

Run-time prediction of business process indicators using evolutionary decision rules (Summary)*

Alfonso E. Márquez-Chamorro, Manuel Resinas, Antonio Ruiz-Cortés

Dpto. Lenguajes y Sistemas Informáticos, University of Seville, Seville, Spain.
{amarquez6,resinas,aruiz}@us.es

Summary of the contribution

Predictive monitoring of business processes is a challenging topic of process mining which is concerned with the prediction of process indicators of running process instances. The main value of predictive monitoring is to provide information in order to take proactive and corrective actions to improve process performance and mitigate risks in real time. In this paper, we present an approach for predictive monitoring based on the use of evolutionary algorithms. Our method provides a novel event window-based encoding and generates a set of decision rules for the run-time prediction of process indicators according to event log properties. These rules can be interpreted by users to extract further insight of the business processes while keeping a high level of accuracy. Furthermore, a full software stack consisting of a tool to support the training phase and a framework that enables the integration of run-time predictions with business process management systems, has been developed. Obtained results show the validity of our proposal for two large real-life datasets: BPI Challenge 2013 and IT Department of Andalusian Health Service (SAS).

Keywords: Business process management, Process mining, Predictive monitoring, Business process indicator, Evolutionary algorithm

Acknowledgements

This work has received funding from the European Commission (FEDER), the Spanish and the Andalusian R+D+I programmes, BELI and COPAS, [grant numbers TIN2015-70560-R, P12TIC-1867] and Juan de la Cierva program [JCF 2015].

* This work has been published in Expert Systems with Applications Volume 87: 1-14, 2017. DOI: doi.org/10.1016/j.eswa.2017.05.069