

Course Title	Introduction to Artificial Intelligence	Instructor(s)	Baiko Sai
		E-mail	bsai@miu.ac.jp
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	Category4:Outward-Extemporaneous 9.Group Work on Questions, etc.	Compulsory or Elective	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	<ul style="list-style-type: none"> <li>• Be able to provide an overview of the history of artificial intelligence leading up to the current artificial intelligence boom.</li> <li>• Be able to explain machine learning methodology and evaluation methods based on large amounts of data.</li> <li>• Be able to explain the social impact and challenges of artificial intelligence.</li> <li>• Learn about typical machine learning methods and deepen your understanding of the principles behind them.</li> </ul>		
Prerequisite	Attending the "Introduction to Artificial Intelligence" lecture		
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.	Assign homework to review and check comprehension
	2	Part 2: Search (1) #2: State spaces and basic search	Assign homework to review and check comprehension
	3	Part 3: Search (2) #3: Search for optimal route.	Assign homework to review and check comprehension
	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	Assign homework to review and check comprehension
	5	Part 5: Machine learning (1) #5: Supervised learning.	Assign homework to review and check comprehension
	6	Part 6: Machine learning (2) #6: Unsupervised learning.	Assign homework to review and check comprehension
	7	Part 7: Machine learning (3) #7: Reinforcement learning.	Assign homework to review and check comprehension
	8	Part 8: Neural networks and deep learning (1) #8: Neural networks and nonlinear functions.	Assign homework to review and check comprehension
	9	Part 9: Neural networks and deep learning (2) #9: Neural network learning and algorithms, convolutional neural networks.	Assign homework to review and check comprehension
	10	Part 10: Natural language processing (1) #10: Natural language processing, morphological analysis.	Assign homework to review and check comprehension
	11	Part 11: Natural language processing (2) #11: Syntactic analysis, semantic analysis, vector representation of words and sentences.	Assign homework to review and check comprehension
12	Part 12: Artificial intelligence (AI) and computers	Assign homework to review and	

		#12: The cerebrum and computer networks, distributed parallelization methods, multi-agent artificial intelligence.	check comprehension
	13	Part 13: The arrival of a society integrated with artificial intelligence (AI) #13: Application in each field.	Assign homework to review and check comprehension
	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.	Assign homework to review and check comprehension
	15	Part 15: Summary #15: "Creating" intelligence and prospects. About the final exam.	Assign homework to review and check comprehension
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).		
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