Exam

Date: 11.06 12:30

Duration: 4 hours

Theoretical part

- No use of notes, only memory
- Consists of 5 blocks(In the parentheses the number of notes is indicated)
  1. Intelligent agents and their architecture (*See 2, 3, 4*)
  2. Logical agents (*See 5, 6*)
  3. Uncertain knowledge (*See 7*)
  4. Decision systems (*See 8, 9*)
  5. Learning (*See 10, 11*)
- There will be given 2 questions to choose for the answer
- Each question gives 2 points, therefore $\Sigma = 10$
- The part is weighted with 0.3 for the whole mark

Practical part

- 4 tasks:
  1. Describe a world with the logical statements (*See 5, 6*) [2 points]
     - Given a world of 3x3 or 3x4 with empty squares, need to choose the barriers and rewards in 2 places
     - Need to specify sensors and actions in the natural language
     - Need to translate the actions to the language of logic
     - Need to create a Knowledge base of at least 5 sentences
     - The agent needs to do an inference with MODUS PONENS, preferably two times in a row
  2. Uncertain knowledge and decision making (*See 7, 8, 9*) [2 points]
     - Need to find probabilities for all states where the agent can get in 2 turns
       - The world is stochastic
       - Actions are given
     - Need to draw a stochastic action representation tree
     - Need to calculate an expected utility value
  3. Value and policy iteration algorithms (*See 9*) [3 points]
     - Need to do 2 iterations
     - Need to define a policy after each iteration
  4. Reinforcement learning (*See 11*) [3 points]
     - Need to generate training sequence by yourself
     - Use a naive learning
     - Create a transition model diagram
     - Use a temporal-difference algorithm
- Overall $\Sigma = 10$ points
- Weighted with 0.2 from the whole mark
- **Recommended sequence to do tasks: 4, 2, 3, 1**