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Business process monitoring using of advanced techniques

The documents collectively emphasize the integration of advanced techniques such as deep neural networks (DNNs), Graph Convolutional Networks (GCNs), machine learning, and genetic algorithms in various domains. These techniques are applied to tasks ranging from dam safety management to business process prediction, decision support tools, facial recognition technology, and enhancing transparency in artificial intelligence (AI) applications.

In dam safety management, MISTRAL and DAMSAFE utilize DNNs, event logs, and genetic algorithms for real-time data analysis, state identification, and safety management procedures. Similarly, in business process prediction, GCNs are employed alongside machine learning algorithms to predict events and timestamps, with emphasis on careful evaluation and model optimization.

Recomminder, a decision support tool, incorporates machine learning algorithms to analyse event log data, train predictive models, evaluate performance, and recommend models based on meta-learning. Moreover, advanced techniques like deep neural networks with entity embedding are introduced to enhance predictive business process monitoring, focusing on improving prediction accuracy for ongoing cases.

Facial recognition technology implementation involves the use of advanced techniques such as Histogram of Oriented Gradients (HOG) and TensorFlow, emphasizing deep learning frameworks for facial recognition tasks and the benefits in strengthening security measures and continuous surveillance.

The documents advocate for transparency in AI applications, proposing the use of technologies like XBRL and developing taxonomies to enhance accessibility and understanding of AI systems. Ethical considerations are also highlighted to align AI systems with human values and prevent potential moral dilemmas.

Loreley utilizes genetic algorithms to generate synthetic data instances that comply with process constraints, aiming to enhance the interpretability of predictive process monitoring models. Future tasks include addressing limitations and evaluating the technique with benchmark datasets to enhance its applicability and robustness.