Leveraging Artificial Intelligence for Business Process Management (Extended Abstract)

Digitisation and AI confer a major potential from a business point of view but in the meantime, they pose a non-negligible risk, in fact AI is seen as the main driving factor behind the development of digitisation and has a important potential for innovation and automation. By the way, digitisation is the « megatrend » of the century because it influences a lot of aspects regarding human life.
But, there is a need for AI research and this is to develop new methods and technologies and to transfer them into entrepreneurial practice.
Thanks to digitisation, modern and digitised business process are centred around data, thus influences the decisions that lead towards overall process goal. With all of that gathered, BPM is well-equipped to field for AI application.
AI serves to automate laborious tasks and free more human capacity or allowing new and previously impossible insights into the process. In addition to that, the available process data is a good point to start for BPM researchers to develop new AI methods that support modelling, implementation, process development, monitoring and optimisation.

In the Reference Model Mining (RMM), the application on AI mainly focuses on methods that combine automated approaches with human intelligence to achieve better results with few resources. According to a rational criteria, the tools analyse and structure the available input data. The data-centric of the tools assists the human reference model developer, whom is in capacity to take soft factors into consideration. So, here the tools foster the collaboration between systems and humans, where each party brings onto the table its individual assets towards the solution of the problem.

In the Predictive Process Monitoring (PMM), the scope is on the application of state-of-art deep learning technology for predicting the next events in a process sequence. PPM can be divided in two parties: the first one is a brand new approach to predicting the next process event using deep learning with higher precision values and illustrated that the process prediction can possibly use an implicit process representation in neural network. To put it simply, the network is able to predict next events, the time required and associated resource to complete the whole instance and the current step. Afterwards, the concept has to be tested in a realistic environment. In the second party, the method is adapted to be used the DFKI-Smart-Lego-Factory demonstrator, so that, visitors and users are able to benefit from much more explanation on the network's result.
Finally, PPM is the design of the new AI system in form a trained neural network. It independently develops an implicit understanding of the structure and thus it's able to reason about the future process behaviour. And thanks to that, users don't have to provide a single information beyond a process log and they can access process behaviour when making predictions.

For the case of Process Discovery (PD), what really matter is the notion of rationality in process mining. Here, the goal was to establish a common notion of PD discovery which can be used by AI system and humans. However, the contribution to PD facilitate the development of new AI-based methods for PD and at the same time enables human process miners to compare and improve the quality of the approaches they chose.

In order for us to conclude, there are multiple possibilities to use AI in BPM. Throughout the three topics seen in this summary, one can compute that the use of AI is very diverse regarding the different BPM steps/stages.