Guest Editorial Column: Special Issue of Journal of Mobile Multimedia "Artificial Intelligence in Automation with Mobile Applications"

Dear Readers,

We are very glad to introduce you to this Special Issue of the Journal of Mobile Multimedia "Artificial Intelligence in Automation with Mobile Applications".

The aim of this Special Issue is to present the systematized research, description, and analysis of new theoretical results and applications of artificial intelligence techniques (neural networks, intelligent search, machine learning, evolutionary and swarm algorithms, fuzzy sets and logic, multi-agent systems, hybridization of intelligent algorithms, etc.) in mobile technologies for automation, in particular, for industrial and special robots, medical applications, control systems, communications, data transmission, pattern recognition, and image understanding.

This Special Issue is published in collaboration with authors from universities and research institutes who have great experience in the development of international research projects on artificial intelligence, the internet of things, industrial automation, robotics, soft computing, and mobile multimedia.

The Special Issue consists of four articles:

The article "Swarm Optimization of Fuzzy Systems for Mobile Robots with Remote Control", by O. Kozlov et al., is devoted to the advanced methodology for optimization of fuzzy control systems for mobile robots with remote control based on bioinspired swarm techniques. The proposed

approach makes it possible to create effective intelligent control systems for mobile robots based on the principles of hierarchical multi-level control, remote IoT-based control, fuzzy logic control, and intelligent optimization of fuzzy control devices. The applied hybrid particle-swarm-optimization techniques with elite strategy allow optimizing various parameters of fuzzy control systems, finding the optimal solution to the problem, and, at the same time, having a higher convergence rate compared with the basic algorithms.

In "The Queue's Automated Creation of Doctor's Calls by Patients in the Hospital with Visualization via the Mobile Application", I. Zhuravska et al. discussed the COVID-19 problems and the necessity to provide medical care to a growing number of patients in hospitals. The authors (a) focus on the importance to determine the patient from whom a voice urgent appeal was received earlier for automatically forming the calls' queue, (b) use the passive acoustic location method and sound sensors in the wards with patients and (c) consider the microcontroller system, located inside special spatial structure, ensures the transmission of sound to a server computer system. The above system alternately records the receipt of urgent appeals, analyzes the location of the sound source, and sends the relevant data to the doctor's smartphone. The mobile application visualizes information about the location of the patients who need urgent consultation or help.

The article "Implementation of Generative Adversarial Networks in Mobile Applications for Image Data Enhancement", by O. Striuk et al., aims to explore and research Generative Adversarial Networks (GANs) as a tool for mobile devices that can generate high-resolution images from low-resolution samples and reduce blurring. GANs are widely used for a vast range of applied tasks for image manipulations. GANs are able to synthesize, combine, and restore graphical samples of high quality that are almost indistinguishable from real data. The main scope of the presented research is to study the possibility of using GANs for the abovementioned tasks, and their potential implementation in mobile applications.

B. Shevchuk et al. in the article "Telemonitoring of human biomedical and biomechanical signals" consider methodological and algorithmic bases of the local-regional and global wireless networks operation for functional state people's long-term monitoring. The construction of efficient wireless networks and portable devices for monitoring biological objects is proposed. The authors discuss (a) high-speed algorithms for processing, encoding, encrypting, and transmitting samples of monitoring signals and video data frames, and (b) using a signaling approach and the express analysis of

monitoring signal samples. The described technology is focused on evidence-based monitoring of the condition of operators of various human-machine complexes, systems, vehicles, aviation and space systems, and monitoring of athletes and healthy people in order to prevent various diseases.

All of the presented articles have been double-blind reviewed in two rounds according to the publication's standards.

We hope each reader will enjoy reading this Special Issue and will get valuable information about the advanced implementation of artificial intelligence in automation processes with mobile applications.

We would like to warmly express our deep appreciation to all authors for their contributions, to reviewers for their timely and interesting comments and suggestions as well as to River Publishers' staff for their kind technical assistance.

We certainly look forward to working with all the contributors again in the nearby future.

Guest Editors

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