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**Abstract**

We present an automated framework for the inference of behavioral models from the execution traces of a web-based business application (WBA). The model inference framework consists of a formal approach to infer automata models from traces of WBA's and an advanced prototype tool set implemented around the data mining engine Weka, the model checker SPIN, the formal language manipulation framework ANTLR and the graph visualization software GraphViz. The traces of a WBA are collected by monitoring the communications in client-server architectures, where a client can be an Internet browser or a service accessing the server side of the application. The inferred models depict both the control and data flow (showing data variations) of the WBA and can be used for its visualization and verification. Finally, we discuss Web-FIM an online deployment of the model inference framework and illustrate the use of the tools with an example.