Mutual Training in Late-Game Chess: A Comparison Between Dataset-Based and Reinforced Learning Algorithms.

Mario[1]   Matthias [2]   Swaraj[3]   Timon [4]

November 20, 2017

[1]Mario Rios, s3485781.
[2]Matthias Haucke, p282705.
[3]Swaraj Dalmia, s3494950.
[4]Timon van der Berg, s1925873.

0.1 proposal

0.1.1 Application

We will train a computer to play chess end-games involving 4 or 6 chess pieces. Several 'agents' will be designed, each using a different machine learning technique. Then we wll do the following.

1. Train agents using a dataset.

2. Train agents by having them play against data-trained agents.

3. Train agents by having them play against eachother.

We will then do the following.

1. Compare the rate of succes between data-learned agents. For this we will find the correct evaluation metrics in literature.

2. Compare the rate of succes between play-trained agents.

3. Compare the play-trained agents with data-trained agents. We want to see if the play-trained agent is able to compete with the data-trained algorithm, and if it will surpass it in skill.

4. If time permits, we modify the data-trained agent to learn from games it plays while teaching the other algorithms.

0.1.2 Data set

0.1.3 Methods

For reinforced learning we will definitenly use Q-learning. We will explore other options in the first week, not necessarily deep learning.

0.1.4 Programming language

We will use the Python programming language. We are familiar with this language and many machine learning libraries are available for it.

0.1.5 Planning

The final presentations are on the 24-25th of January, after which we have ten more days to finish the report. We therefore have about 6 weeks after handing in the project proposal until the presentations.

1. Find metrics and clarify goals for our investigation, formalizing our intentions. Investigate if our chosen algorithms are suited. (1 week)

2. Implement algorithms (3 weeks)

3. Run simulations and training. (1 week)

4. Analysis on data. (1 week)

5. Make the presentation. (1 week)

6. Make the final report. (1 week)

week	date	task
1	20-26/11	1
2	27/11-4/12	2
3		2
4		2
5	8/1 - 11/1	3
6	11/1 - 18/1	4
7	18/1 - 24/1	5
8	24/1 - 1/2	6

Bibliography