

Editorial

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Vol. 23, No. 3. issue of ComSIS is in front of you. We are glad to say that we have gained the trust of the authors from several countries all over the world. This issue of ComSIS contains 6 regular research papers.

In the paper: *The Soft Factors in Digital Transformation Strategies: A Study of Employees Digital Competencies and Support Measures*, František Sudzina, Andreja Pucihar, and Gregor Lenart present a study that examines whether the digital competencies of employees and the way in which management introduces new digital technologies to employees influence the extent of selected strategic areas of digital transformation and the importance of different types of support. The data for the study was collected in collaboration with Slovenian chambers of commerce using an online questionnaire. The authors find that the way in which new digital technologies are introduced has an impact on customer experience, processes and digital solutions to support the business, as well as the digitalization of business models, products and services. In addition, the customer experience was also influenced by digital competencies. The ability to obtain funding for digital transformation was influenced by enterprise size and published local and international examples of best practice in the field of digitalization were influenced by the methods used to introduce new digital technologies.

While Environmental, Social, and Governance (ESG) assessment plays a key role in sustainable finance, data scarcity and noise in emerging economies hinder robust model development. Ivana Marković, Adela Ljajić, Jelena Z. Stanković, Miloš Košprdić, and Jovica Stanković, in their paper *Model Parameter-Based Transfer Learning for ESG Score Prediction in Developing Markets*, propose a model parameter-based transfer learning with random forest (MPBTL-RF) approach for domain adaptation situations where source data are not available. The proposed model is evaluated using three traditional learning approaches: Random Forest (RF), eXtreme Gradient Boosting (XGB), and Feedforward Neural Networks (FNN). Cross-validation is used to assess model generalizability, while domain adaptation is tested through in-domain and out-of-domain settings. The authors state that proposed MPBTL-RF approach achieves competitive performance compared to traditional baselines in scenarios with limited training data, offering time advantages with predictive efficiency and stability. The authors demonstrate how machine learning pipelines can adapt to data-constrained, real-world domains, fostering the synergy between Artificial Intelligence and business.

The research presented in the paper *DICYME: Dynamic Industrial Cyber Risk Modelling Based on Evidence*, by Javier García-Ochoa, Jaime Rueda, Rubén R. Fernández, Alberto Fernández-Isabel, Isaac Martín de Diego, Emilio L. Cano, Romy R. Ravines,

Ovidio López Espinosa, and Jaume Puigbó Sanvisens, was also inspired by the digital transformation. The authors advocate that traditional cybersecurity methods are increasingly inadequate for addressing the rapidly evolving threat landscape, emphasizing the critical need for intelligent, adaptive, and proactive defensive strategies. In the study introduced in the paper they present Dynamic Industrial Cyber Risk Modelling Based on Evidence (DICYME), a comprehensive system that integrates diverse analytical techniques to identify patterns and characteristics that reveal emerging threat trends, enabling organizations to proactively defend against potential future attacks. Beyond threat detection, DICYME operates as a pipeline that retrieves data from diverse cyber incident reports, specialized databases, and other relevant sources of cyber-related information, applies specialized techniques for victim identification, indicator computation, threat actor profiling, Common Vulnerability and Exposure (CVE) relationship mapping, and ultimately performs the Cyber Risk Quantification (CRQ).

The Examination Timetabling Problem (ETP) is an NP-hard combinatorial optimization problem that has been extensively studied over the past decades, with methodologies ranging from classical heuristics to contemporary machine learning approaches. In their paper Examination Timetabling with Independent Resource Pools: A Multi-Stage Genetic Algorithm Approach, Khalil Chebil, Mahdi Khemakhem, Abdallah Hammad, and Mohammed Alanazi provide a comprehensive literature review and propose a novel two-stage genetic algorithm-based decomposition combined with a clear linear mathematical formulation. A contribution of this work is in addressing the practical complexity of two-separated examination facilities at PSAU, where male and female students study in separate buildings with independent examination rooms, capacities, and supervisory staff, yet must follow a synchronized examination schedule. This creates a coupled dual-ETP problem where two independent resource allocation problems must share identical time slot assignments, significantly increasing model complexity and constraint interactions.

Filip Prentović, [Zoran Budimac](#), Marjan Heričko, and Gordana Rakić, the authors of the paper Role of Software Metrics in Practical Quality Management, advocate a use of software metrics for continuous insight into products and processes, while software metrics are a critical tool for building reliable software and assessing software quality, especially in complex domains and mission-critical environments. The aim of the research conducted in this paper is to determine the existence of different perspectives regarding the impact of software metrics on software quality between participants in software development. The main contribution is in analyzing the impact that the application of software metrics has on the quality of software and on the overall project success by statistically analyzing data obtained from the survey. The paper contains a comprehensive survey of code analysis techniques, software metrics, and the analysis of the application of software metrics in practice. Also, importance, influence, and the level of usage of software metrics in IT companies have been considered, as well as the estimation of results significance obtained in the process of measuring software.

The paper Artificial Neural Network Modeling for Air Pollution Prediction: LSTM versus the Levenberg-Marquardt Approach, by Goran Keković, Rade Božović, Sonja Ketin, Vladimir Mikić, Miloš Ilić, and Boban Vesin considers the problem of accurate prediction of air pollutant concentrations. It remains a critical challenge for environmental monitoring and public health, demanding robust and adaptive artificial intelligence approaches. The authors investigate the effectiveness of various types of artificial neural

networks (ANNs), including Long Short-Term Memory networks (LSTM) and networks based on the Levenberg-Marquardt algorithm (LM) and its variant with Bayesian regularization (LMBR), in predicting air pollution under different data conditions. Since LSTM networks are based on first derivative loss function algorithms and the LM algorithm is usually superior to this type of algorithm, a comparison of these networks was conducted. This is further supported by the limited coverage of this topic in existing literature. ANNs were tested on two different datasets: the Air Quality dataset, where the target variable was the concentration of benzene (C₆H₆) and the Beijing PM_{2.5} dataset, where the target was the concentration of PM_{2.5} particles.

On behalf of the ComSIS Consortium, we would like to take this opportunity to give our great thanks to the reviewers and all the authors for their high-quality work, great efforts, and remarkable enthusiasm.