Introduction to the HICSS-57 Minitrack on Process Mining in Healthcare

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Process mining is a research field providing a set of concepts and methods to analyze the execution of work processes in a data-driven way. In traditional application domains of business process technology including finance and electronic commerce, process mining provides insights about how work processes are performed in reality using process execution data captured by information systems. Since then, process mining has expanded to other, novel application domains, including logistics, public administration, and, more prominently, healthcare. The application of process mining in healthcare is faced with several challenges such as the flexible nature of healthcare processes. Nevertheless, health information systems provide a rich set of process execution data, and process mining offers the chance to better understand healthcare processes and to identify areas for process improvement.

The minitrack on process mining in healthcare aims to provide a forum for researchers and practitioners to discuss novel ideas in the area of process mining in healthcare. For the third edition of the minitrack, three regular papers were accepted after a peer review process, covering three distinct topics in the process mining research spectrum. The accepted papers will be briefly introduced below.

Firstly, the paper *"Whetting the SWORD: detecting workarounds by using active learning and logistic regression"* by Wouter van der Waal, Inge van de Weerd, Saskia Haitjema, Teus Kappen and Hajo A. Reijers centers around the detection of workarounds (i.e. deviations from a prescribed procedure to reach an intended goal) in an event log. Using a logistic regression model and active learning approach, the proposed method enables the detection of workarounds without requiring domain experts to provide a large amount of labeled data as an input. The method is applied to a case study at the emergency room of a Dutch academic hospital. The paper exemplifies the innovative use of process execution data as it leverages an event log to better understand how healthcare professionals behave in reality.

Secondly, the paper *"Care records and healthcare processes: adding context to clinical codes"* by Lara Chammas, Owen P. Dwyer, Emmanuel Sallinger, Jim Davies and Eva J. A. Morris presents a method to conduct process mining analyses while considering contextual information embedded in care records to, e.g., stratify patient populations. To this end, an existing stepwise process mining method has been adapted and extended, taking inspiration from epidemiological research methodology. The proposed method has been applied to the patient journey associated with colon cancer treatment at an English regional hospital. The paper illustrates the importance of taking into account context in order to generate meaningful process mining results in healthcare environments.

Finally, the paper *"Process mining using Electronic Health Records data - quo vadis? Reflections from observing nurses' activities and data registration behavior"* by Niels Martin, Isabeau Gielen and Jochen Bergs focuses on the input side of process mining. In particular, the paper centers around the question of how well Electronic Health Records data reflects how work actually gets done in healthcare processes. To this end, the results of an observation study at a Belgian hospital are reported in which the activities that nurses perform have been observed, as well as their data registration behavior. The paper shows that Electronic Health Records data provides a highly fragmented and inaccurate view of how nurses perform work, giving rise to highly relevant discussion points.

The diversity of topics covered by this year's contributions will stimulate interesting discussions during the minitrack and will inspire future research in the field of process mining in healthcare.

We would like to thank all authors for contributing to the minitrack. Moreover, we wish to express our gratitude to all members of the program committee for their detailed and timely reviews.

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URI: https://hdl.handle.net/10125/106827
978-0-9981331-7-1