Course Title	Introduction to Artificial Intelligence	Instructor(s)	Baiko Sai （実務経験のある教員）
		E-mail	
Class Style	Lecture, seminar, etc.	Office Hours	Wednesday PM
Track		Mode of Instruction	Of-line
Credits	2	Allocated Year	Third or fourth year
Active Learning	Category 4-(1): Interactive Lectures	Compulsory or Elective	
Course Overview	From this you will be interested in artificial intelligence (AI), acquire basic knowledge from the user's perspective so that it will be useful in your future career and daily life! In this lecture, we will understand the basic ideas in each field of exploration, knowledge representation, inference, planning, and machine learning that are necessary to build an artificial intelligence system, and we will introduce you to the basic concepts necessary to apply them to the real world. We aim to build a solid foundation.		
Course Objectives	・Be able to provide an overview of the history of artificial intelligence leading up to the current artificial intelligence boom. ・Be able to explain machine learning methodology and evaluation methods based on large amounts of data. ・Be able to explain the social impact and challenges of artificial intelligence. ・Learn about typical machine learning methods and deepen your understanding of the principles behind them.		
Prerequisite			

Course Schedule

No	Contents	Homework
1	Part 1: Birth of artificial intelligence #1: Introduction to the definition, history, related studies, roles, etc. of artificial intelligence (AI), Let's create artificial intelligence.	No
2	Part 2: Search (1) #2: State spaces and basic search	No
3	Part 3: Search (2) #3: Search for optimal route.	No
4	Part 4: Game theory #4: The theory of game, The standard model game, The equilibrium of control strategy, Nash equilibrium, Prisoners' dilemma, Zero-sum game, Minimax strategy, Alpha-Beta pruning/methods	No
5	Part 5: Machine learning (1) #5: Supervised learning.	No
6	Part 6: Machine learning (2) #6: Unsupervised learning.	No
7	Part 7: Machine learning (3) #7: Reinforcement learning.	No
8	Part 8: Neural networks and deep learning (1) #8: Neural networks and nonlinear functions.	No
9	Part 9: Neural networks and deep learning (2) #9: Neural network learning and algorithms, convolutional neural networks.	No
10	Part 10: Natural language processing (1) #10: Natural language processing, morphological analysis.	No

	11	Part 11: Natural language processing (2) #11: Syntactic analysis, semantic analysis, vector	No
		representation of words and sentences.	
	12	Part 12: Artificial intelligence (AI) and computers #12: The cerebrum and computer networks, distributed parallelization methods, multi-agent artificial intelligence.	No
	13	Part 13: The arrival of a society integrated with artificial intelligence (AI) #13: Application in each field.	No
	14	Part 14: Limits and future of artificial intelligence (AI) #14: What artificial intelligence cannot do at the moment, the limits of artificial intelligence. Artificial intelligence safety.	No
	15	Part 15: Summary #15: "Creating" intelligence and prospects. About the final exam.	No
Grading	Quiz 20 % Assignments 30 % Credit validation exam 50% Perform a comprehensive evaluation.		
Textbooks	No		
References	とことんやさしい「人工知能」の本 辻井潤一 産業技術総合センター イラストで学ぶ 人工知能概論 改訂第 2 版 (KS 情報科学専門書) 谷口 忠大 未来社会と「意味」の境界: 記号創発システム論／ネオ・サイバネティクス／プラグマティズム 単行本 谷口 忠大 (編集), 河島 茂生 (編集), 井上 明人 (編集).		
NOTES	担当教員は、30年以上のソフトウェア開発、組み込みエンジニア、暗号システムの開発等の経験を活かし、講義を行う。		