



Bachelor Project: Stochastic Process Discovery in Rust

Process mining aims to enable analysts to obtain insights about business processes running in organizations. In typical real-life processes, certain process behavior occurs more frequently than other behavior. Given an event log, the relative frequency of observing a trace represents the likelihood of executing the corresponding sequence of steps. Correspondingly, a stochastic process model annotated with the relative likelihoods of routing decisions induces a probability distribution over traces that represent the modeled process behavior.

Automatically discovered stochastic process models can help understand and improve organizations. In this project, we will consider stochastic process discovery as finding a model with an optimal stochastic conformance checking measure, such as unit Earth Movers' Stochastic Conformance Checking or Entropic Relevance.

In this project, we will:

- Take an existing stochastic discovery technique [1];
- Select an efficient optimization solver;
- Implement the solver and the technique in Rust;
- Evaluate the implementation with real-life event logs.

We intend your code to be part of the Ebi framework, so we ask you to give us a license for the code you write.

Pre-requisites

To apply for this project, you must demonstrably have experience with process mining. For instance, you have followed Fundamentals of Business Process Management, Business Process Intelligence, Advanced Process Mining, or have taken your seminar in the BPM or PADS group.

About the BPM group

The Business Process Management: Foundations and Engineering group is a new group in the Informatik faculty. The focus of the BPM group, led by Prof. Sander Leemans, is on the combination of data-based process analysis and the optimisation of processes in organizations.

How to apply

In an at-most 1-page A4 application, motivate what triggers you to pursue this opportunity, and indicate your prior experience with process mining, including relevant courses and your marks. Please send your application to applications@bpm.rwth-aachen.de. The starting date is flexible, and applications close 31 October or once a suitable candidate has been found.