

Bachelor's Thesis

Evaluation of XCS on the OpenAI Gym

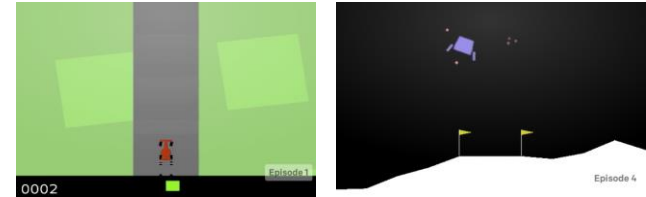
Self-aware computing systems continuously reason about their environment to self-adapt to changes and maintain optimal behavior, thereby requiring the deployment of machine learning techniques. One prominent candidate for implementing computational self-awareness is XCS, which is a rule-based learning technique that combines reinforcement learning with a genetic algorithm. However, current research on XCS often restricts the experimental evaluation to simple toy problems that are not widely used. Hence, the goal of this thesis is to evaluate XCS on the standardized open-source benchmarks of the OpenAI Gym to aid future research on XCS.

Type of project

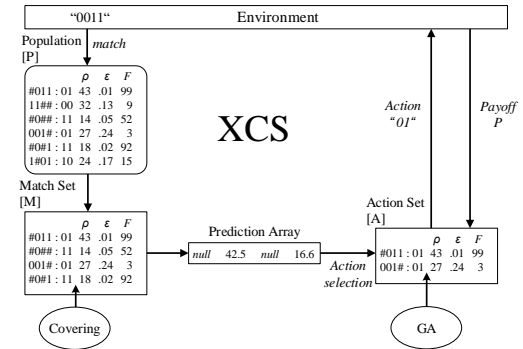
- Modify an existing XCS library (C/C++) to be compatible with the OpenAI Gym
- Evaluate XCS on the benchmarks of the OpenAI Gym
- Analyze the results to identify patterns and “sweet spots” of XCS

Prerequisites

- Programming skills (C/C++ and Python)
- Interest in machine learning



CarRacing and LunarLander Benchmarks



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