

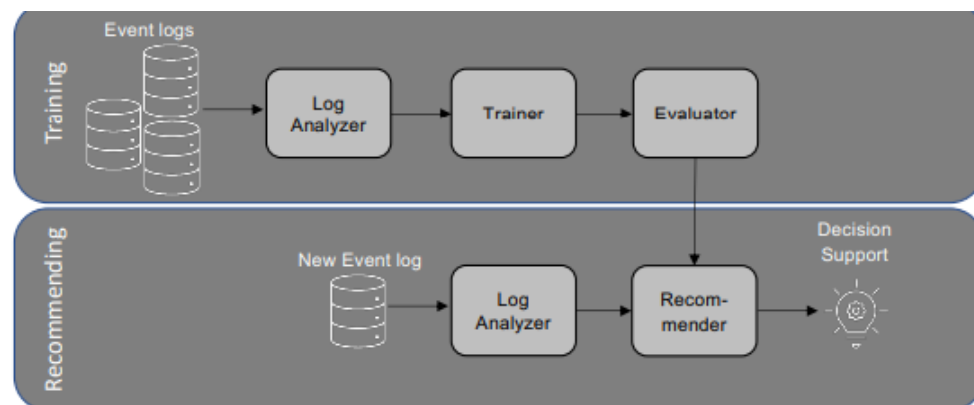
Title: The Recomminder: A Decision Support Tool for Predictive Business Process Monitoring

Keywords: Predictive Business Process Monitoring, Machine Learning, Business Process Management, Process Mining, Decision Support

Summary:

This document discusses the evolution of Predictive Business Process Monitoring (PBPM) techniques within Business Process Management (BPM) research. PBPM aims to forecast various aspects of running business processes, enabling stakeholders to intervene proactively to enhance operational performance. Recent PBPM methods leverage machine learning (ML) algorithms to generate predictions from historical event log data. Despite advancements, there is no one-size-fits-all approach due to variations in event log characteristics. Consequently, practitioners face challenges in implementing research-designed approaches tailored to their specific event logs.

To address this issue, the text introduces a decision support tool called Recomminder, structured into four components: LogAnalyzer, Trainer, Evaluator, and Recommender. These components aid in analyzing event log characteristics, training predictive models with various configurations, evaluating model performance, and recommending suitable models based on meta-learning. The tool is designed in Python with a backend and frontend for both developers and non-developers.



The Log Analyzer extracts event log features using a Process Discovery algorithm, while the Trainer trains predictive models using ML frameworks like Random Forest and LSTM, along with data pre-processing techniques. The Evaluator assesses model performance using common metrics and trains a meta predictive model using Decision Trees. The Recommender component utilizes this meta model to recommend the best classifier for a given event log file.

Additionally, the text outlines the frontend implementation using TurboGears, Bootstrap, and jQuery, providing users with an intuitive interface to interact with the Recomminder. The frontend allows for asynchronous upload of event log files, displays real-time process updates, and presents results including visualizations of the decision tree, metrics plot, and feature importance.

In conclusion, the text highlights the utility of Recomminder for both researchers and practitioners in understanding the relationship between event log characteristics and PBPM techniques. Future enhancements include expanding prediction tasks, ML algorithms, encoding techniques, and ensemble learning methods to improve prediction accuracy and usability of the tool.