

## Introduction to the HICSS-57 Software Technology and Software Development Minitrack

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The development of software has provided ample opportunities for research, provides ample opportunities, and likely will provide ample opportunities. Not long ago, the proliferation of mobile computing opened up a new stream of research, then the same happened with the Internet-of-Things (IoT) and Cyber-Physical Systems (CPS). Possibly, fog, edge, and dew computing and the convergence of technologies will continue this trend. All of these topics seemingly provide completely new endeavors; with a closer look, however, they can draw from what is already known – both regarding typical problems and regarding solutions.

Experiences and methods from classical software development can only be utilized to some degree when solving challenges that arise from new application, changing environment, and demanding domains. Development is complicated by the often faced need to develop for a multitude of platforms. With the emergence of multi-platform and multi-device, the new golden standard are applications not only across software ecosystems, but across hardware platforms such as laptop, mobile, tablets, embedded devices, sensors, and wearables. Therefore, new threads of research are needed to tackle these issues and to pave the way for improved software development, better business producibility and improved user experience (UX).

Further, there are novel developments in machine learning and analysis, and the emergence of multi-faceted aspects of artificial intelligence (AI), ranging from algorithms to ethical AI, secure AI and sustainable AI perspectives. This creates new opportunities for groundbreaking research through distributed machine learning, federated learning, edge analytics and computational collaboration between several heterogeneous systems and device forms.

This minitrack started as *Mobile App Development* (HICSS-49, Majchrzak and Heitkötter, 2016 and HICSS-50, Majchrzak and Grønli, 2017) before broadening to *Software Development for Mobile Devices, Wearables, and the Internet-of-Things*

(HICSS-51, Majchrzak and Grønli, 2018 and HICSS-52, Majchrzak and Grønli, 2019). Since its fifth year (HICSS-53, Majchrzak et al., 2020, HICSS-54, Majchrzak et al., 2021, HICSS-55, Majchrzak et al., 2022, and HICSS-56, Majchrzak et al., 2023), we adapted it to the further changing landscape to keep it attractive to the community, now including cyber-physical systems (CPS). This year, we broadened it further. The minitrack is devoted to the technological background while keeping an eye on business value, user experience, and domain-specific issues. Contributions may take a sociotechnical view or report on technological progress. We are particularly interested in applied software technology but also welcome theoretical work.

The minitrack covers eleven papers:

1. *Making Team Projects with Novices More Effective: An Experience Report* by Carlos Paradis, Rick Kazman, and Anthony Peruma
2. *PosEmo – An automated system for measuring user interest and attitude in real time* by Mikolaj Buchwald, Szymon Kupinski, Jan Nowak, Magdalena Biadala, and Maciej Behnke
3. *Behavioral Aspects of Agile Software Development: A Case Study on Meeting Practices* by Viktoria Stray, Nils Brede Moe, Gunnar Bergersen, and Jeanette Kirkerud
4. *Energy Efficiency and Classification Locality: Pareto-optimal trade-offs in multi-class sensor-based Human Activity Recognition* by Thomas Hoof, and Benjamin Buchwitz
5. *Enhanced Transport Mode Recognition on Mobile Device* by Anders Skretting, Tor-Morten Grønli, Tim A. Majchrzak, Cristian Mateos, and Matias Hirsch
6. *Overcoming Test Debt and Advancing Software Sustainability with Automated Testing: A B2B Trading Platform Case Study* by Xiaoge Zhang, Bhavika Sharma, and Timo Koppe

7. *Performance Comparison Analysis of ArangoDB, MySQL, and Neo4j: An Experimental Study of Querying Connected Data* by Johan Sandell, Einar Asplund, Workneh Yilma Ayele, and Martin Duneld

8. *Investigating an Industry Practical Model for Confidence in Expert Cost Estimation of Feature Enhancement Requests* by Daniel Port, and Bill Taber

9. *The Rise of Generative AI in Low Code Development Platforms – An Analysis and Future Directions.* by Olivia Bruhin, Ernestine Dickhaut, Edona Elshan, and Mahei Li

10. *Don't Buy the Pig in a Poke: Benchmarking DNNs Inference Performance before Development* by Constantin Völter, Timo Koppe, and Phillip Rieger

11. *The Low-Code Phenomenon: Mapping the Intellectual Structure of Research* by Syed Asad Ali Naqvi, Markus Zimmer, Paul Drews, Kristina Lemmer, and Rahul Basole

Moreover, we accepted a guest paper:

12. *DRAMA at the PettingZoo: Dynamically Restricted Action Spaces for Multi-Agent Reinforcement* by Learning Frameworks, Michael Oesterle, Tim Grams, and Christian Bartel

This means that we will host a full day of minitrack presentations comprising four sessions!

We are glad that we again had many helping hands. We are proud that all authors who submitted papers to our track got at least three constructive reviews as well as an additional meta-review. We think that we outperform many journals with this effort in giving authors advice, whether their papers are accepted or not. Therefore, we would like to thank (and explicate) our program committee for their continued arduous work:

- Sebastián Echeverría, Carnegie Mellon Software Engineering Institute
- Siri Fagernes, Kristiania University College
- Gheorghita Ghinea, Brunel University
- Matías Hirsch, ISISTAN – UNICEN – CONICET
- Adrian Holzer, University of Neuchâtel, Switzerland
- Shah Rukh Humayoun, San Francisco State University
- Cristian Mateos, ISISTAN – UNICEN – CONICET
- Syed Atif Mehdi, University of Central Punjab
- Laura Po, University of Modena and Reggio Emilia
- Mohammad Tafiqur Rahman, University of South-Eastern Norway (USN)

- Rocco Raso, Universität des Saarlandes
- Sergio Ríos-Aguilar, Universidad Politécnica de Madrid
- Daniel Rodriguez, University of Alcalá
- Davide Rossi, University of Bologna
- Tacha Serif, Yeditepe University
- Davor Svetinovic, Vienna University of Economics and Business
- Bastian Tenbergen, SUNY Oswego
- Tony Wasserman, Carnegie Mellon University Silicon Valley
- Oliver Werth, Leibniz Universität Hannover
- Alejandro Zunino, ISISTAN – UNICEN – CONICET

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