Special Issue on Innovation and Sustainable Solutions in Engineering and Education

This special issue “Innovation and Sustainable Solutions in Engineering and Education” is a publication presenting multidisciplinary engineering and educational research. The scientific articles included here discuss a wide range of solutions enabling sustainable development, the effects of the carbon footprint, efficient energy use and the presentation of all this knowledge through education as a society-shaping activity. The spread and use of artificial intelligence cannot be avoided in this topic. Sustainability plays an important role in engineering sciences and engineering education. Advanced engineering technologies and engineering students must address long-term solutions and apply future professional technological explanations within the framework of sustainable solutions. This special issue generally contains articles and research that present the methods of engineering sciences and engineering education necessary for a sustainable future, including methods for assessing sustainability, education, and corporate responsibility.

Kursat Tanriver and Mustafa Ay’s study on " Innovative Approach in the Strength Analysis of Rivet Connections and Integration of Bending Moment", which a software is presented for calculating the static strength of rivet connections in plates of the same type. This software has been enhanced with the inclusion of equations that cover both the tensile test and the bending moment that occurs under real loading conditions and is often overlooked. Karel Slinták, Radka Daňová, Tomáš Urbánek and Lucie Macurová present their research on "A Comparative Analysis of the Range of Language Schools in the Czech Republic", focusing on comparative analysis of the products of language schools in the Czech Republic. The aim is to analyze the range of services, identify the range of language school courses and explore dependencies between market/competitive factors that can influence the product strategy of language schools. Tamas Kersánszki, Fekede Tuli, Tóth-Pjeczka Katalin, Felde Imre, Holik Ildikó and Fazekas Ágnes's paper on "Aligning Education with Industrial Development: A Study on Ethiopia's Education Sector and its Integration with Economic Clusters" offers a the pivotal role of education in Ethiopia's socio-economic development, focusing on aligning educational initiatives with the demands of a knowledge-based economy. Gabrijela Dimić, Boško Bogojević, Ljiljana Pecić, Ivan Tot and Petar Spalević in "Proposed Approach to Analysis and Visualization of Educational Data Based on the Concept of the Big Data addresses introduces a framework for data analytics in a blended learning environment based on Big Data technologies. The framework integrates heterogeneous educational data sources and enables real-time processing using Apache Spark. István Dénes and Sándor Semperger explore the "Enhancing backup system of Power Network Substations Control Systems through Version Control". This research analyses in particular the backup system of substation automation systems. Gyorgy Groller, Norbert Kis, Péter Sasvári, Balázs Sára, Orsolya Szalainé

Kaczkó, Zsuzsa Szalay, Artúr Szilágyi and Klára Tóthné Szita's article on "Carbon footprint of online vs. in-person learning in higher education" focusing on three main areas: to determine the carbon footprint of university education, a university campus, and to identify possible areas for emission reduction, to investigate the impact of online education on the carbon footprint, to identify international practice. Petr Kubeček, Alexander Ilkström Kravcov, Leopold Kruszka, Martin Blaha and Ondřej Pekař in their study "Problems Connected with the Length of the Escape Tunnel and Demining of Evacuation Routes caused by Artillery", highlight essentially intends to describe the consequences of using artillery in an urban operation environment from the perspective of assuring exits from escape tunnels and shelters. Emergency exits are designed to ensure that people can escape from a shelter if the exits are blocked by rubble from destroyed buildings. Xiao Li, Balázs Horváth and Ágoston Winkler's exploration of "Evaluation Methods of Electric Buses in Public Transportation: A Review of Literature", research direction has the ability to broaden the options available and provide an alternate concept and theory for evaluating the installation of fully electric buses. Dilmurod Akbarov, Abduvali Turdiboyev, Péter Kádár, Matkarim Ibragimov, Nodir Eshpulatov, Anvar Norboev and Oliyaxon Zayniyeva's paper on " Electric Pulse Processing in the Extraction of Oil from Industrial Seeds" focuses on the application of electric pulse processing as a method to improve the quantity and quality of oil obtained from seeds. László Balázs, József Nádas, Ákos Horváth and György Molnár address the "Sensors in public lighting", compares two trends of sensor-lighting integration: remote and local sensor data processing. The article presents the lighting technology possibilities of using video signals transmitted by surveillance cameras in current communication networks. Tamas Kokuti, Laszlo Balazs, Monika Rajcsanyi-Molnar and Istvan Andras's article on "Exploring the role of artificial intelligence in the education process: Artificial intelligence that supports cognitive processes" examines the impact of artificial intelligence (AI) on higher education. Kristián Fodor, Zoltán Balogh, Martin Vozár, Jan Francisti, Stefan Koprda and Marek Hrabčák, in "Optimization of production infrastructure processes through artificial intelligence methods (OPTIMUM)", present the OPTIMUM framework, a machine learning-driven system for optimizing control units in manufacturing environments.

This special issue can make a significant contribution to the development of innovative and sustainable pedagogical, technological, and engineering solutions, offering a wide range of perspectives and empirical results. We hope that getting to know the content of this publication will contribute to professional development and even the formation of new personal relationships. We wish you enjoyable reading and browsing!

György Molnár and Tibor Wührl

Guest Editors