For many years game systems were designed to beat world champions. The concept behind these systems is based on decision trees - the system maps the game states as a search tree, where each node represents the game state and edges represent actions between states. Systems based on naive algorithms that investigate all existing nodes cannot complete the task in a feasible time. Therefore, such systems limit the number of investigated nodes and determine the state value by heuristic calculation. Pruning techniques have been developed to prune nodes in a way that does not affect the search optimality because the calculation quality increases as the nodes we evaluate are farther from the initial node.

In this project, we defined conditions for performing a bounded suboptimal search in multiplayer game trees based on optimal pruning techniques. By setting these conditions on existing optimal algorithms, we have created two algorithms that have the potential to prune more since they settle for a suboptimal solution (within the range of a constant). The aim is to reach deeper nodes and make a better decision, despite the cost we agreed to pay.

In the experiments we performed using a random tree generator and a four-player Rolit game simulator, the suboptimal algorithms investigate deeper nodes and achieve better results than the optimal algorithms.