Playing Various Strategies in Dominion using Deep Reinforcement Learning

Jasper (Jan-Philip) Gergik

CSC494 Project

Reinforcement learning has developed state of the art computer agents for both classical games and video games, but computer opponents for modern tabletop games still struggle with suboptimal performance and comprehension of the game mechanics.

For the game Dominion, we develop a reinforcement learning based agent with a novel multiset-based architecture which outperforms previous learning-based agents and on par with best search-based agents. We train agents capable of playing a variety of strategies which previously have only been seen in human play, and highlight how to improve on current methods to achieve variety in behaviour.

This work is being published as part of AAAI AIIDE-23.

ARIA
APPLIED RESEARCH IN ACTION