

Innovative informatics methods for process mining in health care

Peer-reviewed author version

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Special Issue on Innovative informatics methods for process mining in health care

Submissions can be submitted on or after February 1st, 2021 with submission deadline of June 1st, 2021.

The world's most valuable resource is no longer oil, but data. The biomedical and health domains are no exception. The ultimate goal of biomedical informatics techniques is not to collect more data, but to extract valuable knowledge and insights from existing data. Regarding the execution of clinical processes, more and more data are being captured in the form of event data by, for instance, electronic health record systems. Event data constitutes a key source of information to analyze and improve clinical processes. In recent years, a new discipline has emerged which combines traditional process analysis and data-centric analysis: process mining. Research interest, focusing on the development of innovative methods, has experienced a remarkable growth in recent years. In 2016, the review paper "Process mining in health care: a literature review" [1], published in JBI, identified 74 articles on this topic. By mid 2020, the number of articles citing this same review reached more than 285. Within the biomedical informatics context, process mining contributions have dealt with various challenges in recent years. These include, for instance, the extraction of typical treatment processes from electronic medical records [2], the automatic detection of process deviations in trauma resuscitation [3], the discovery of collaboration patterns between health care professionals in the emergency room [4], and the suitable abstraction of medical event data to discover processes and compare traces [5].

This special issue provides a high-quality forum for interdisciplinary researchers to propose novel informatics methods for process mining in health care. The submitted papers should center around relevant problems experienced in the medical domain and propose innovative process mining methods to deal with them. Hence, submissions should move beyond using a brief health care application simply to illustrate a highly generic process mining method. The special issue welcomes high-quality and innovative submissions on a wide range of topics, including (but not limited to):

- Data extraction, integration and preparation for process mining in health care
- Data-driven modeling, analysis and improvement of health care processes

- Data-driven compliance analysis for health care processes
- Data-driven monitoring of health care processes
- Multi-perspective approaches for process mining in health care
- Root-cause analysis for health care processes
- Predictive analytics for health care processes
- Data-driven process recommendations in health care
- Data-driven simulation and optimization of health care processes
- Human-in-the-loop approaches to process mining in health care
- Privacy-preserving approaches for process mining in health care

For all topics, the focus should be on the development of novel methods and techniques for process mining in a biomedical informatics context.

1. Peer review process

All submitted papers must be original and will go through a rigorous peer-review process with at least two reviewers. Papers previously published in conference proceedings will not be considered. JBI's editorial policy will be strictly followed by special issue reviewers. Note in particular that JBI emphasizes the publication of papers that introduce innovative and generalizable methods of interest to the informatics community. Specific applications can be described to motivate the methodology being introduced, but papers that focus solely on a specific application are not suitable for JBI.

2. Submissions

Authors must submit their papers via the online Elsevier Editorial System (EES) at <http://ees.elsevier.com/jbi>. **Submissions can be submitted on or after February 1st, 2021 with submission deadline of June 1st, 2021.** Authors should select "Informatics for Process Mining" as their submission category and note in a cover letter that their submission is for the "*Special Issue on Innovative Informatics Methods for Process Mining in Health Care*". If the manuscript is not intended as an original research paper, the cover letter should also specify if it is, rather, a *Methodological Review, Commentary, or Special Communication*. Authors should make sure to place their work in the context of human-focused biomedical research or health care, and to review carefully the relevant literature.

JBI's editorial policy, and the types of articles that the journal publishes, are outlined under *Aims and Scope* on the journal home page

at <https://www.journals.elsevier.com/journal-of-biomedical-informatics> (click on “Read more” for full details). All submissions should follow the guidelines for authors

at <https://www.elsevier.com/journals/journal-of-biomedical-informatics/1532-0464/guide-for-authors>, including format and manuscript structure. If the authors speak a first language other than English, editorial assistance by a native English speaker is highly recommended prior to submission. Open-source software code and data should ideally be made available through Internet resources that are enduring. JBI is an international journal and generalizable contributions from throughout the world are highly encouraged.

The full special issue is compiled when the last paper has been accepted (see the collection of virtual special issues at <https://www.sciencedirect.com/journal/journal-of-biomedical-informatics/specialissues>). Note that JBI is a hybrid journal that offers open access for a fee as an option for accepted papers.

Questions regarding the special issue

Please direct any questions regarding the special issue to Dr. Jorge Munoz-Gama (jmun@uc.cl).

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