

## PREFACE TO THE SPECIAL ISSUE ON SOFTWARE ENGINEERING

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This special issue is composed of carefully selected papers presented at the XXII KKIO Software Engineering Conference organized in Krakow on 21–22 September 2021 (<https://kkio.pti.org.pl/2021/>). KKIO is a prime software engineering international conference organized annually by the Polish Information Processing Society (<https://portal.pti.org.pl>) in a close collaboration with different Polish university computer science institutes. This edition of KKIO was organized by the Malopolska Branch of the Polish Information Processing Society and Institute of Computer Science AGH University of Science and Technology, Krakow, Poland.

The aim of KKIO is to stimulate research and to promote cooperation between science, industry, and governmental bodies. It is a platform to make contacts, initiate cooperation between researchers and engineers, and draft national and international projects. This conference allows managerial staff from the industry, private organizations, and government bodies to widen their knowledge about software engineering to learn the latest achievements in software engineering research and praxis.

The papers in this issue represent seven most successful topics of the Conference.

Topic *Software Engineering Processes, Practices, Methods, and Tools* has gathered contributions related to new tools, processes, practices, methods, and tools

supporting software life cycles as well as evaluation or improvement of the new or existing processes, practices, methods, and tools. This topic is represented by the paper

- Krzysztof Marek, Michał Śmiałek, Kamil Rybiński, Radosław Roszczyk and Marek Wdowiak: BalticLSC: Low-Code Software Development Platform for Large Scale Computations [1].

Topic *Automating Software Engineering* addressed development of contemporary software systems as a complex enterprise which requires automated approaches to be done in an economic and timely manner. This is not possible without techniques for constructing and transforming software artifacts and supporting software processes with tools. Two different approaches are described in the papers

- Maciej Penar and Wiktor Zychla: Object-Oriented Build Automation – A Case Study [2],
- Bogumila Hnatkowska and Mateusz Cebinka: Activity Diagram Generation Based on Use-Case Textual Specification [3].

Topic *Software Engineering for Particle Physics* was proposed for the first time at the KKIO Software Engineering Conference, and it resulted in two interesting keynote lectures and a number of valuable presentations. This field is characterized by a set of information technology challenges related to exabyte data volumes and millions of computing intensive simulation jobs both distributed around the World and therefore elaboration of optimised software solutions is necessary. We have decided to include in this issue three representative papers:

- Jakub Czajka, Jacek Otwinowski and Jacek Kitowski: Non-Intrusive Data Inspection for Message-Based Systems [4],
- Michał Mazurek, Gloria Corti and Dominik Muller: New Simulation Software Technologies at the LHCb Experiment at CERN [5],
- Aleksandra Poreba: The Trigger Performance Monitoring and Rate Predictions Preparation for Run 3 at Atlas Experiment [6].

Topic *Software Engineering for Computational Medicine* addressed development of software tools supporting prevention, diagnosis, and treatment of diseases, ultimately resulting in clinical decision support systems. It is the subject of the paper

- Jakub Adamczyk and Filip Malawski: Comparison of Manual and Automated Feature Engineering for Daily Activity Classification in Mental Disorder Diagnosis [7].

Topic *Software Engineering for Network Services and Clouds* gathered presentations related to methods of development for network-centric application, quality assurance and evaluation, architectures of cloud- and network-based applications and services in network environment. These challenges and solutions are described in the paper

- Hanna Grodzicka, Michal Kedziora and Lech Madeyski: Cloud Solutions for Private Permissionless Blockchain Deployment [8].

Topic *Software Engineering for Quantum Computing* was included into the Conference to provide a forum for software developers, computer scientists and physicists to understand and discuss research on current problems in quantum software development. These aspects of quantum computing are presented in the paper

- Julia Plewa, Joanna Sieńko and Katarzyna Rycerz: Variational Algorithms for Workflow Scheduling Problem in Gate-Based Quantum Devices [9].

Finally, the paper

- Jacek Dajda et al.: Current Trends in Software Engineering Bachelor Theses [10]

describes the most significant results of the Competition of students' engineering projects which was organized to encourage graduates of engineering first-cycle degree studies to develop their professional aspirations in the context of software engineering and to enable the exchange of knowledge and experience of different academic communities.

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