Building a multiagent competitive gaming platform

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1 Overview and Goal

In this project you should develop a platform for playing a specific competitive game. There are two competitors who play against each other. The platform should allow people to use an agent to play for themselves. The game consists of a series of turns in which both agents are given the latest game state data and are expected to reply with a control response. After the responses have been received the game state is updated accordingly.

We give two examples for multiagent competitive gaming platform. The first example is the platform used by the CodeCup competition [1]. In the last edition of the contest they choose turn-based deterministic game [2]. The second example is the platform used by the Bubblebot competition. The goal of this competition was to design a bot which plays 2-on-2 indoor football (aka. soccer) against a bot opponent [3, 4]. This game is stochastic and requires the agent to coordinate two players of her team in the same time. Some other examples of multiagent competitive gaming platforms are Vindinium [5] and AI challenge [6].

You should choose a stochastic real-time game such as the game in the second example and you should implement it in a multiagent platform. The platform allows two agents to play against each other using a protocol that you define. It should also allow people to play agains each other and agains other agents. Another requirement is that the agents that are using the platform could be written in different programming languages. This platform will be very useful for students to learn how to implement intelligent agents that operate in complex environment. It will be also be very useful for researchers which will be able to compare different reinforcement learning techniques.

2 Project Steps

- Choose a competitive game for the platform

- Design and implement the platform

- Implement simple agent(s) to demonstrate how the platform functions

3   Required Skills

The student should have knowledge in Software engineering and Visual design. An advantage is to have knowledge in Game design.

References

[1] "Codecup 2016," accessed: 3 October 2016. [Online]. Available: http://archive.codecup.nl/2016/

[2] "Sample game from codecup 2016," accessed: 3 October 2016. [Online]. Available: http://archive.codecup.nl/2016/01/sample_game_6561.html

[3] "Sample game from bubblebot: Wolfbot vs smartbot," accessed: 3 October 2016. [Online]. Available: https://www.youtube.com/watch?v=_8Hn1cbQrx8

[4] "Sample game from bubblebot: Wolfbot vs wolfbot," accessed: 3 October 2016. [Online]. Available: https://www.youtube.com/watch?v=ZBi9GPXwE_Y

[5] "Vindinium," accessed: 3 October 2016. [Online]. Available: http://vindinium.org/

[6] "Ai challenge: Ants," accessed: 3 October 2016. [Online]. Available: http://ants.aichallenge.org/