Exercises for the lecture

Applications of Artificial Intelligence

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Exercise sheet 2 (2016-10-07)

Solutions will be discussed on 2016-10-21.

Exercise 1

Classify the environments of the following agents:

- Playing skat
- Building a house

What would be reasonable subtasks of those systems?

Exercise 2

Visit the MASON website and experiment with some multi-agent simulations
http://www.cs.gmu.edu/∼eclab/projects/mason/
Classify the environments of these examples!

Exercise 3

Become familiar with the task of pattern recognition by performing the following two tasks:

1. Implement a simple Nearest Neighbor Classifier for the unit square. Therefore randomly generate 100 points in the square and 100 points outside as a training set. Then generate another 100 points per class (inside or outside) as a test set and classify them by measuring the distances to all 200 training samples. Taking the class label of the nearest neighbor (i) or taking the class label which is the majority of the k nearest neighbors (ii) are the typical decision strategies. Finally, measure the performance (correct classification rate) for $k = 1, 3, 7, 11$.

2. Download the file sounds.zip from the ilias page and perform isolated digit recognition. You may use the Nearest Neighbor idea or any other method you know. Useful commands: import wave; wave.open(file1,'r');