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Abstract. This editorial introduces the first issue of the third volume of the Journal of Edge Computing (JEC). It provides an overview of the five articles featured in this issue, which cover diverse applications of edge computing technologies in domains such as cybersecurity, healthcare, and distributed systems. The first article summarizes the 4th Edge Computing Workshop (doors 2024), highlighting research advances in edge computing. The second article proposes an LSTM-based model for detecting cyber attacks in IoT systems using the CIC-IoT2023 dataset. The third article presents a machine-learning model for classifying respiratory system sounds to aid in the early diagnosis of respiratory diseases. The fourth article describes an IoT system that analyzes environmental data using geolocation to generate alerts about potential health risks. The fifth article explores the use of telemetry for dynamic analysis of distributed systems to identify architectural smells and anomalies. The editorial highlights the potential of edge computing technologies in addressing various challenges and expresses gratitude to the authors, reviewers, and editorial team for their contributions.

Keywords: edge computing, doors 2024, IoT security, cyber attacks, LSTM, respiratory disease diagnosis, machine learning, IoT, open APIs, geolocation, telemetry, distributed systems, dynamic analysis

Welcome to the first issue of the third volume of the Journal of Edge Computing (JEC). This issue features five articles covering diverse aspects and applications of edge computing technologies.

We open this issue with an article titled "Empowering the Edge: Research advances from doors 2024" [5] by Tetiana A. Vakaliuk and Serhiy O. Semerikov. This report summarizes the 4th Edge Computing Workshop (doors 2024) held in Zhytomyr, Ukraine, which brought together researchers to share advances and applications in edge computing. The article highlights the peer-reviewed papers covering topics from edge hardware to AI and security, with common themes including leveraging edge computing for sensing applications and addressing resource utilization and management challenges.

The second article, "A long short-term memory based approach for detecting cyber attacks in IoT using CIC-IoT2023 dataset" [1] by Akinul Islam Jony and Arjun Kumar Bose Arnob, proposes an LSTM-based model to detect cyber attacks in IoT systems using the recent CIC-IoT2023 dataset. The model demonstrates high accuracy and F1 score in identifying known and evolving cyber-attack patterns, highlighting the potential of deep learning in IoT security.

Next, Negin Melek presents a machine learning model for classifying respiratory system sounds like coughing and sneezing in "Responding to challenge call for machine learning model development in diagnosing respiratory disease sounds" [3]. Inspired by the "Pfizer digital medicine challenge", the study extracts MFCC features. It applies SVM and other classifiers to distinguish coughing/sneezing sounds from other audio samples, achieving 83% success with SVM. This work has implications for early diagnosis of respiratory diseases.

The fourth paper, "An IoT system based on open APIs and geolocation for human health data analysis" [2] by Oksana V. Klochko and Vasyl M. Fedorets, describes an IoT system that analyzes environmental data using geolocation to generate alerts about potential health risks like air pollution, pollen, and adverse weather conditions. The system demonstrates the potential of integrating IoT, open APIs, and GIS for preventive healthcare applications.

Finally, Oleh V. Talaver and Tetiana A. Vakaliuk explore telemetry for dynamic analysis of distributed systems in "Telemetry to solve dynamic analysis of a distributed system" [4]. They propose an approach to collect and process telemetry data using graph databases and algorithms to identify architectural smells and anomalies. The results visualized using Neo4j Bloom, showcase how telemetry can aid in understanding and optimizing complex distributed systems.

These articles underscore the diverse ways edge computing technologies are being leveraged to address challenges in domains like cybersecurity, healthcare, and distributed systems. We hope our readers find the research presented here insightful and thought-provoking.

As always, we express our gratitude to the authors, reviewers, and editorial team for their invaluable contributions. We look forward to bringing more high-quality research on future JEC issues.

References

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