Introduction to the 13th International Workshop on Business Process Intelligence (BPI 2017)

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1 Aims and Scope

Business Process Intelligence (BPI) is a growing area both in industry and academia. BPI refers to the application of data- and process-mining techniques to the field of Business Process Management. In practice, BPI is embodied in tools for managing process execution by offering several features such as analysis, prediction, monitoring, control, and optimization.

The main goal of this workshop is to promote the use and development of new techniques to support the analysis of business processes based on run-time data about the past executions of such processes. We aim at bringing together practitioners and researchers from different communities, e.g. Business Process Management, Information Systems, Database Systems, Business Administration, Software Engineering, Artificial Intelligence, and Data Mining, who share an interest in the analysis and optimization of business processes and process-aware information systems. The workshop aims at discussing the current state of ongoing research and sharing practical experiences, exchanging ideas and setting up future research directions that better respond to real needs. In a nutshell, it serves as a forum for shaping the BPI area.

The 13th edition of this workshop attracted 16 international submissions. Each paper was reviewed by at least three members of the Program Committee. From these submissions, the top eight were accepted as full papers for presentation at the workshop.

The papers presented at the workshop provide a mix of novel research ideas, evaluations of existing process mining techniques, as well as new tool support. *Burattin and Carmona* propose a framework for online conformance checking. *Deeva, De Smedt, De Koninck and De Weerdt* compared process mining and sequence mining techniques for dropout prediction in MOOCs. *Korneef, Solti, Leopold and Reijers* propose a probabilistic approach towards identifying most probable alignments. *Sanchez-Charles, Carmona, Muntés-Mulero and Solé* investigate the use of word embedding for reducing the amount of labels in an event log by combining events with semantically similar names. *Seeliger, Stein and Mühlhäuser* present a novel approach

which provides suggestions for redesigning business processes by using discovered as-is process models from event logs and apply motif-based graph adaptation. *Fani Sani, Van Zelst and van der Aalst* address the problem of complex and incomprehensible discovered process models with a general purpose filtering method that exploits observed conditional probabilities between sequences of activities. *Syamsiyah, van Dongen and van der Aalst* focus on recurrent process mining, i.e. the application of process discovery to systems from which data can be extracted near real time, by keeping an intermediate structure persistent in the database thus reducing the time to rediscover process models from the same data source. Finally, *Rehse, Fettke and Loos* analyse the influence of unobserved behaviour on the quality of discovered process models.

This year, the BPI workshop is also co-located with the second Process-Discovery Contest, organized by Josep Carmona, Massimiliano de Leoni, Benoit Depaire and Toon Jouck. With the patronage of the IEEE Task Force on Process Mining, the contest aims to assess tools and techniques that discover business process models from event logs. Compared with the 2016 edition, this year the contest aims to ensure that the models provide business values for process owners. Another change compared to 2016, is the introduction of trace completeness. Five out of the 10 event logs marked are characterized by containing 20% of incomplete traces. Those traces are incomplete in the sense that they are missing the last events. This is very common in reality because event logs are usually extracted from information systems in which a certain number of process executions are still being carried on. The objective is to compare the effectiveness of techniques to discover process models that provide a proper balance between "overfitting" and "underfitting". For the purpose of the contest, 10 "reference" models were created. For each process model, a perfectly-fitting training event log was generated. These training logs were used by the contestants to discover 10 process models. Contestants were allowed to use any technique or combination of techniques. The winner is the contestant that could discover process models that are the closest to the original process models. To assess this, a classification perspective was used. For every process model, an undisclosed "reference" test log was created containing 20 traces, of which 10 positive traces (traces recording behavior compliant with the "reference" model) and 10 negative (the trace recording behavior not compliant with the "reference" model). The winner is the group that discovers the models with the highest accuracy, namely which contains the largest number of true positive and the lowest number of true negative traces, within the "reference" model. As an example, a false positive is a trace that is complaint with the discovered model but, in fact, is not complaint with the "reference" model. The winner was the team of P. Dixit and H. Garcia Caballero, who generated accurate models (98.5%) that were considered as highly understandable by the jury.

As with previous editions of the workshop, we hope that the reader will find this selection of papers useful to keep track of the latest advances in the BPI area, and we are looking forward to keep bringing new advances in future editions of the BPI workshop.

2 Workshop Co-organizers

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3 Program Committee

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