Protocol – Intelligent Systems 30.03.2022

Subject: Machine Learning / Reinforcement Learning

Examiners: Staab / Mainprice

Term: Winter 21/22

Recommendations:

- RL: lecture by David Silver (on YouTube), "RL: An Introduction" by Sutton and Barto
- ML: StatQuest (on YouTube)

Grade: 2,0

Reinforcement Learning

1) State two examples where we could use Reinforcement Learning
2) What is a value function? How is the return defined?
3) What is Value Iteration? State the update step
4) Explain the phases of Policy Iteration
5) State the formula of Sarsa
6) What is the target and the error in the formula?
7) Is this off-policy?
8) What is the relation between target and behavior policy in off- and on-policy learning?
9) State the update step in function approximation

Machine Learning

1) Define classification in probabilistic terms
2) State the bayes classifier (bayes theorem)
3) How are the different parts in the formula called?
4) What is the difference to Naïve Bayes? What is the reason for those differences? Show this with an example of two input data points
5) State the formula of Linear Regression
6) What is the Bayes Error?
7) Show the loss function
8) How did we solve Linear Regression in the lecture?
9) Why don't we do this in practice?
10) What can we do to improve the loss function? (regularization)
11) How does regularization improve the loss?