Abstract

We describe the experimental development of an AI player that adapts to different point systems for Parameterized Poker Squares. After introducing the game and research competition challenge, we describe our static board evaluation utilizing learned evaluations of abstract partial Poker hands. Next, we evaluate various time management strategies and search algorithms. Finally, we show experimentally which of our design decisions most significantly accounted for observed performance.

Keywords

game artificial intelligence; reinforcement learning; expectimax

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Reinforcement Learning poses significant challenges beyond pattern recognition, including exploration, credit assignment, stability, safety. Often simpler to represent and learn good policies than good state value or action value functions (such as for robot grasping an object), state value function doesn’t prescribe actions (dynamics model becomes necessary). Action value function requires to solve maximization problem over actions (challenge for continuous / high-dimensional action spaces). Parameterized Poker Squares (PPS) is a generalization of Poker Squares where players must adapt to a point system supplied at play time and thus dynamically compute highly-varied strategies.