

The Validation of Information Resulted by Process Mining in Case of a Garage Gate Control

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Abstract

Process mining techniques allow for extracting information from event logs. For example, the audit trails of a workflow management system or the transaction logs of an enterprise resource planning system can be used to discover models describing processes, organizations and products. Within the research domain of process mining, process discovery aims at constructing a process model as an abstract representation of an event log. The goal is to build a model (e.g., a Petri net) that provides insight into the behaviour captured in the log. We have to create an event log that exactly mimics the behaviour given as input. This event log can be made by scientific investigations, e.g. using ProM framework system. ProM is used to analyse and compare logs in various ways. This analysis is very useful because e.g. the optimization of process execution can be made better. Starting point for ProM is the MXML format. One MXML file is able to store information about multiple processes.

To illustrate it we present a real-life case study: workflow of a multi-storey car park's gateway. The garage gate is an automaton controlled by an operator. The automaton executes the steps sequentially; however it needs the reactions of the operator for doing it. A condition for firing a transition is to be allowed from the operator side too. Based on the initial Petri net of the system we create an applicable meta-model for process mining. We illustrated the operation of the garage gate on a Petri Net with traditional tool and after that we produced an event log file. To this we wrote a procedure that could make an MXML file. We imported the MXML file in the ProM framework. We used ProM for the production of a new Petri net, we chose the α -algorithm to the production. The α -algorithm assumes that the potential model is a sound Structured Workflow Petri net (SWF-net) without short loops. SWF-nets are a subclass of workflow nets in which the net structure explicitly shows its behaviour. The resulted Petri net can be used for different

process mining possibilities.

A process mining validation method has been presented in this paper, it resulted a Petri net for multilateral use. During the validation of the log we have compared the initial and the generated Petri nets. We got that they are very similar excepting the description of the conditions. The similarity was reached by special XML tags which were used for signing the relation between the conditions surrounded by actions. In the future we are searching for what happens if not everything can be observed in a process. Can we generate the absent traces? On the other hand we can see an event log, from that we produce a Petri net in ProM. After that we lose events after each other and we examine whether the Petri net can be mined.

Keywords: Process mining, Petri net, ProM

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