

## Introduction to the HICSS-53 Software Development for Mobile Devices, the Internet-of-Things, and Cyber-Physical Systems Minitrack

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Applications for mobile devices (apps) have facilitated the success of smartphones and tablets. By using apps, the multi-purpose hardware of modern devices can be utilized to the full extent. Despite much progress with regard to development methods, software development kits, and frameworks, app development poses many challenges. This is even more so for novel mobile devices such as wearables and for the hardware that constitutes the Internet-of-Things (IoT) and Cyber-Physical Systems (CPS). Compatibility, performance, battery-saving, security, and safety are only some of the issues that are mainly driven by the quality of the used software. A satisfying level of this quality in many cases is very hard to achieve and proper techniques for testing and formal verification are needed.

Experiences and methods from classical software development can only be utilized to some degree. Moreover, the inherent challenges of the respective new devices ask for novel solutions. The above-sketched issues are worsened by the conditions that development activities meet. Typical particularities include the need for multi-platform development, device fragmentation, context-sensitivity, low computational power, little memory, energy conservation requirements, and the heterogeneity of users. 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 standards, better business producibility and an improved user experience (UX).

This minitrack started as *Mobile App Development* (HICSS-49 [1] and HICSS-50 [2]) before broadening to *Software Development for Mobile Devices, Wearables, and the Internet-of-Things* (HICSS-51 [3] and HICSS-52 [4]). In its fifth year, we stay true to the original idea, yet adapt to the further changing landscape to keep it attractive to the community.

The minitrack covers five papers:

1. *Design and Implementation of a Usability-Framework for Smartwatches* by Steffen Zenker and Sebastian Hobert
2. *Detecting Repackaged Android Applications Using Perceptual Hashing* by William Glisson, Todd Anzel, Jeffrey McDonald, and Thanh Nguyen
3. *Application of Design Thinking for Elicitation Requirements in Mobile Applications* by Aleteia Patricia F. de Araujo, Edna Canedo, Alexandre Vinhadelli Papadópolis, and Anderson Cerqueira
4. *MergePoint: A Graphical Web-App for merging HTTP-Endpoints and IoT-Platform Models* by Benedikt Bongarth, Johannes Hammen, Fabian Burzlaff, Christian Bartelt, and Sven Grottker
5. *A Bibliometric Analysis of the HICSS Software Technology Track* by Tor-Morten Grønli, Tim A. Majchrzak, and Hermann Kaindl

We are glad that we again had many helping hands. We are proud that all authors that submitted papers to our track got at least three – most even four – 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. And continuing this to the fifth edition of the minitrack makes us glad. Therefore, we would like to thank (and explicate!) our program committee for their continued arduous work:

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- Bastian Tenbergen, SUNY Oswego
- Tony Wasserman, Carnegie Mellon University Silicon Valley
- Oliver Werth, Leibniz Universität Hannover
- Burkhard Claus Wuensche, University of Auckland

- [5] T.-M. Grønli, T. A. Majchrzak, and H. Kaindl, “A bibliometric analysis of the HICSS software technology track,” in *Proceedings 53th Hawaii International Conference on Systems Science (HICSS-53)*, AIS Electronic Library (AISeL), 2020.

For our fifth anniversary, our own paper on this minitrack (the one that will be presented last) takes a look into history. While taking our minitrack and especially the topic of mobility as the motivation, the bibliometric analysis we provide covers the HICSS Software Technologies track as a whole. We hope that you enjoy this article [5], which does not look into the latest technological developments but rather reflects on where we have come from.

## References

- [1] T. A. Majchrzak and H. Heitkötter, “Introduction to the mobile app development minitrack,” in *Proceedings 49th Hawaii International Conference on Systems Science (HICSS-49)*, p. 5682, IEEE Computer Society, 2016.
- [2] T. A. Majchrzak and T.-M. Grønli, “Introduction to the mobile app development minitrack,” in *Proceedings 50th Hawaii International Conference on Systems Science (HICSS-50)*, p. 6161, AIS Electronic Library (AISeL), 2017.
- [3] T. A. Majchrzak and T.-M. Grønli, “Introduction to the HICSS-51 software development for mobile devices, wearables, and the internet-of-things minitrack,” in *Proceedings 51th Hawaii International Conference on Systems Science (HICSS-51)*, p. 5686, AIS Electronic Library (AISeL), 2018.
- [4] T. A. Majchrzak and T.-M. Grønli, “Introduction to the hicss-52 software development for mobile devices, wearables, and the internet-of-things minitrack,” in *Proceedings 52th Hawaii International Conference on Systems Science (HICSS-51)*, pp. 7399–7400, AIS Electronic Library (AISeL), 2019.