Universität Rostock

Traditio et Innovatio

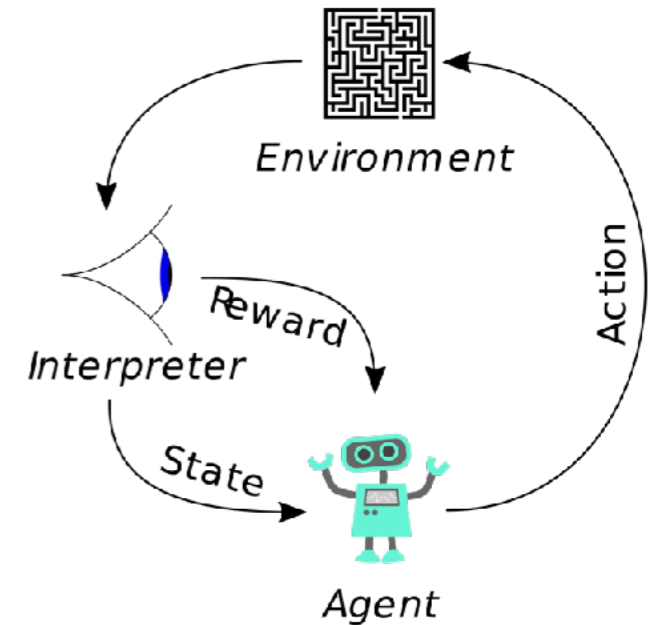Project / KSWS / NEidI
Smart Computing Summer 2021

„Reinforcement Learning"

Mobile Multimedia Information Systems

Sebastian Bader

Reinforcement Learning

wikipedia.org/wiki/Reinforcement_learning

- Reinforcement learning (RL) …

  – is a sub-field of machine learning which aims at building intelligent agents that are able to determine optimal actions in an unknown environment.

- RL has been successfully applied to …

  – Playing Atari games:

    „Human-level control through deep reinforcement learning"

    https://www.nature.com/articles/nature14236

  – Flying an autonomous helicopter

    „An Application of Reinforcement Learning to Aerobatic Helicopter Flight"

    http://heli.stanford.edu

  – and many many more …

Project / KSWS / NEIDI Reinforcement Learning

- We will study different aspects of reinforcement learning and advanced topics:

  - value and policy iteration to learn optimal actions under uncertainty

  - inverse reinforcement learning to learn the reward structure

  - ...

- We will target different application areas:

  - Intelligent therapeutic systems for Neuro-Rehabilitation

  - Automated game playing

  - ...

Project / KSWS / NEIDI - Organisation

- ## Organisation

  - If interested, enrol via StudIP until April 6!
    - Project: <u>Course ID 23818</u> (BSc)
    - KSWS: <u>Course ID 23819</u> (BSc)
    - NEIDI: <u>Course ID 23837</u> (MSc Inf)
    - NEIDI: <u>Course ID 23875</u> (MSc CSI)

  - First meeting Thu 8. April, 15:00-17:00 via Zoom
    (check StudIP announcement)
  - Limited number of participants: 40 in total

- ## Please note:

  - There will also be a BSc Seminar on this topic in which we study the fundamentals of RL