Sparkle: Towards Automated Algorithm Configuration for Everyone

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Abstract

Sparkle aims to provide a platform for solving computationally challenging problems such as SAT and AI planning. The key idea here is to allow algorithm developers to focus on improving the state of the art, while Sparkle handles the meta-algortihmics. So far Sparkle has handled algorithm selection and scheduling (AutoFolio), and has been applied in SAT solving and planning competitions. This talk focuses on the addition of algorithm configuration. Automated algorithm configuration allows algorithms to perform at their best for each application domain, without needing to manually adjusting settings. Competitions such as the Configurable SAT Solver Challenge (CSSC) have shown that automated algorithm configuration is extremely likely to result in performance increases over the use of default parameters. Sparkle aims to implement best practices as well as avoiding pitfalls in algorithm configuration to the benefit of both novices and experts in meta-algorithmics. Novices benefit from Sparkle by gaining easy access to selection and configuration for their algorithms, while experts no longer have to worry about all minute details for each and every experiment (but certainly can if so inclined). Challenges in simplifying access to algorithm configuration will be discussed. How can we, for instance, simplify the process of describing the parameter space? Can a PCS (parameter configuration space) file perhaps be generated based on minimal input from the user?