



An Ontology Based Process Mining Framework for Logistics Domain

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ABSTRACT

Process mining is emerging new field and it is a set of techniques referring to the fields of data science and process management to assist the analysis of operational techniques primarily based on event logs. Process mining techniques replace traditional business process management. Process mining is applied in many domains specially in healthcare, manufacturing etc. and there are only a few studies are done in the logistic domain. As the nature of the processes in the logistics domain is very complex, unstructured, and often changing and fluctuating, the need of better management is critically essential. Therefore, process mining is one of fruitful approach to discover and analyses the processes in logistic domain. However, there is no comprehensive and standard approach for process mining in logistic domain. By identifying this research gap, we provide better guidance by defining an ontological-based framework for process mining in the logistics domain in this research. This research follows the design science research methodology and the framework and the Ontology are the two main artifacts. The proposed framework covers most of the activities in process mining starting from extracting event logs then selecting suitable pre-processing techniques and process mining algorithms, deriving the process model and evaluating the model. Each stage in the framework guided with best suitable approach to the logistic domain. For example, the Ontology developed for logistic domain used in the pre-processing stage to filter the relevant events. This research uses Prom tool for evaluation, pre-processing, and mining process models. The proposed ontology and the framework are validated with a real logistic dataset. This framework will help logistics companies to improve the handling of business processes efficiently and increase the productivity.

Keywords: *Event log, Logistics, Ontology, Prom Tool, Process mining*