Editorial

In this compilation of research papers, we present 31 accepted research papers of a diverse array covering topics ranging from educational practices to cybersecurity, from robotics to healthcare. These papers reflect the commitment of researchers to advancing knowledge and addressing contemporary challenges. Each contribution offers a unique perspective, employing various methodologies and technologies to delve into specific domains. Let's explore the each paper of this stimulating collection.

The integration of Information and Communication Technologies (ICTs) in education is explored in this paper, emphasizing the importance of considering the perceptions of students and teachers. Drawing on the technology acceptance model (TAM2), the study provides insights into how these perceptions influence the intentional and behavioral use of ICTs in educational practices [1].

Addressing the evolving landscape of cybersecurity, this paper introduces an effective method for detecting stepping-stone intrusions using packet crossover ratios. The proposed approach not only enhances ease of implementation but also demonstrates efficiency through well-designed network experiments [2].

Focusing on database applications, this paper introduces algorithms for optimal allocation and deallocation of multi-tiered persistent storage devices. Leveraging extended Petri nets, the study highlights the linearization of data flows to generate optimal storage plans, showcasing improvements in performance compared to random allocation strategies [3].

Swarm robotics is explored in the context of collective movement for tasks like transportation and observation. The paper introduces a leader-follower-controlled method that calculates direction and distance potentials, allowing a robot swarm to maintain formations with different densities while on the move [4].

This paper delves into the realm of education and technology, presenting StereoMV, a software for stereometry training. It explores different 3D visualization types and modes, emphasizing the importance of 3D technology in strengthening students' interest and spatial thinking [5].

Exploring the vulnerabilities in WiFi-based IoT devices, this paper extends previous work by employing time series monitored WiFi data frames and advanced machine learning algorithms. The study reveals the potential for high-accuracy profiling of IoT devices, emphasizing the need for robust security measures [6].

In the realm of unmanned aerial vehicles, this paper focuses on electrical drive systems for high-speed multicopters. Introducing sensorless control methods based on field-oriented control, the study showcases innovative approaches for rotor position estimation, verified through simulation and experiments [7].

Recognizing the significance of emotion in human interaction, this paper addresses emotion detection in Bangla speech data. Employing ensemble machine learning methods, the study achieves notable accuracy in emotion detection, crucial for scenarios where video interaction is limited [8].

Exploring the potential of quantum computers in enhancing information system security, this paper introduces basic concepts of quantum computing. The study discusses applications in image

processing security and introduces the prospect of multilevel systems, showcasing the exponential gains in data processing time [9].

This paper focuses on telemedicine, presenting a cloud platform for teleconsultation and telemonitoring. Embracing a workflow management system, the study adopts international healthcare standards and emphasizes an integrated clinical workflow management approach, showcasing advancements in telemedicine [10].

Addressing inventory control challenges, this paper discusses the redesign and improvement of raw material inventory control processes. Utilizing Oracle APEX, the study demonstrates positive outcomes, including increased productivity, elimination of manual tasks, and improved response times in the textile industry [11].

This innovative paper combines CubeSat technology with AI frameworks for crowd management during large-scale events. The proposed system, integrating aerial imaging and wearable devices, demonstrates accuracy in managing crowds and notifying ground controllers of potential issues, offering a comprehensive solution [12].

Building on hardware prefetching techniques, this paper introduces an extension to improve prefetch coverage. The study proposes a refined metric for measuring the net contribution of a prefetcher, showcasing significant IPC speedup improvements over existing methods [13].

In the realm of information security, this paper presents a security prototype aimed at mitigating risks, vulnerabilities, and threats. Through a deductive and exploratory research approach, the study introduces prototypes that effectively control raw data, ensuring data integrity in both public and private companies [14].

Exploring the application of process mining in healthcare, this paper conducts a systematic literature review and presents a case study on medical teleconsultation. The study highlights the potential of process mining in improving healthcare processes, even in the challenging context of identifying relevant log files [15].

In "Natural Tsunami Wave Amplitude Reduction by Straits – Seto Inland Sea", the authors shed light on the protection of coastal populations and infrastructure in the Seto Inland Sea, Japan. Utilizing numerical modelling, the study explores the influence of strait width and tsunami wave period on wave amplitude reduction, providing crucial information for tsunami safety regulations [16].

In the realm of 5G telecommunication, "Designing the MIMO SDR-based Antenna Array for 5G Telecommunication" introduces a new 2×2 MIMO testbed, emphasizing the importance of flexibility and real-time processing in the implementation of multiple-input–multiple-output systems. The study employs USRP B210 and microstrip antennas to achieve high-quality service and coverage in the rapidly evolving landscape of 5G technology [17].

Shifting focus to healthcare, "A Structuration View of the South African National Health Insurance Readiness" investigates the challenges faced by the implementation of the National Health Insurance in South Africa. Employing structuration theory, the study identifies factors influencing the project, emphasizing the empirical nature of the findings [18].

For bird enthusiasts, "Birds Images Prediction with Watson Visual Recognition Services from IBM-Cloud and Conventional Neural Network" presents the "Birds Images Predictor" application. Comparing the performance of a convolutional neural network with IBM's visual recognition service, the study highlights advantages such as higher training image volume, better color distinction, and a remarkable 99% prediction accuracy with the latter [19].

The impact of information technology on Brazilian higher education during the Covid-19 pandemic is explored in "A Review of the Role of Information Technology in Brazilian Higher Educational Institutions during Covid-19 Pandemic". The study, based on reports from 66 institutions, underscores the role of information systems in enabling rapid responses to the crisis, maintaining academic routines, and ensuring student satisfaction [20].

"Estimating Subjective Appetite based on Cerebral Blood Flow" delves into the development and validation of a biological food preference task. By observing changes in cerebral blood flow related to subjective evaluations of various food states, the study uncovers potential correlations between neural responses and subjective preferences [21].

In the realm of medical research, "Ensemble Extreme Learning Algorithms for Alzheimer's Disease Detection" addresses the critical need for early detection of Alzheimer's disease. The study utilizes Ensemble Extreme Learning Models on the OASIS dataset, exploring various models and comparing their performance for Alzheimer's detection [22].

Turning our attention to environmental concerns, "Emerging Trends in Green Best Practices and the Impact on Government Policy" examines 'green' companies' practices. The study recommends that U.S. government agencies formalize and release sustainability policies, setting quantifiable goals to bridge the gap between industry and government practices in achieving sustainable objectives [23].

In the cybersecurity domain, "Operating Systems Vulnerability – An Examination of Windows 10, macOS, and Ubuntu from 2015 to 2021" investigates vulnerabilities in three operating systems. The study reveals varying vulnerability scores, attributing differences to the popularity of the operating systems and their susceptibility to attacks [24].

Addressing challenges in renewable energy systems, "Design and Analysis of a Virtual Synchronous Generator Control Scheme to Augment FRT Capability of PMSG-Based Wind Turbine" proposes an advanced control method for wind turbines. The study introduces a Virtual Synchronous Generator-based inverter controller to enhance fault ride-through competence and frequency stability [25].

For data warehouses, "Consideration of Ambiguity in the Analysis Phase of Data Warehouses" adopts fuzzy logic to account for ambiguity in the analysis phase. The study explores the context-dependent definition of membership functions, presenting an extensible solution enriched with natural language terms [26].

In the context of smart agriculture, "Interference-Aware Nodes Deployment of a LoRa-Based Architecture for Smart Agriculture in the Southern Region of Senegal" addresses the use of IoT in agriculture. The study proposes a network architecture using Low-Power, Wide Area Networks (LPWANs) for water irrigation techniques in Casamance, emphasizing the optimal choice of technology and sensor deployment [27].

Optimizing tsunami warning systems is the focus of "Optimizing Sensors Locations for Tsunami Warning System". The study proposes an algorithm to balance the number of sensors and the time needed to determine tsunami wave parameters. The findings suggest different optimal sensor positions based on minimizing detection time or maximizing the time to approach the nearest coast after recovering wave parameters at the source [28].

In the field of age estimation, "Transfer and Ensemble Learning in Real-time Accurate Age and Age-group Estimation" employs deep learning techniques for accurate age and age group prediction from facial images. The study introduces a hierarchical aggregation model, showcasing promising results in predicting age and age group in real-time situations [29].

Lastly, the importance of mobility intelligence in urban planning is highlighted in "Mobility Intelligence: Machine Learning Methods for Received Signal Strength Indicator-based Passive Outdoor Localization". The study compares traditional methods and machine learning approaches for RSSI-based passive outdoor localization, showcasing the superiority of machine learning methods in providing accurate results [30].

In "Technical Aspects and Social Science Expertise to Support Safe and Secure Handling of Autonomous Railway Systems", the authors delve into the growing realm of autonomous vehicles, specifically focusing on autonomous railway systems. The study takes a multilevel approach, combining Failure Mode, Effects and Criticality Analysis (FMECA) with sociological and technical aspects to ensure safe operations and effective human-machine interactions in the context of autonomous railway systems. By integrating both technical components and sociological considerations, the paper aims to enhance trust in digital solutions and Cyber-Physical Systems (CPS), contributing valuable insights for the future development and safe deployment of autonomous railway systems [31].

In summary, this collection of papers offers a comprehensive exploration of diverse topics, ranging from natural disasters and technology implementation to healthcare, environmental sustainability, and artificial intelligence. Each article contributes valuable insights, advancing knowledge in its respective domain. As we navigate the complexities of our rapidly evolving world, these research findings provide a foundation for informed decision-making and further exploration of critical issues.

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