

Topics for seminar on process analytics (CS 719 & SM 457, FSS 2021)

Last updated: 13-01-2021

The following topics are suggested for the literature study you shall conduct. The questions after each topic are included to provide a bit more information of what the topic entails. They can serve as inspiration for a research question that you will aim to answer in your literature study, but you are by no means limited to these exemplary questions.

You are also free to propose your own topic by looking at publications at key venues such as the international conferences on Business Process Management (BPM), Advanced Information Systems Engineering (CAiSE), and Process Mining (ICPM), as well as journals such as Information Systems and Decision Support Systems. Topics of interest can relate to research areas such as process analysis, process mining, stream processing, and robotic process automation.

1. **Quality in process discovery.** What makes a discovered process model *good*?
2. **Declarative process discovery.** What are the main challenges in the discovery of declarative constraints?
3. **Data-aware process discovery.** How are data attributes incorporated in discovery algorithms?
4. **Stochastic conformance checking.** What does this novel view on process conformance entail?
5. **Computational efficiency in conformance checking.** What approaches exist to limit the computational complexity of conformance checking techniques?
6. **Anomaly detection in process mining.** What makes process behavior an anomaly and how can it be detected?
7. **Stream-based process mining.** What are the challenges and techniques when considering event data in the form of streams rather than event logs?
8. **Encoding process behavior.** In what ways can process behavior be encoded in order to support learning-based approaches for, e.g., prediction and clustering?
9. **Privacy in process mining.** How do existing works aim to ensure that process mining does not violate the privacy of individuals?
10. **Trace clustering.** Which approaches exist that group together similar traces and for what purposes?
11. **Process mining in healthcare.** How is process mining employed to analyze healthcare processes and what are the particular challenges that need to be considered here?
12. **Organizational process mining.** What insights can be gained about the resources and people involved in the execution of a business process?

- 13. Text-to-model transformation.** Which techniques exist to extract process information from textual descriptions?
- 14. NLP and BPM.** How can natural language processing be used to support business process management?