KOREA UNIVERSITY
SEJONG CAMPUS

Reinforcement Learning [AICS403]

Course Introduction & Basic Concepts

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Korea University

AI Cyber Security

CONTENTS

Course Introduction

■Course Information

□ Reinforcement Learning (강화학습(영강))
□ Completion division: Major Selective
□ Lecture Room: R212, Sci & Tech Bldg. 2
□ Lecture Time: **Fri (6-8) 14:00 ~ 17:00**

■Overview

□ This course covers the theoretical foundations and practical algorithms of reinforcement learning for sequential decision-making. It introduces fundamental concepts such as Markov Decision Processes (MDPs), Bellman equations, and the distinction between model-based and model-free approaches.

□ It further explores advanced methods including deep reinforcement learning, policy gradients, and actor-critic architectures, with practical algorithms such as SARSA, Q-learning, DQN, and PPO..

■Course Activity

■ Lecture	■ Presentation	□ Discussion	□ Experiment	□ Practice
□ Group Activity	□ Individual Activity	□ Group Guidance	■ Quiz	□ Q & A

Course Outlines [1]

Week	Period	Studying Contents	Textbook	Activity
1	09.01-09.05	Course Outline	PDF	Assignment (2~3 times)
2	09.08-09.12	Introduction to Reinforcement	PDF	
3	09.15-09.19	Multi-Armed Bandit Problem	PDF	
4	09.22-09.26	Markov Decision Processes (MDP)	PDF	
5	09.29-10.03	Bellman Equations	PDF	
6	10.06-10.10	Model-based Planning	PDF	
7	10.13-10.17	Model-free Value Prediction	PDF	
8	10.20-10.24	Midterm Exam		

Course Outlines [2]

Week	Period	Studying Contents	Textbook	Activity
9	10.27-10.31	Model-free Policy Optimization	PDF	Assignment (2~3 times)
10	11.03-11.07	Deep Learning for RL	PDF	
11	11.10-11.14	Deep Reinforcement Learning	PDF	
12	11.17-11.21	Value-based Deep RL	PDF	
13	11.24-11.28	Policy-based Deep RL	PDF	
14	12.01-12.05	Reinforcement Learning and AlphaGo	PDF	
15	12.08-12.12	Meta Reinforcement Learning	PDF	
16	12.15-12.19	Final Exam		

Grade/Failure by absence

■Score ratio

□ Midterm exam (30%)

□ Final exam (30%)

- The midterm and final exam results will be kept private.
- (However, you can check it when you inquire personally.)

□ Quiz (30%)

- Assignment (five times)
- Presentation

□ Attendance (10%)

■Rules

□ 3 tardies = 1 absence

□ 6 absent = F grade

General notice

■Attendance and Excused Absence Policy

□ Attendance will be checked through **offline attendance** (via LMS).

□ The number of excused absences for the same reason is limited.

□ Principle: All requests for excused absences must be submitted in advance.

□ Exception: In unavoidable cases, supporting documents must be submitted within 10 days after the reason has ended.

□ Requests for excused absences must be submitted before the end of the semester.

General notice

■No Offline Class (Make-up Lecture Provided Online)

□ The class will be canceled from November 24 to 28.

□ A make-up session will be provided through pre-recorded lecture videos.

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1	09.01-09.05	Course Outline	PDF	
2	09.08-09.12	Introduction to Reinforcement	PDF	
3	**09.15-09.19**	**Multi-Armed Bandit Problem**	**PDF**	
4	09.22-09.26	Markov Decision Processes (MDP)	PDF	**Assignment**
5	09.29-10.03	Bellman Equations	PDF	**(2~3 times)**
6	**10.06-10.10**	**Model-based Planning**	**PDF**	
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Thank you

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