Introducing StarExec: a Cross-Community Infrastructure for Logic Solving*

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Ongoing breakthroughs in a number of fields depend on continuing advances in the development of high-performance automated reasoning tools, such as SAT solvers, SMT solvers, theorem provers, constraint solvers, rewrite systems, model checkers, and so on. Typically, application problems are translated into (possibly large and complex) formulas for these tools to reason about. Different tradeoffs between linguistic expressiveness and the difficulty of the original problems have led to the adoption of different reasoning approaches and the use of different logics to encode those problems. Solver communities, formed around these different logics, have developed their own research infrastructures to encourage innovation and ease the adoption of their solver technology. Examples include standard formats for the logic problems, libraries of benchmark problems, and solver competitions to spur innovation and further advances. So far, these different infrastructures have been developed separately in the various logic communities, at significant and largely duplicated cost in development effort, equipment and support.

StarExec, currently under development, is a solver execution and benchmark library service aimed at facilitating the experimental evaluation of automated reasoning tools. It will provide a single piece of storage and computing infrastructure to all logic solving communities, reducing the duplication of effort and waste of resources. StarExec will provide a custom web interface and web services running on a cluster of 150-200 compute nodes, with several terabytes of networked disk space. The service will allow community organizers to store, manage and make available benchmark libraries, competition organizers to run competitions, and individual community members to run comparative evaluations of automated reasoning tools on benchmark problems. The StarExec web site will provide facilities to upload and organize benchmarks, browse and query the stored benchmark libraries, view and analyze execution results and statistics, as well as access various data programmatically through a web API.

This talk gives an overview of StarExec, describing its main design, components, functionality, and usage policies, and discusses its current status and development plan.

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