Revolution: Automatic Evolution of Mined Specifications

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Abstract: Specifications mined from execution traces are largely used to support testing and analysis of software applications with little runtime variability. However, when models are mined from applications that evolve at runtime, the resulting models become quickly obsolete, and thus of little support for any testing and analysis activity.

To cope with such systems, mined specifications must be consistently updated every time the software changes. In principle, models can be periodically mined from scratch, but in many cases this solution is too expensive or even impossible.

In this paper we describe Revolution, an approach for the automatic evolution of specifications mined by applying state abstraction techniques. Revolution produces models that are continuously updated and thus remain aligned with the actual implementation. Empirical results show that Revolution can suitably address run-time evolving applications.