Fudan University, School of Data Science
2021/2022 (1st Term)

Course Code & Title:	DATA130008.01 "Introduction to Artificial Intelligence"

Teaching staff

Instructor	
Name	Dr. Wei, Zhongyu 魏忠钰
Office	Room 1407, XinKingBo Building (新金博大厦)
Email	zywei@fudan.edu.cn

TA				
	Li, Zejun	李泽君	Gao, Yuan	高源
	Luo, Ruipu	罗瑞璞	Liu, Qingwen	刘晴雯
	Zhang, Jiwen	张霁雯	Liang, Jingcong	梁敬聪
	Zhong, Cheng	钟诚	You, Tao	游涛

Course Time and Classroom

Lecture & Lab	- Tuesday 18:30 to 21:05 at H4103

Course Description & Content

Artificial Intelligence (AI) aims to make a computer that can learn, plan and solve problems autonomously. AI applications include web search, speech recognition, face recognition, machine translation, autonomous driving, and automatic scheduling, etc. In this course, you will learn fundamental principles and techniques that drives such applications and have a chance to implement some of them. Specific topics include search, constraint satisfaction problems, game playing, reinforcement learning and probabilistic reasoning. The main goal of the course is to equip students with the tools to tackle real problems in the era of big data.

Learning Activities

Activities	Number of Hours
Lecture	36
Lab	12

Reference Book

1. Stuart J. Russell, Peter Norvig (2009) Artificial Intelligence A Modern Approach, 3rd Edition.2009, Prentice Hall

Assessment Scheme

Task	Weight
Individual Programming Projects	30% (12%+9%+9%)
Group Competition Project	25% (20%+30%+50%)
Lab and Participation	10%
Final Exam	35%

Course Schedule (Subject to final confirmation)

Week	Date	Topic	Reading
1	2021.09.14	Lecture 1.0: Introduction to AI Lecture 1.1: Uninformed Search	Chapter 1, 2, 3.1-3.4
2	2021.09.21	Mid-Autumn Day Festival, No class	
3	2021.09.28	Lecture 2.1: Informed Search ***Tutorial 1: Intro to python*** **PJ1 – Out**	Chapter 3.5-3.6
4	2021.10.05	The National Day Festival, No class	
5 (LAB)	2021.10.12	<u>Lab 1: Search Algorithm</u>	
6	2021.10.19	Lecture 3.1: Constraint Satisfied Problem **PJ1 – Due (10.17)** **PJ2 – Out**	Chapter 6 Chapter 4.1 - 4.2
7	2021.10.26	Lecture 4.1: Adversarial Searchl, Utility Theory	Chapter 5.2 - 5.5 Chapter 16.1 - 16.3
8 (LAB)	2021.11.02	<u>Lab 2: alpha-beta Pruning</u> ***Tutorial 2: Introduction to Gomoku*** **Group PJ Out** **PJ2 – Due (10.31)**	
9	2021.11.09	Lecture 5.1: RL - Markov Decision Process	
10	2021.11.16	Lecture 6.1: RL - Policy Evaluation Lecture 6.2: RL - Policy Control **Group PJ first-check-point Due (11.14)** **PJ3 – Out**	Chapter 17.1 - 17.3
11	2021.11.23	Lecture 7.1: RL - Value Function Approximation	Chapter 21.1 - 21.5
12 (LAB)	2021.11.30	<u>Lab 3: reinforcement learning</u> ***Tutorial 3: RL for Gomoku*** **Group PJ mid-term Due (11.28)**	
13	2021.12.07	Lecture 8.1: Bayes Net representation Lecture 8.1: Bayes Net independence **PJ3 – Due (12.05)**	
14	2021.12.14	Lecture 9.1: Bayes Net inference Lecture 9.2: Bayes Net sampling	Chapter 14
15 (LAB)	2021.12.21	<u>Lab 4: Bayes network</u> **Group PJ – Due (12.19)** **PJ4 – Out**	Chapter 14
16	2021.12.28	Lecture 10.1: Markov and HMM	Chapter 15.1 - 15.5
17	2022.01.09	**PJ4 – Due**	
18	2022.01.11	Final Examination	

Assignment Timeline

Category	Content	Online Time	Offline Discussion/ Mid-Term	Time/ DDL	TA in Charge
Lab - 1	Search Algorithm	10.05	-	10.12	梁敬聪
Lab - 2	alpha-beta pruning	10.26	-	11.02	刘晴雯
Lab - 3	Reinforcement learning	11.23	-	11.30	游涛
Lab - 4	Bayes network	12.14	-	12.21	高源
OJ	-	-	-	-	梁敬聪
PJ - 1	Pacman	9.28	10.16	10.17	梁敬聪
PJ - 2	N-queens	10.19	10.30	10.31	刘晴雯
PJ - 3	Black Jack	11.16	12.04	12.05	游涛
PJ - 4	Car	12.21	1.8	1.9	高源
T - 1	Introduction to Python	-	-	09.28	李泽君
T - 2	Introduction to Gomoku	-	-	11.02	张霁雯
T - 3	RL for Gomoku	-	-	11.30	钟诚
Final PJ	Gomoku	11.02	11.14, 11.28	12.19	罗瑞璞，梁敬聪

- **All coding needs to be done with Python.**
- **All reports need to be written in English.**
- **You can choose 2 out of 3 PJs from (PJ-2, Pj-3 and Pj-4) for submission. If you submit all the three projects, we will use the top-2 scores as your final score.**