

## Editorial

We are delighted to present this issue featuring 19 accepted research articles spanning a wide range of engineering and technology topics.

The issue begins with Adekunle and Adewale's paper on implementing and evaluating wireless sensor networks for automated hydroponic systems [1]. Through simulations, they found cluster-based networks provided lower latency and energy consumption compared to multi-hop networks as the system scaled up. These findings can guide future smart agriculture systems.

Shifting focus to vehicular networks, Laouiti et al. put forth an enhanced cross-layer mechanism for real-time high-efficiency HEVC video streaming over VANETs [2]. By adaptive video frame prioritization based on network conditions, their approach achieved improved video quality and lower latency compared to standard methods. This has important implications for future connected vehicles.

In the field of network security, Aissani et al. present a taxonomy of techniques for securing routing protocols in mobile ad-hoc networks [3]. Analyzing cryptography-based and trust-based solutions, they highlight the need for hybrid methods leveraging both encryption and reputation systems to ensure node honesty. Their work provides a useful framework for MANET security.

Renewable energy systems are explored in El Bakkali et al.'s paper on PV-battery hybrid grid integration [4]. They developed smart power management strategies aimed at ensuring reliable supply while preventing battery overcharging/discharging. Simulations verified their approach can reduce customer energy costs. This provides a model for sustainable hybrid grids.

Shifting focus to project management, Laaz et al. study IT project models during the era of digital transformation [5]. Identifying constraints posed by new technologies, they propose a hybrid framework blending aspects of traditional waterfall and agile methodologies. Practical insights are offered for adapting to the digital age.

In the power electronics domain, Rathore et al. analyze the stability of DC microgrids with constant power loads [6]. Through theoretical analysis and simulations, they derive power level guidelines and current controller bandwidths that maintain stability without requiring additional compensators. This economical approach facilitates integration of new load types.

Probabilistic logic modeling is the theme of Schulte et al.'s work on constructing and utilizing symmetries in dynamic relational domains [7]. They introduce novel techniques to detect object behavioral symmetries over time, preventing unnecessary grounding and enabling more efficient lifted inference. This advances graphical modeling capabilities.

The study by Kissane et al. investigates blended learning for tertiary mathematics, replacing a face-to-face tutorial with online activities [8]. Their quasi-experimental results showed improved performance for entering students and similar outcomes for more advanced students. This supports incorporating e-learning alongside traditional methods.

Shifting focus to renewable assessment, Mudau et al. present solar radiation modeling and estimation using weather data in South Africa's Vhembe District [9]. Applying data analytics and mapping approaches provides insight into local solar energy potential. Their work aids planning of renewable generation systems.

Computer vision for healthcare is spotlighted in Ito et al.'s paper on using generative adversarial networks to evaluate hand hygiene [10]. Using fluorescent imaging of washed hands, their deep learning model achieved high accuracy in detecting cleaning thoroughness. This demonstrates an innovative application of AI to improve training and practices.

Automatic image captioning is explored by Chaudhari et al. through a unified visual saliency framework [11]. Integrating convolutional and recurrent neural networks with attention modeling, their approach provides state-of-the-art performance on both general and medical image datasets. Advancing multi-modal understanding has broad impacts.

In the field of digital forensics, Alotaibi presents techniques for recovering WhatsApp artifacts on Android devices without root access [12]. Their forensic analysis identified valuable messaging evidence extractable from internal storage. Practical tools to access encrypted app data aid law enforcement investigations.

Taking an interdisciplinary perspective, Lebyodkin articulates a condensed matter physics approach to modeling fracture in solids [13]. Adopting rheological material models and micro-damage based failure criteria, their framework has potential for predicting component durability under varied loading conditions. This synergistic view may unlock new insights.

Decision support through interpretable AI is the focus of Imamori et al.'s work on explaining mastitis detection models for dairy cows [14]. Applying inductive logic programming, they extracted symbolic rules characterizing influential patterns in sensor measurements. Increased model transparency and trust facilitates practical adoption.

Shifting to public health technology, Al-Ruithe et al. provide an updated discussion of contact prevention mobile apps amidst the continued COVID-19 pandemic [15]. They argue such tools remain beneficial for mitigating transmission and propose features enhancing user awareness. Ongoing innovation is critical as viruses evolve.

Data security is revisited in El Bilali et al.'s examination of privacy for forward private searchable encryption [16]. They introduce new leakage-abuse attacks recovering search queries from access patterns and mitigate via obfuscation techniques. Advancing cryptographic protections is crucial as data volumes grow.

Assessing education outcomes, Alelyani et al. analyze digital readiness among Saudi university students [17]. Their survey highlights competence gaps, with lower skills in safety and content creation. Recommendations are presented for improving curriculum and better cultivating digital citizenship.

Designing scalable blockchain frameworks for healthcare data sharing is explored by Wazid et al. [18]. They propose federated hospital-city-state networks with access controls facilitating efficient cross-organization EHR queries. Reliable and timely data availability can improve care quality.

Rounding out the issue, Norman examines application of strategic design for organizational transformation [19]. A contextual framework is developed identifying links between operational and management activities where interventions and measurement can enable innovation capabilities. This provides useful guidance for companies pursuing change.

In summary, the excellent breadth of topics covered in this special issue exemplify high-caliber research advancing the frontiers of science, engineering and technology. We hope these

contributions will stimulate further interdisciplinary studies and translations of ideas into impactful innovations. We thank the authors for entrusting their work to our journal and our reviewers for upholding rigorous standards.

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