Presentation Abstract: Runtime Verification Tools

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Abstract. We introduce a categorization for Runtime Verification tools to provide an overview of what is available and where implementation gaps exist. We classify a variety of important tools according to specification type, verification paradigm, interface, language, and output type. We also identify patterns in existing tools report on areas that appear to deserve more development attention.

1 Overview

Researchers in the field of Runtime Verification (RV) have implemented many tools, but no overview exists that attempts to summarize their contributions. A repository of RV tools would be useful for researchers to situate their own work and to provide opportunities for comparison and collaboration. This work aims to provide such a repository, making it easier for practitioners and researchers alike to find and compare RV tools.

We briefly describe each tool and classify it under several categories of tags. We classify how specifications are written for the tools, some of the specification paradigms they support, their programming interfaces, their execution environments, and the kinds of information they produce.

Specification Type	Paradigm	Interface	Language	Output
Logic Formula	Time	Internal Shallow	C / C++	Verdict
Rule	Chaining	Internal Deep	Java	Data
State Machine	Events	External	Python	Visualization
Regular Expression	States		Scala	
Stream Processing	Data		R	

Table 1. Categories of tags for the tools

Table 1 shows the possible values for each tool category. Each column in the the table represents a category, with its values listed below. An individual tool may support more than one value per category. For example, a tool that supports properties written in Metric First-Order Temporal Logic (MFOTL) would have the *Specification Type* value "Logic Formula," and the *Paradigm* values "Time," "Events," and "Data."

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