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Editorial for JEC Volume 2 Issue 2 (2023)

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Abstract. This editorial presents innovative research at the intersection of edge computing and various disciplines, demonstrating the transformative potential of edge computing technologies. The issue includes a study on a digital Proportional-Integral-Derivative (PID) regulator model for controlling unmanned aerial vehicles, using digital filtering methods and a genetic algorithm; discusses an autonomous Internet of Things (IoT) system for monitoring classroom microclimates, contributing to the understanding of how microclimate parameters influence the physiological state of students; details the design and implementation of an educational model for a smart home, integrating various subsystems and renewable energy sources. This issue aims to inspire further exploration and innovation in edge computing, driving the field forward and opening up new possibilities for technology and society.

Keywords: edge computing, overview, Journal of Edge Computing

Welcome to the latest edition of the Journal of Edge Computing. As we continue to explore the rapidly evolving field of edge computing, we aim to bring you the most innovative and impactful research. This edition delves into a variety of topics that are shaping the future of edge computing. In this issue, we focus on the intersection of edge computing and various disciplines, highlighting the transformative potential of edge computing technologies in diverse fields. We present studies that push the boundaries of what's possible, offering fresh perspectives and novel approaches that challenge traditional paradigms.

Petrosian et al. [4] discusses the development of a digital Proportional-Integral-Derivative (PID) regulator model for controlling unmanned aerial vehicles. The model is based on digital filtering methods, specifically using a digital filter with a finite impulse response for the differential component. The coefficients of the digital filter are calculated using a genetic algorithm, which enhances the model's accuracy. The PID-regulator coefficients are computed using traditional PID-regulator methods.

Korenivska et al. [3] discusses the development of an autonomous Internet of Things (IoT) system for round-the-clock monitoring of classroom microclimates. The system uses edge devices to measure climatic parameters such as temperature, relative humidity, carbon dioxide level in the air, and the concentration of light air ions. The data is recorded on a smartphone and saved on a remote server. The article presents the principles of building microclimate monitoring systems, the requirements for the system, the criteria for choosing the elemental base, and the technical characteristics of each component. It also describes the structure of the

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air ion concentration sensor developed by the author and the method of measuring the air ion concentration in the room.

Balyk, Leshchuk and Yatsenyak [1] details the design and implementation of an educational model for a smart home, using Internet of Things (IoT) principles. The model includes three key levels: command, communication, and management, and integrates various subsystems such as communication, signalling, lighting control, temperature regulation, garbage container filling, and sensor data monitoring. The study provides a detailed description of the hardware components used to implement the Mini Smart House, a practical application of the model.

Tkachuk et al. [5] introduces a new intelligent robotic platform designed to improve and speed up the process of water quality assessment and bottom relief analysis in reservoirs. This platform, equipped with various sensors and actuators, can conduct extensive studies over larger areas of the reservoir, overcoming the limitations of traditional water analysis methods. The advanced design of the platform includes a control board, servo motors, a brushless motor, a radio module, a GPS module, and a motor speed controller, all enclosed within a robust casing.

Klymenko and Striuk [2] provides a detailed study on the technical aspects of edge-enabled GPS tracking systems, their evolution, and an analysis of existing problem-solving approaches. It introduces mathematical models that simulate the operation of the hardware and software components of these systems. An adaptive user interface has been developed, enabling usage across various platforms such as smartphones and personal computers. The paper also explores innovative methods for visualizing the trajectory of a moving object on an electronic map.

We hope that the insights and discoveries shared in this edition will inspire further exploration and innovation in edge computing, driving the field forward and opening up new possibilities for technology and society.

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