

The topic of cooperative pathfinding with the extension of formations is addressed in this thesis. The problem of cooperative pathfinding with formations was formally defined and a new scalable hierarchical modular solving algorithm named APriCA was introduced and implemented. For testing and benchmarking purposes an environment called ChessWars was developed. In order to measure the quality of maintaining formations we introduced a new quantity named “fragmentation”. The APriCA algorithm performed better than external domain independent planners such as LPG, Blackbox and SASE in all aspects. In comparison with the LRA\* algorithm the solutions found by APriCA were of better quality and with certain parameters settings were found faster.