

# Thesis Summary

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Quantified Boolean Formula or QBF was proposed in the 1970s as a natural generalization of the propositional logic. There are two types of QBF solvers expansion-based and search-based. For all of the existing search-based QBF solvers, the term "search" refers to a depth-first search-based QDLL procedure. However, QBF is similar to two-player strategy game on a theoretical level, and depth-first search is rarely used in two-player strategy game solving. For this thesis project, we investigate whether a best-first search algorithm that has achieved massive success in two-player strategy game called proof number search can be combined with existing search-based QBF solving algorithms such as Backjumping and QCDCL, and if this new combination can outperform the depth-first search based solver on some popular benchmarks. The experiment result shows that in our current version of the solver, replacing depth-first search with proof number search is not beneficial on most benchmarks. However, proof number search based QBF solvers can solve a few instances that depth-first search is unable to solve, which implies that this new algorithm combination might be worthy to be studied further.