Towards Robust Conformance Checking (Extended Abstract)

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The growing complexity of processes in many organizations stimulates the adoption of business process management (BPM) techniques. Process models typically lie at the basis of these techniques and generally, the assumption is made that the operational business processes as they are taking place in practice conform to these models. However, recent experience has shown that this often isn't the case. Therefore, the problem of checking to what extent the operational process conforms to the process model is increasingly important.

In [1], we provide a robust method for calculating conformance between a log and a process model. First, we introduce flexible models that provide an abstraction of many languages and allow for the modeling of complex control flow constructs, such as OR-split/joins and multiple tasks that represent the same activity. We provide semantics for these models, but without specifying how to execute them. Instead, we show that in the context of a case that has been recorded in the log, we can construct instances of the model that maximize certain conformance metrics. Finally, using experiments on simulated data (comparable in size to real-life data sets), we show that our approach calculates fitness correctly in the presence of complex constructs, where existing approaches do not.

Given a process model and an event log, our approach does not only solve the problem of having inaccurate conformance results, but also opens possibilities to compare conformance values for a given log between different models made in different languages. With existing approaches, conformance comparison between two process models and a given log require both models to be created in the same process modeling language. We soften the requirement such that models can be in different modeling languages as long as they can be represented as abstract models.

The work presented in this paper provides a solid basis for robust conformance checking. Since our flexible models do not have executable semantics, we do not rely on state-space exploration (which is required in Petri-net based conformance checking). Using the approach presented in [1], we plan to define metrics that capture different dimensions of conformance. Furthermore, our approach can easily be extended to identify the "skipping" of activities, i.e. by identifying which tasks were executed but not logged.

Our approach is fully implemented in Version 6 of the ProM framework, that can be obtained from http://www.processmining.org, evaluated using simulated

event logs and compared against an existing conformance technique based on Petri nets. By experiments, it is proven that the proposed approach provide better insights to conformance between a given process model and an event log, particularly when advanced control flow constructions (e.g. OR split, OR join) exist in the model.

References

1. A. Adriansyah, B.F. van Dongen, and W.M.P. van der Aalst. Towards Robust Conformance Checking. In *Proceedings of the 6th International Workshop on Business Process Intelligence (BPI 2010 - accepted)*, 2010.