Deep Learning Lab Course 2016
(Deep Learning Practical)

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Exercise 3

Visual planning

- Your third exercise is to train a CNN to perform visual planning (imitating an A* planner)
- We prepared code for you implementing a simple grid-world environment: `https://github.com/mllfreiburg/dl_lab_2016`
- **Setup:** Your agent will get to see a local view of the map (plus some history) and has to predict the optimal action
- **Training data:** Training data will be generated by running A* on a simulator of the environment (see get_data.py)
- **Goal:** Your goal is to train the agent such that it reaches maximum performance (as close to A* as possible)

Hand in the exercise on the **16.12**

Exercise 3

Video demo of the environment: see astar_demo.py

Exercise 3

Requirements regarding your solution:

- Implement an agent using a CNN network and training in tensorflow (you can use keras or slim etc. now)
- Evaluate your agent using the test script
- **Some questions to answer in your report:**
  - How well does your agent perform from the local view ?
  - What happens if you increase the history length for the views or make the view larger ?
  - What happens if you change the target location after training (you can change it in utils.py) ?
  - What happens if you change the map after training (how well does your agent generalize) ?
  - Can you think of ways to make the agent generalize across target locations different maps ? **For bonus points:** test one of these ideas.