healthcare, bioinformatics, and computer vision. This paper initially emphasizes the significance of predicting high-dimensional datasets while analyzing associated challenges such as curse of dimensionality, data sparsity, and data noise. Subsequently, it provides detailed insights into the applications of traditional computational methods as well as artificial intelligence-based and hybrid prediction methods for high-dimensional dataset prediction. The advantages and limitations of these approaches are also extensively discussed. Finally, specific application cases involving financial prediction medical diagnosis bioinformatics and computer vision are examined along with proposed future research directions encompassing enhancement of model generalization ability robustness computational efficiency interpretability alongside development of novel dimensionality reduction techniques feature selection methods and machine learning algorithms.

SEE TURTLES: A Cross-Platform Application For Safeguarding Endangered Ecology Of Marine Turtles

Ram Adrian Gacutan (Don Mariano Marcos Memorial State University), **Dennis Loren Tacubanza** (Don Mariano Marcos Memorial State University), **Rizalyn Florague** (Don Mariano Marcos Memorial State University), **Lily Ann Ugay** (Don Mariano Marcos Memorial State University) and **Zhella Anne Nisperos** (Don Mariano Marcos Memorial State University).

ABSTRACT:

The study aimed to develop a dedicated system to manage marine turtle conservation efforts, specifically focusing on supporting the Coastal Underwater Resource Management Actions (CURMA) project in San Juan, La Union. SEE TURTLES outlines two main objectives: to develop a cross-platform application for CURMA: Coastal Underwater Resource Management Actions (Pawikan Conservation and Protection Program) and to determine the acceptability of the developed application using User Acceptance Testing. This research adopted a blended approach, combining a developmental type of research and descriptive research. The Scrum methodology, a well-established agile development framework, is the foundation for software development. A total of 37 respondents evaluated the system's acceptability using User Acceptance Testing. The results revealed a 100% pass rate, affirming the application's error-free status and acceptance as a cross-platform application. Overall, this study successfully achieved its general objective, which is to develop a cross-platform application to support the efforts of conservationists to protect turtle populations and their habitats.

Awareness And Competencies In Data Analytics Of The Public Practice Sector Of Accountancy

Justine Lemuel Juano (National University-Manila), **Ivy Claire Tong** (National University-Manila), **Angelica Benico** (National University - Manila), **Rachelle Anne Villacorte** (National University - Manila), **Tessie Cua** (National University-Manila), **Araceli Angeles** (National University-Manila) and **Mario Camacho** (National University-Manila).

ABSTRACT:

Data analytics, the process of converting data into information through visual presentations, reporting, and interpreting, can be used by businesses to find new opportunities, save money, and make decisions more quickly and efficiently. Being aware of its potential in audit engagements, accounting professionals are already incorporating it into audit engagements. The researchers gathered graduates of the accounting programs who are working in the public practice sector in Metro Manila to assess their level of awareness using Data Analytics tools, competency in Data Analytics, and the impact of having Data Analytics skills. Findings show that with data analytics, the respondents are aware of how competence impacts their work efficiently and effectively and how it will impact interacting and managing data on their work. Despite this, they still have insufficient knowledge of data analytics and awareness of data analytics tools. Data Analytics, as a course, should be imperatively offered in accounting curricula as students will initially be helped in sharpening their knowledge and skills in different kinds of data analytics tools during their stay at the university. Data Analytics, as a course, should be imperatively offered in accounting curricula as students will initially be helped to sharpen their knowledge and skills in different kinds of data analytics tools during their stay at the university. Universities should conduct further studies on how they can implement adding data analytics as a subject in the accounting curricula, wherein students will benefit from it and will not hinder the fundamental accounting subjects and major business subjects.



Navigating the Threat Landscape: A Comprehensive Review of Adversarial Attacks in Computer Vision Systems

 **Tian Jie** (National University) and **Vladimir Y Mariano** (National University).

ABSTRACT:

Adversarial attacks present a major challenge in deep learning for computer vision. By adding subtle perturbations, adversarial samples can cause significant mispredictions in visual models, exposing their vulnerabilities and limiting their use in security-sensitive applications like autonomous driving and facial recognition. Studying adversarial attacks and defense strategies to improve the robustness and reliability of visual systems is thus crucial. This paper reviews recent research progress, defining adversarial samples, classifying attack methods, and outlining evaluation metrics. Key attack strategies, such as optimization-based (e.g., FGSM, PGD, Carlini-Wagner), generative model-based, and transformation-based attacks, are discussed. Common defenses like adversarial training, detection and reconstruction, preprocessing, model compression, and robust architectures are introduced. Public datasets, evaluation platforms, and experimental setups are summarized, with an analysis of results. Applications and challenges in tasks like object detection, semantic segmentation, facial recognition, and autonomous driving are examined. Finally, future defense strategies, theoretical guarantees, interpretability, and deployment considerations are explored. This review offers comprehensive insights into adversarial attacks and defenses, providing guidance for researchers and practitioners.



Study on the profile model of rumor user in the scenario of social platform

Yong Xu (Anhui University of Finance & Economics), **Xue'Er Wang** (Anhui University of Finance & Economics) and **Hengna Wang** (Anhui University of Finance & Economics).

ABSTRACT:

This study designs social media rumor user group portrait labels to analyze the characteristics of rumor users. By identifying the attributes of different types of rumor user groups, we are able to gain an in-depth understanding of their behavioral patterns and develop more effective strategies for online rumor governance and mitigation. [Methods/Process] First, we utilize Weibo rumor data as the research object and design a portrait label system from the two aspects of user features and text features. A user portrait model is then constructed. Thereafter, we employ the K-means algorithm to segment user groups with significant differences. Finally, based on the clustering results, we analyze the characteristics of the user groups and propose targeted public opinion control and rumor management strategies. [Results/Conclusion] The findings indicate that rumor users can be primarily categorized into six categories: general social users, flooding users, high-frequency interactive sharing users, "gossip-type" users, "hidden-type" users, and users who blindly follow trends. A detailed analysis of the key features of each user group is conducted, and corresponding governance strategies are proposed. [Innovation/Value] This study carries out data-driven user portrait research, reasonably constructing rumor user group portraits to enrich the theoretical and methodological framework of user portrait research. It also offers a novel research perspective for the supervision and guidance of online public opinion.



A Cyberbullying Text-based Analysis with Risk Assessment Leveraging Machine Learning Algorithms

Nikhael Nosa (Saint Michael's College of Laguna), **Anna Liza Ramos** (Saint Michael's College of Laguna), **Edison Contante** (Saint Michael's College of Laguna), **Aliza Lyca Gonzales** (Saint Michael's College of Laguna) and **Dave Jarmin Balingbing** (Saint Michael's College of Laguna).

ABSTRACT:

Cyberbullying is a critical issue that impacts mental health, leading to stress and anxiety. It has been the subject of numerous studies, with a major focus on the classification analysis of cyberbullying messages. Therefore, this study aims to design a new concept for assessing the type of cyberbullying and determining the risk level of cyberbullying messages received by individuals. To conduct this study, the researchers collected approximately 1,244 text messages from Facebook and TikTok. These messages, in Tagalog, were categorized into types of cyberbullying such as flaming, outing, denigration, and threatening, and they were labeled by experts. Each message within each category was examined to determine its consequence level and assess its classification using machine learning algorithms, as well as to determine the risk level of the message received by the user. As a result, the random forest outperformed other models with an accuracy score of 74% for classifying the type of cyberbullying and 59% for determining the consequence level of the message. However, the results of this model should be further improved to enhance its performance, as well as to re-examine the proposed design in assessing the risk level of cyberbullying.



Exploring Diverse Approaches to Enhance Pedestrian Lane Detection Performance

Russell Roy Escobar (Saint Michael's College of Laguna), **Anna Liza Ramos** (Saint Michael's College of Laguna), **Steven Albero** (Saint Michael's College of Laguna), **John Kenneth Guevarra** (Saint Michael's College of Laguna) and **Jessa Adorna** (Saint Michael's College of Laguna).

ABSTRACT:

Pedestrian Lane detection is of paramount importance and requires meticulous examination. Additionally, this study addresses the limitations posed by blurry, poorly lit, faded, and shadowed images. The study scrutinizes the filters utilized in existing research to address specific image conditions, along with the deep learning models employed. Findings indicate that the Guided filter performs admirably for blurry images, while the Kalman filter excels in enhancing visibility under poor lighting conditions. The Sobel Filter proves effective for faded images, and the Geodesic Filter is adept at handling images with shadow effects. Furthermore, the YOLOv8 deep learning model achieves an impressive 93% accuracy rate. However, upon deploying the filters in conjunction with the classification model, notable disparities emerged. Filters for poor lighting conditions and blurry images greatly improved the AI model, but filters for faded and shadowed images significantly reduced its performance. Consequently, it is imperative to conduct further investigations into performance consistency when deploying models in AI environments. Furthermore, it is crucial to tailor image filtering techniques to specific image conditions for optimal pedestrian lane detection. This adaptive approach ensures robust performance across diverse environmental scenarios.

An Empirical Analysis of the Application of Blockchain Technology in the Circulation Module of Library Management Systems

Ray Louis Arcilla (University of San Carlos - Talamban Campus), **Shinji Ishikawa** (University of San Carlos - Talamban Campus) and **Angie Ceniza-Canillo** (University of San Carlos - Talamban Campus).

ABSTRACT:

Library management systems (LMS) are key for every modern library to function properly. New innovations in technology provide us with tools to develop and improve the traditional way of managing libraries. As the market demands a more efficient and streamlined system, developers have started applying new emerging technologies to meet the demands. Blockchain technology is one of these new emerging technologies. The researchers aim to conduct an empirical analysis by developing two rudimentary LMS hosted locally, focusing solely on the circulation module of each system. The two systems will utilize a different backend development approach: one will be a traditional approach with the use of structured query languages (SQL) and localized databases, this is the centralized LMS. Another will be using a local private blockchain as a way to host the application's database, the decentralized LMS. Upon testing, results show that there is a significant difference in the performance, in favor of the centralized LMS over the much slower decentralized LMS. Performing multiple processes in a blockchain takes longer to complete as the smart contract needs to validate the transaction, create and mine a new block before adding it to the blockchain. However, the decentralized LMS showed better results in the security test, coming out with significantly fewer vulnerabilities than that of the centralized LMS.



Analysis of Students' Performance using Data Mining Technique

Londabee Margarse (National University) and **Rodolfo Raga** (National University).

ABSTRACT:

Students, teachers, the administration, and other stakeholders are challenged by the change of teaching and learning methodologies. That is the sensible and efficient course of action during a pandemic though it may lead to sudden change in the performance of the students. This study will shed light on the issue of how ICT tools affects students' academic performance and performs accurate analysis on the comparison of online and face-to-face classes. The SEMMA framework was observed and the data mining technique such as k-Means which is the popular clustering model was used. The RapidMiner is the tool used incorporated with H2O AutoML to process and reengineer the datasets of a specific campus that was utilized for the study. It is capable of illustrating the effects of connectivity and technology availability on student performance and to convey the findings. The visualizations through helpful charts contributed in the clear and notable display of results. This is beneficial to the academic institution to understand and be familiar with the outcome of blend learning to the students.



Depression Detection in Tweets using Ensemble Neural Networks

Jacob Balane (University of San Carlos), **Sebastian Villanueva** (University of San Carlos) and **Angie Ceniza-Canillo** (University of San Carlos).

ABSTRACT:

Depression, a mood disorder, is characterized by persistent feelings of sorrow, hopelessness, and a diminishing enthusiasm for life's pleasures. It can significantly impact various aspects of a person's life, including their work, relationships, and physical health. Early diagnosis and treatment are crucial for improving outcomes, yet many individuals with depression do not seek professional help. With the rise of machine learning, there is a growing interest in developing tools to identify individuals at risk of developing depression or already experiencing depressive symptoms. The researchers aimed to leverage this tool to develop a depression detection model using Twitter and Kaggle data. With that data, the researchers created models using three neural network algorithms: Convolutional Neural Network (CNN), Recurrent Neural Network (RNN), and Long Short-Term Memory (LSTM). The predictions of each base model were then combined to create a stacking ensemble model using XGBoost as the meta-learner. The results demonstrated that the stacking ensemble model achieved a ratio of 0.9181, representing the best positive-to-negative ratio among the four models. Additionally, the stacking ensemble model outperformed in precision, recall, and F1-score, with values of 86.04%, 82.10%, and 84.02%, respectively. Furthermore, the stacking ensemble model exhibited the highest accuracy at 84.34%, followed by the LSTM, RNN, and CNN models with accuracies of 84.01%, 82.53%, and 81.48%, respectively. In conclusion, the stacking ensemble model, leveraging the strengths of multiple neural network algorithms, emerges as a promising approach for depression detection, showcasing superior performance metrics and accuracy compared to individual models.



Prevalence, Devices Used, Reasons for Use, Trust, Barriers, and Challenges in Utilizing Generative AI among Tertiary Students

John Paul Miranda (Don Honorio Ventura State University), **Joseph Alexander Bansil** (Don Honorio Ventura State University), **Emerson Fernando** (Don Honorio Ventura State University), **Almer Gamboa** (Don Honorio Ventura State University), **Hilene Hernandez** (Don Honorio Ventura State University), **Myka Cruz** (Don Honorio Ventura State University), **Roque Francis Dianelo** (Don Honorio Ventura State University) and **Dina Gonzales** (Don Honorio Ventura State University).

ABSTRACT:

This study aimed to understand the use of generative AI among Philippine college students, focusing on usage frequency, devices, reasons for use, knowledge and trust in AI, and the challenges and support experienced. A cross-sectional research design was employed. Results indicated that most students used free versions of generative AI tools on their smartphones due to financial constraints and a lack of immediate academic needs. Their primary uses included homework, brainstorming ideas, and research, with additional applications in language learning, creative writing, and study planning. Less than half of the students felt confident using generative AI, and many had moderate trust in the information provided. They expressed mixed feelings about the accuracy and reliability of AI-generated content. Barriers included limited access, lack of teacher support, difficulty understanding AI outputs, insufficient training, and financial constraints. Challenges involved unreliable internet connections, software bugs, navigation difficulties, plagiarism risks, and misinformation. These results highlighted the need for better access, support, training, and ethical guidelines, as students worried about verifying AI-generated information, losing critical thinking skills, and becoming dependent on these tools. Additionally, they faced challenges in balancing AI use with traditional study methods and ethical issues. Broader concerns included negative impacts on learning and thinking skills, changing academic standards, potential job loss, and privacy issues. Students felt their peers viewed AI technologies most positively, followed by teachers and school administrators, and received the most support from peers. The reliance on free AI tools stressed the need for more accessible and affordable options for college students, while varying levels of trust suggested a need to improve the perceived reliability and accuracy of AI-generated information. Key barriers such as limited access, lack of teacher support, difficulty understanding AI outputs, and technical challenges emphasized the importance of better integration and support within the educational system.

Risk Analysis of Urban Traffic Accident Impact Based on Association Rules

Ruofan Wang (National University Manila, Philippines) and **Rodolfo Raga Jr.** (National University Manila, Philippines).

ABSTRACT:

At present, road traffic accidents are one of the types of accidents that lead to the most deaths in various countries, and pose a great threat to human life and property. The frequent occurrence of traffic accidents has become a major problem to be solved urgently. Therefore, it is of great practical significance to prevent and reduce traffic accidents. According to the previous analysis theory, the three factors of "people, vehicles and roads" should be mainly used in the analysis of road traffic accidents. However, the real combination of fatal factors is difficult to be found. Therefore, this paper conducts data analysis based on the urban road traffic accident data of Xiaoshan District, Hangzhou City. Based on the improved Apriori algorithm, a road risk factor identification method based on the association rule mining algorithm of multi-dimensional influencing factors of accident identification reason, accident type, road type and environmental factors is proposed to improve the clustering accuracy and comprehensively reflect the correlation information among the multi-dimensional influencing factors of traffic accidents. The results show that the contour coefficient of K-means clustering algorithm is ideal when K=12, and the confidence of Apriori association rules is improved.

Identification of Construction Safety Behavior Based on YOLOv8

Huang Kan (National University , Jiangxi Vocational and Technical College of Communications) and **Mideth B Abisado** (National University).

ABSTRACT:

Preventing and reducing construction accidents is a difficult and weak link in engineering construction management. The use of Convolutional Neural Networks (CNN) for construction behavior detection and recognition can promptly issue warning messages to construction workers who engage in unsafe behavior. However, it has limitations in terms of computational speed and resource requirements, which affects the application of CNN in situations with high timeliness requirements and low device performance. This article focuses on detecting the safety behavior of wearing safety helmets, collecting surveillance videos from 12 intelligent transportation construction sites in Jiangxi Province, China, and building a dataset containing 1570 images; Train and validate the dataset using YOLOv8, and construct the MN-YOLOv8 network by replacing the backbone network of YOLOv8 with MobileNet v3, and conduct comparative experiments with the original network; The results show that the parameter count and detection speed of the model have been significantly optimized, but the accuracy of model detection has slightly decreased. However, the range of decrease is within the acceptable range of construction engineering. The modified model has practical value in scenarios that require high detection speed and low resource deployment.

Factors Influencing on the intention of Green Travel under the Carbon Generalized System of Preference (CGSP)

Chunmei Liu (Shandong Jiaotong University, National University(the Philippines)), **Mideth Abisado** (National University(the Philippines)) and **Avonn Nova** (National University(the Philippines)).

ABSTRACT:

In order to study the key factors inducing green travel among urban residents under the carbon inclusive mechanism, analyze the formation mechanism of green travel intention, and reduce urban transportation carbon emissions. First, an SEM model of urban residents' green travel under the carbon inclusive mechanism was constructed; Then, based on the data and path analysis results of 354 valid sample obtained from the online survey, the relationship, Interrelationships and corresponding parameters between latent variables and measured variables was obtained. The results show that the direct influence path coefficients of CI, PBC, ATT, SN and HAB on BI are 0.529, 0.299, 0.146, 0.103 and 0.152 respectively, while the influence of HAB is Not significant; The coefficient of HAB indirectly affecting BI through ATT is 0.102, and the coefficient of PU indirectly affecting BI through CI and SN is 0.450. It can be seen that under the carbon inclusive mechanism, effective methods such as increasing the value and application breadth of carbon credits, improving perceived behavioral control, increasing publicity and social awareness, and cultivating green travel attitudes can promote the behavioral intention of urban residents' green travel effectively.



Segmentation of MRI Brain Tumor Images Based on Deep Learning

 **Fangliang Huang** (National University) and **Mariano Vladimir** (National University).

ABSTRACT:

Accurate automatic segmentation and prognostic diagnosis based on three-dimensional magnetic resonance imaging (MRI) are essential for the proper treatment of Brain Tumor like gliomas. T1-Gado MRI sequence images of gliomas are used in this paper to automatically segment gliomas using deep convolutional neural networks. Nine machine learning models that combine radiomics features and clinical characteristics are used to predict and compare the survival and prognosis of glioma patients. The clinical decision curves show that, except for KNN and DT, all models perform well at various threshold probabilities.



Hybrid Retrieval-Augmented Generation and Fine-tuned LLMs for Enhanced Port Industry Question-Answering Systems

Xinqiang Hu (College of Computing and Information Technologies, National University Manila, Philippines) and **Mideth Abisado** (College of Computing and Information Technologies, National University Manila, Philippines).

ABSTRACT:

In recent years, large language models (LLMs) represented by GPT (Generative Pre-trained Transformer) have made great progress, especially in the fields of dialogue and question answering. The corpus used for LLM training is public data, and the knowledge it has is general knowledge, which can answer general questions. When applying this model, enterprises hope that LLM can have professional knowledge and solve problems in professional fields. There are two technologies that can achieve this goal, namely retrieval-augmentation technology (RAG) and LLM fine-tuning technology. At present, thanks to the strong demand for dialogue systems, RAG technology and LLM fine-tuning technology have achieved unprecedented development. Various RAG paradigms attempt to solve the problem of "precise retrieval", and LLM also strives to challenge higher quality in terms of scale and accuracy. However, these two technologies have their own advantages and disadvantages. Which technology or combination is more suitable is a topic worth studying. In this paper, the datasets comes from the laws and regulations of the port industry. We built a port knowledge question and answer system, hereinafter referred to as PortGPT, to help port-related users. Llama is used as the basic LLM, and the datasets is used to fine-tune the basic LLM. On this basis, a set of RAG channels is established, and the system can give correct answers to user questions. This paper uses different schemes for combination experiments, such as: only using basic LLM, RAG, fine-tuning LLM and their combination. Through experiments, it is found that the accuracy of question and answer is increased from 80% to 90%. This study not only greatly improves the accuracy of the question-answering system, brings a good experience to port users, and reduces service costs, but also provides a good example for other industries in LLM basic selection and LLM solution planning.

Ready, Set, Survive: An Informative Video Animation For Barangay Disaster Preparedness During Typhoon and Fire

Francheska Nicole Limson (National University Philippines), **Maria Gearand Bulawan** (National University Philippines), **Abdallah Mohammed Kashta** (National University Philippines) and **Juancho Iii Ramores** (National University Philippines).

ABSTRACT:

The paper discussed the effectiveness of a video animation and system website as supporting material to educate the residents in being prepared on natural disasters. The animated video and website focus on raising public awareness and educating the community to prepare them for disaster scenarios, potentially saving lives and reducing the impact of such events. The goal of strengthening the preparedness of the residents is to encourage people to be more informed and be prepared for any circumstance, which is also one of the factors that have been considered in project-making. The objective of this project is to create an animation and captivating website that shows how to educate residents on effective preparedness and response measures. However, the scope is limited to the use of video animation to promote the importance of disaster preparedness plan without any social, political, or economic factors will be addressed.

MindCare: A Mobile and Web Application for Synergy Nursing Homecare Center Using Exponential Smoothing for Forecasting Mental Illness

Gabriel Luis Sabater (National University), **Christian Joelo Mondoñedo** (National University), **Johnrod Francis Jardeleza** (National University), **Riv Joshua Avila** (National University), **Roben Juanatas** (National University) and **Emeliza Yabut** (National University).

ABSTRACT:

This study introduces the Mindcare: A mobile and web application for Synergy Nursing Homecare Center using exponential smoothing for forecasting mental illness; it is designed to be a companion and eradicate the said challenges of the healthcare professionals and staff. It is quick, easy, and reliable access to billing and expenses tracker, and inventory systems can help healthcare providers to save time, reduce errors and ultimately improve patient care. MindCare is primarily intended to aid healthcare staffs' services by modernizing their method of recording, which traditionally relies on a pen and paper-based system. Moreover, the information that the facility keeps will be stored in a safer way. The system used the PERN stack: PostgreSQL for database, ExpressJs as the back-end framework, ReactJS as the front-end JavaScript library, and NodeJs as the server runtime environment. The paper concludes included the creation of a billing tracker module to log patient payments and dues. Additionally, the integration of predictive analytics using time series forecasting was taken to anticipate trends in mental illness for the upcoming month, utilizing data from the census module. Furthermore, an inventory tracker module was developed to effectively manage a variety of items, including medicines and other products. Overall, the project aimed to optimize operations and patient care by offering a versatile platform for financial and medical data management.



iDesign: A Mobile and Web Consultation Application for Clients and Architects of Suizo Company

Jill Shyrine Alejandrino (National University Manila), **Cyril Bien Aribon** (National University Manila), **Jonh Anferney Dawson Alladin** (National University - Manila) and **Leonila Valdez** (National University - Manila).



ABSTRACT:

Global issues related to house structure and interior design is the need for affordable customized housing consultation platforms. This paper focuses on designing a web and mobile application called iDesign with the goal of providing a platform wherein architects, clients, constructors, and admin of the company can use their devices in order to conduct online consultation, video conferencing, online booking with the selected Architect, and browsing of digital house structure and house designs. iDesign is developed using Java and React J.S. while incorporating the agile method. The iDesign mobile and web application is essential to Suizo Company as well as to the architects, clients, and constructors as it allows the company to communicate with their clients without the hassle of meeting up physically.

WASTE WISE: A Mobile And Web Application For Waste Management Of City Environment Management Office In Marikina City

Kevin Paul Sta Maria (National University - Manila), **Venedic Bello** (National University - Manila), **Racel Jude Marahay** (National University - Manila) and **Reynier Querijero** (National University - Manila).

ABSTRACT:

Waste management poses a variety of issues that include environmental, economic, and social aspects. The expansion of waste streams, ranging from dangerous industrial outputs to ever-increasing residential garbage, places a pressure on resources and infrastructure. Inefficient trash collection, disposal, and recycling systems frequently degrade the environment, worsen health risks, and contribute to resource depletion. Waste Wise, a mobile and web program, is being suggested to modernize and expedite Marikina City's garbage management practices. This innovative approach empowers residents to actively participate in waste management by reporting issues, arranging appointments, and learning about CEMO's facilities and services. It also encourages recycling habits through DIY suggestions and guarantees that CEMO's activities are transparent. The data analytics capabilities of Waste Wise will enable evidence-based decision-making, resulting in more efficient waste collection and recycling activities. Furthermore, the program includes a back-end administration system that allows CEMO workers to monitor and analyze data.

Equal Perspectives: A Framework For Parallax Website Journey Through Gender Equality on Men

Veronica Silva (College of Computing and Information Technologies National University Manila, Philippines), **Matt Klarenz De Vera** (College of Computing and Information Technologies National University Manila, Philippines), **Rei Krishna Vergara** (College of Computing and Information Technologies National University Manila, Philippines) and **Roben Juanatas** (College of Computing and Information Technologies National University Manila, Philippines).

ABSTRACT:

Gender inequality has been ruining the diversity of the entire humanity, in which separating people in all gender resulting to unhealthy relationship amongst each other. But there is a lot of organizations that supports equality for woman and for the LGBTQ+ community but none of them are for men. The continuous innovation of our technology will be used in effort to promote gender equality for men that are being stereotyped into societal expectations, where they are expected to also be emotionally stable who doesn't possess weak emotions that are potentially stopping men to speak up for themselves whenever they are being violated, because the reality is men can also be emotionally fragile, which it adds up to men's health hazards. Using the technology as an opportunity to widen the knowledge of how the issue has a big negative impact amongst the nation, parallax website is a scrolling type of web design than is more visually appealing for the users and catch their interest with its graphics. The goal is to make another unique way of distributing information and educate the users enable to give them knowledge about the importance of support system for men too and give out resources than will assist men in developing their mental health issues and their skill development.

TRAIN TRACKER PH: A Mobile and Web Application for the Commuters of the Philippine National Railways

Matthew Haeven Bautista (National University - Manila), **Jose Iii Mallari** (National University - Manila), **Rexeth Macalalad** (National University - Manila) and **Lord Edgardian Tavu** (National University - Dasmarias).

ABSTRACT:

Due to limitations in the current infrastructure, the modern railway system has trouble giving commuters real-time information. This study highlights the shortcomings of conventional approaches, which struggle to provide timely updates, such as the Absolute Block System and GSM-R. The additional communication delays caused by walkie talkies have prompted railroad groups to look into alternatives like Telegram group chats. Rush hour congestion causes lengthier wait times and ruins travel plans, especially on busy routes like Tutuban to Bicutan. The lack of prompt service announcements makes commuting more difficult. Advanced communication techniques, clear passenger assistance, and proactive station notifications become crucial to overcome these problems and enhance the commuter experience. This study emphasizes the value of quick reactions from train stations and employs GPS technology to address difficult railway problems.

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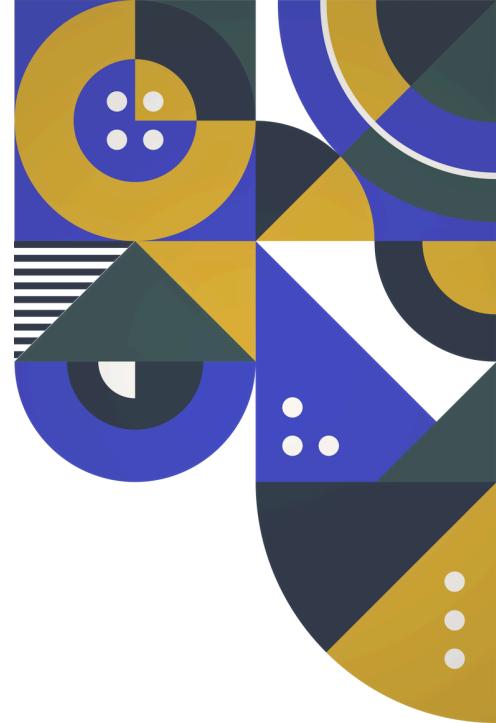
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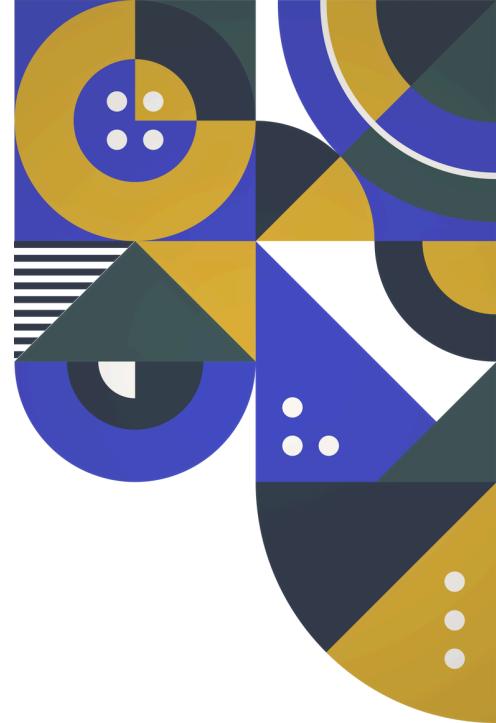
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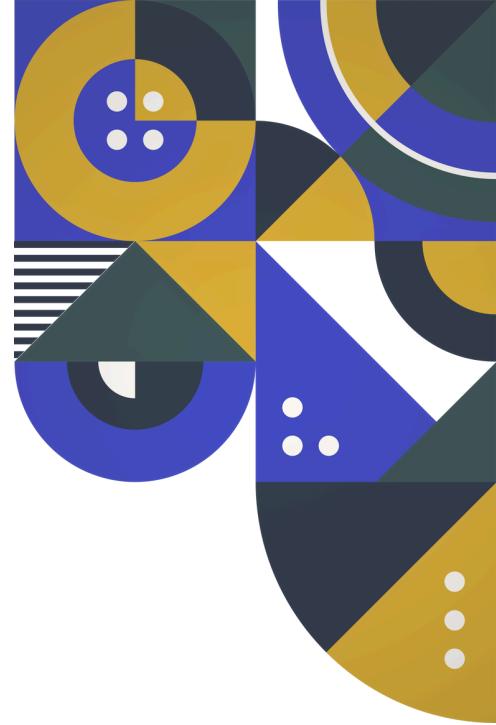
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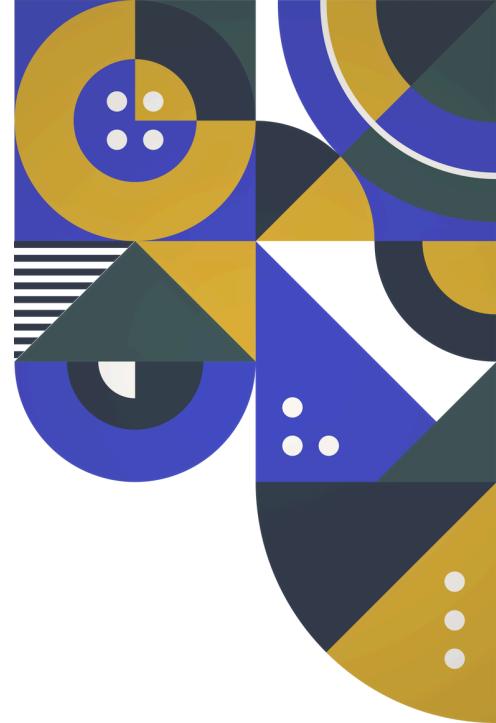
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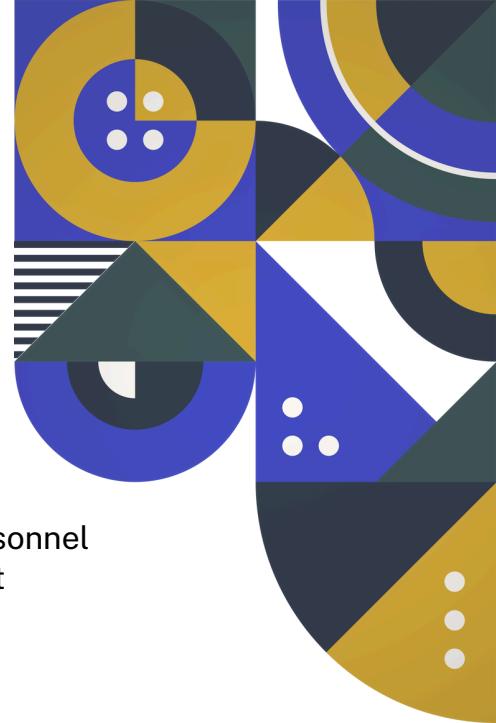
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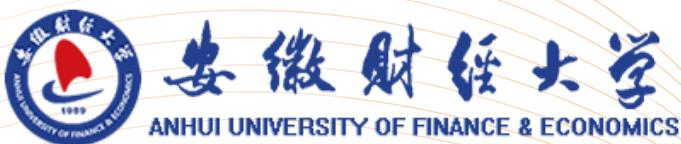
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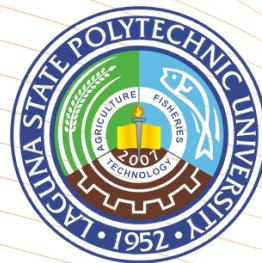


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