Deep learning for predicitve process monitoring

THE TEXT INTRODUCES PROCESS MONITORING AS A DISCIPLINE THAT AS THE GOAL TO UNDERSTAND AND IMPROVE BUSINESS PROCESSES BY ANALYZING EVENT LOGS. IT TALKS ABOUT THREE SECTIONS: PROCESS DISCOVERY, ENHANCEMENT, AND CONFORMANCE, WITH A FOCUS ON PREDICTIVE MONITORING, THAT ANTICIPATES ISSUES IN RUNNING CASES. DEEP LEARNING IS ACKNOWLEDGED AS A POWERFUL TOOL FOR PREDICTIVE MONITORING, ESPECIALLY WITH SEQUENTIAL DATA LIKE BUSINESS PROCESSES, BUT IT IS STILL CHALLENGING TO CHOOSE THE RIGHT ARCHITECTURES.

TABLE 1: Excerpt of a business process log

Case ID	Activity	Timestamp	Resource
Case2118	Assign seriousness	14-01-2010 07:52:50	Resource 2
Case2118	Take in charge ticket	09-02-2010 13:01:11	Resource 21
Case2118	Resolve ticket	17-02-2010 07:44:53	Resource 21
Case2118	Closed	17-02-2020 07:44:59	Resource 21
Case2088	Assign seriousness	04-02-2010 08:37:45	Resource 2
Case2088	Take in charge ticket	04-02-2010 09:01:28	Resource 2
Case2088	Create SW anomaly	04-02-2010 09:01:35	Resource 2
Case2088	Resolve ticket	16-03-2010 13:08:40	Resource 2
Case2088	Closed	31-03-2010 11:08:53	Resource 5

THE PAPER AIMS TO PROVIDE A BENCHMARK TOOLBOX FOR PREDICTIVE MONITORING TECHNIQUES BY CATEGORIZING DEEP LEARNING APPROACHES AND CONDUCTING EXPERIMENTS TO EVALUATE THEM. THE TOPIC OF DISCUSSION IS THE DESIGN OF PREDICTIVE MONITORING APPROACHES BASED ON DEEP LEARNING, WHICH ENCOMPASSES INPUT DATA SELECTION, PREDICTION TARGETS, AND NEURAL NETWORK TYPES.

THE TEXT DISCUSSES ENCODING FORMATS AND STRATEGIES THAT ARE UTILIZED IN DEEP LEARNING ARCHITECTURES FOR MONITORING PREDICTIVE BUSINESS PROCESSES, AS WELL AS ADDRESSING CHALLENGES WITH TRACE ENCODING AND ENCODING ATTRIBUTE VARIABLES. BENCHMARKING EXPERIMENTS WERE CONDUCTED ON REAL-LIFE EVENT LOGS, EVALUATING DIFFERENT APPROACHES BASED ON METRICS LIKE ACCURACY AND BRIER SCORE.

IN CONCLUSION, THE PAPER PROVIDES AN ANALYSIS OF DEEP LEARNING TECHNIQUES FOR PREDICTIVE BUSINESS PROCESS MONITORING, OFFERING INSIGHTS INTO THEIR PERFORMANCE UNDER MANY SCENARIOS AND DATASETS AND EMPHASIZING THE SIGNIFICANCE OF SELECTING APPROPRIATE ENCODING STRATEGIES AND TAKING INTO ACCOUNT TASK-SPECIFIC REQUIREMENTS.