DIAG Approach: Introducing the Cognitive Process Mining by an Ontology-Driven Approach to Diagnose and Explain Concept Drifts

Sina Namaki Araghi*[1], Franck Fontanili , Arkopaul Sarkar , Elyes Lamine , Mohamed-Hedi Karray , and Frédérick Bénaben

[1]Tarbes University of Technology – UTTOP, Laboratoire de Génie de Production, ENI Tarbes, 65000 Tarbes, France – France

Résumé

The remarkable growth of process mining applications in care pathway monitoring is undeniable. One of the sub-emerging case studies is the use of patients' location data in process mining analyses. While the streamlining of published works is focused on introducing process discovery algorithms, there is a necessity to address challenges beyond that. Literature analysis indicates that explainability, reasoning, and characterizing the root causes of process drifts in healthcare processes constitute an important but overlooked challenge. In addition, incorporating domain-specific knowledge into process discovery could be a significant contribution to process mining literature. Therefore, we mitigate the issue by introducing cognitive process mining through the DIAG approach, which consists of a meta-model and an algorithm. This approach enables reasoning and diagnosing in process mining through an ontology-driven framework. With DIAG, we modeled the healthcare semantics in a process mining application and diagnosed the causes of drifts in patients' pathways. We performed an experiment in a hospital living lab to examine the effectiveness of our approach.

*Intervenant