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Robotics and Automation, Computer Science, and Artificial Intelligence

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***Abstract* – This thematic issue highlights the convergence of robotics and automation, computer science, and artificial intelligence as the foundation of modern intelligent systems. Advances in robotic design, control systems, and autonomous operation continue to expand the capabilities of automated technologies across diverse sectors. Concurrently, developments in computer science—including algorithmic innovation, distributed systems, and secure computing—provide the essential infrastructure that supports complex and scalable digital solutions. Artificial intelligence strengthens this ecosystem through machine learning, deep learning, and data-driven decision-making, enabling enhanced perception, prediction, and adaptability. Together, these fields drive transformative progress in industrial automation, smart systems, human–robot collaboration, and intelligent applications. This issue brings together research contributions that address theoretical advancements, practical implementations, and interdisciplinary perspectives, offering insight into the evolving landscape of intelligent and autonomous technologies.**

I. Introduction

The accelerating convergence of robotics and automation, computer science, and artificial intelligence continues to transform the technological landscape and redefine the boundaries of innovation. As industries, governments, and societies navigate the challenges and opportunities arising from digital transformation, research in these domains plays a pivotal role in shaping intelligent systems that are capable, adaptive, and aligned with human needs.

This special thematic collection brings together five diverse yet interconnected research contributions from Indonesia, Saudi Arabia, Sudan, Malaysia, Canada, Australia, Bangladesh, and the United States, reflecting a wide international collaboration across four continents. Together, these studies showcase the global nature of innovation in Robotics and Automation, Computer Science, and Artificial Intelligence (AI). Although each paper addresses a distinct real-world problem; from public policy sentiment and cybersecurity to road safety, environmental sustainability, and natural disaster prediction, they collectively highlight how intelligent computational methods are reshaping modern decision-making, automation, and digital transformation across societies with varied geographical, cultural, and technological contexts.

II. Thematic Articles

The first article, "*Sentiment Analysis of Indonesian Nickel Downstreaming on X Using Naïve Bayes and K-Nearest Neighbors*," illustrates the relevance of AI-driven text analytics in socio-economic policy evaluation. By applying supervised machine learning algorithms to public discourse on X (formerly Twitter), the authors uncover nuanced public sentiment surrounding Indonesia's nickel downstreaming policy. The study demonstrates how computational linguistics and AI-based sentiment classification can provide valuable insights for policymakers, bridging the gap between governance and real-time citizen feedback.

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Complementing this social-domain application of AI, the second article, "*Hybrid Phishing Detection Model: Integrating BERT with TF-IDF for Enhanced Email Security*," addresses a fundamental challenge in cybersecurity. By synergising deep contextual embeddings with statistical text features, the authors develop a hybrid classification model capable of detecting sophisticated phishing attempts. This work highlights the interplay between NLP, machine learning, and secure computing - core areas within computer science that underpin automated threat detection systems used in both enterprise and consumer environments.

The third article, **"***Forecasting High-Risk Traffic Zones Using Machine Learning for Enhanced Road Safety***,"** shifts the focus to intelligent transportation systems. Using classification algorithms and ensemble learning, the study demonstrates how machine learning can predict accident severity and identify high-risk traffic regions. This contribution aligns closely with emerging automation and smart mobility initiatives, where data-driven analytics support proactive traffic management, infrastructure planning, and road safety enhancement.

Environmental sustainability and automated classification are at the forefront of the fourth article, "*A Reproducible Benchmark of AdamW-Augmented Lightweight Models for Trash Classification*." This work provides a rigorous, reproducible evaluation of lightweight deep learning models applied to waste-sorting tasks. By benchmarking modern architectures such as MobileNet V3, ViT Small, EfficientFormer, and ShuffleNet V2, the study reinforces the importance of computational efficiency, model optimisation, and reproducibility—key pillars in robotics and automation where real-time image classification plays a central role in autonomous sorting systems and smart recycling technologies.

Finally, the fifth article, "*Cyclone Nature Prediction with the Help of a Customized SVM Model*," demonstrates how machine learning can contribute to disaster risk reduction. The authors propose a custom SVM-based model that achieves superior performance in classifying cyclone characteristics using satellite imagery. This work showcases how computational intelligence and predictive modelling can support early-warning systems, offering critical insights for safeguarding communities and improving climate resilience.

Collectively, these articles exemplify the breadth and depth of contemporary research in robotics, computer science, and AI. From natural language understanding to pattern recognition, from safety-critical predictions to environmental automation, each contribution reflects the ongoing fusion of data, algorithms, and computational power that drives innovation in intelligent systems. Together, they showcase how emerging technologies are reshaping policymaking, cybersecurity, transportation, environmental management, and disaster prediction.

III. Conclusion

This thematic issue provides not only technical advancements but also a broader narrative: that intelligent and automated systems have become indispensable tools in addressing complex societal challenges. As machine learning and AI continue to evolve, their integration across disciplines will remain central to building smarter, safer, and more sustainable futures.