BamBirds 2018 Agent Description

The BamBird agent is developed in context of student projects at the University of Bamberg, Germany. By design, BamBird can be characterized as an GOFAI approach (Good Old-Fashioned AI) approach, yet it contains some recent techniques. The agent comprises four major components.

The first component, mainly using parts provided by the naive agent framework, is responsible for interpreting screen shots. We generate a declarative description of the screen content, enriched by qualitative relations between individual objects and structures detected.

The second component is responsible for determining possible shot candidates and performing shooting during game play. It also augments the scene description with possible shot candidates. This module also implements an online learning of shots to better succeed at hitting a chosen target.

The third component of our agent implements the strategy. It reads the declarative scene description and determines a compact set of reasonable shot candidates. This component is realized in Prolog and employs a simple partial-order planner. The planner selects reasonable shot candidates from a set of options generated by a rule-based system (mostly) based on qualitative spatial relations.

Once shot candidates are computed, it is responsibility of the fourth module to select and execute a shot. Selection is tackled with a MCTS-style search procedure. Key challenges in shot selection are the lack of ability to perform rollouts without running the game, plus the limited time in the competition which does not allow for exhaustive search. A similar method is also employed for level selection.

BamBirds 2018 team members
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