Title: A Controlled Searching of Game Trees

Author: Jan Vrba

Department: Department of Theoretical Computer Science and Mathematical Logic

Supervisor: RNDr. Jan Hric

Abstract: Monte-Carlo Tree Search is a search algorithm based on random Monte-Carlo playouts. Since it was first introduced in 2006, it has been successfully used in several areas. Most notably for the game Go. MCTS is intended mainly for problems with too large a state space to be fully explored in reasonable time. Working with a large state space and the fact that when evaluating a node, it first explores all possible moves leads to large memory complexity. This work explores options a user can use to regulate memory complexity based on the results of previous Monte-Carlo playouts.