

One of the possible approaches to automated planning is compilation to satisfiability or constraint satisfaction. Compilation enables to take advantage of the advancement of SAT or CSP solvers. In this thesis, we implement three of the encodings recently proposed for compilation of planning problems: the model TCPP, the $R^2\exists$ -Step encoding and the Reinforced Encoding. All these approaches search for parallel plans; however, since they use different definitions of parallel step and different variables and constraints, we decided to compare their performance on standard benchmarks from international planning competitions. As the $R^2\exists$ -Step encoding was not suitable for our implementation, we present a modified version of this encoding with a reduced number of variables and constraints. We also demonstrate how different definitions of parallel step in the Reinforced Encoding affect the performance. Furthermore, we suggest redundant constraints extending these encodings. Although they did not prove to be beneficial in general, they could slightly improve the performance on some benchmarks, especially in the $R^2\exists$ -Step encoding.