

Title: Reinforcement Learning for Robotics**Teaching mode:** Face-to-face**Lecturer:** Prof. Dr. Ayşegül Uçar, Engineering Faculty Mechatronics Engineering Department, Firat University**Description:**

In this tutorial, we plan to summarize and explain the reinforcement learning methods that are alternative to classical control methods. There are a lot of reinforcement methods such as tabular Q-learning, Sarsa, actor-critic methods, and policy gradient. In recent years, new reinforcement learning methods including the Deep Neural Networks (DNNs) have appeared. They are Deep Q Networks (DQN), DQN with Prioritized Experience

Replay (DQN+PER), Double DQN (DDQN), Double Dueling DQN (D3QN), Reinforce, Asynchronous Advanced Actor Critic Asynchronous

(A3C) and synchronous Advanced Actor Critic Asynchronous.

This tutorial is going to introduce all of them and apply the cart-pole balancing problem / inverted pendulum on the OpenAI GYM environment and webots.

Keywords: Q-learning, Deep Q Networks, robotics.