Preface to HEDA 2022: The International Workshop on Health Data

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1. Introduction

Health data covers a broad range of data influencing people's health, e.g. their monitoring, analysis, and prediction. In general, it includes several types of data such as environmental data, personal data gathered, for example, via fitness trackers and especially clinical data. These data are often distributed over several data storages, and they are collected from many concurrent (and complex) health care processes.

The routine clinical data are considered precious, and their secondary use is considered beneficial for policymakers, public health officers, scientists, clinicians, citizens and industry. Different initiatives, including European Health Data Network and Clinical Trial Data initiative, initiated by the European Commission and the EFPIA (European Federation of Pharmaceutical Industries and Associations), are searching for better solutions for utilising citizens' health data. However, due to the semantic heterogeneity and the distributed storage of health data, it is still no unified approach to interoperability, hence one relay on divide-and-conquer approaches instead. Facilitating big-data analytics depends on optimized privacy aware data sharing and data reuse, which are still lacking despite different interoperability standards in the medical domain.

HEDA 2022 aims to bring together academics, practitioners and other interested attendees for presentations, and discussions in the domain of digital health with special focus on health data modelling, health processes description and analytics. The aim is to create a broader community to explore the potential for open secondary use and analytics of citizens' health data and develop and evaluate the solutions to make it happen. We emphasise here the central role of citizens, as data holders, whose privacy, active consent and control must be ensured when processing the health data in a global context.

HEDA 2022 invited paper submission, including position and work-in-progress papers, about unpublished research covering all aspects of health data modelling, interoperability and analytics. The workshop was orgainzed as a co-located event together with Petri Nets 2022: The 43rd

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International Conference on Application and Theory of Petri Nets and Concurrency on June 19 - 24, 2022, Bergen, Norway.

The list of topics covered, but was not limited, to the following:

- Health data models and meta-models
- Widespread usage of health data
- Concurrency in health data systems
- Distributed health data processes
- Anonymisation and privacy of health data
- Health data integrity and quality
- Open health data platforms
- Services for data retrieval, data exchange, data analysis (Data analytics as a service)
- Architecture of eHealth systems
- Syntactical and Semantic interoperability
- Device-to-Device Communication
- Data from social media, fitness trackers etc.
- Combining health data sources

2. Program Committee

The program committee of the workshop consisted of experts in various fields related to computer science, software engineering, and health informatics. The committee members, who represent various universities and institutions located in 7 different countries, are listed below:

- Clemens Cap, University of Rostock, DE
- Vincenzo Ciancia, Institute for Information Science and Technologies - CNR, IT
- Gayo Diallo, University of Bordeaux, FR
- Lukas Fischer, Software Competence Center Hagenberg GmbH (SCCH), AT
- Ludovico Iovino, Gran Sasso Science Institute, IT
- Yngve Lamo, Western Norway University of Applied Sciences, NO
- Martin Leucker, University of Lübeck, DE
- Wendy MacCaull, St. Francis Xavier University, CA
- Suresh Mukhiya, Western Norway University of Applied Sciences, NO
- Gunnar Piho, Tallinn University of Technology (TalTech), EE
- Violet Ka I Pun, Western Norway University of Applied Sciences, NO
- Fazle Rabbi, University of Bergen, NO
- Aarne Ranta, University of Gothenburg, SE
- Peeter Ross, Tallinn University of Technology (TalTech), Estonia
- Adrian Rutle, Western Norway University of Applied Sciences, NO

3. Selected papers

The workshop received 14 papers from 8 different countries. After a rigourous reviewing process, 9 of the papers were accepted for publication in this proceedings, giving an acceptance rate of 0.64. All the authors were given the opportunity to present their works in the workshop, however, only those who met the requirements set by the program committee were selected for publication. Out of the 9 accepted papers, the best 2 papers were invited to submit extended versions to the TopNoc journal which will be edited by the chair of the Petri Nets 2022 conference.

The accepted papers are:

1. Toomas Klementi, Kristian Kankainen, Gunnar Piho and Peeter Ross. Prospective research topics toward preserving persons' electronic health records in decentralised content-addressable storage networks
2. Rainer Randmaa, Igor Bossenko, Toomas Klementi, Gunnar Piho and Peeter Ross. Evaluating business meta-models for semantic interoperability with FHIR resources
3. Fazle Rabbi, Bahareh Fatemi and Wendy MacCaull. Analysis of patient pathways with contextual process mining
4. Philipp Bende, Olga Vovk, David Caraveo, Ludwig Pechmann and Martin Leucker. A Case Study on Data Protection for a Cloud- and AI-based Homecare Medical Device
5. Kristian Kankainen, Toomas Klementi, Peeter Ross and Gunnar Piho. Using the Snomed CT as a semantic model for Controlled Natural Language capture of clinical data
6. Patrick Stünkel, Sabine Leh and Friedemann Leh. Process Data Science for Workflow Optimization in Digital Pathology: A status report
7. Igor Bossenko, Gunnar Piho and Peeter Ross. Forward and backward compatibility design techniques applying the HL7 FHIR standard
8. Peter Pfeiffer, Heike Sander, Peter Fettke and Wolfgang Reisig. Towards a Standard Process enabling AI-support for Safety and Conformity of Medical Devices
9. Severin A. Eliassen, Harald Soleim, Atle B. Geitung and Lars Peder V. Bovim. VR-based rehabilitation of cognitive functions among stroke-survivors

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