



Prof. R. Wattenhofer

Playing Games with Capsule Networks

Who remembers the good old Atari games like SpaceInvaders, Pong or Breakout? Google Deepmind and others have shown, that these games can be played with ease by a machine at superhuman performance while more realistic games, i.e, games with a first person view, are harder to learn.

Games in combination with deep reinforcement learning have become a popular stepping stone on the path to general artificial intelligence since they offer a safe environment with a specific goal - to score as many points as possible. As such they help us test ideas in a controlled setting before exposing them to the complexity of the real world. The quest now is to increase the visual complexity in the game environment to get closer to a real world simulation.

One of the main challenges is that games require detailed object recognition, e.g., to distinguish enemies from friends. While neural networks have shown to be effective in object recognition, the exact position and orientation of objects relative to the viewpoint is often neglected in standard approaches. However, such details can be crucial in games.

In this thesis, we will take advantage of a new neural network architecture to improve machine gameplay in a game of your choice.



Requirements: Knowledge in Machine Learning is required (preferably also in Deep Learning).

Interested? Please contact us for more details!

Contacts

- Oliver Richter: richtero@ethz.ch, ETZ G63
- Gino Brunner: brunnegi@ethz.ch, ETZ G63