Artificial Intelligence

Artificial intelligence (AI) is technology and a branch of computer science that studies and develops intelligent machines and software. Major AI researchers and textbooks define the field as "the study and design of intelligent agents", where an intelligent agent is a system that perceives its environment and takes actions that maximize its chances of success.

Knowledge item description	References
Beginner	
The concept of AI	[1.1], [2.1], [3.1]
The concept of intelligent agent	[1.2]
Understanding search concept	[1.3], [1.4], [1.5]
Understanding the concept of logical agents	[1.7]
Competent	
First order logic	[1.8], [1.9], [3.7]
Inference in first-order logic	[1.9]
Classical planning	[1.10], [2.2], [3.8]
Planning and acting in the real world	[1.11], [3.9]
Knowledge representation	[1.12]
Quantifying uncertainty	[1.13]
Probabilistic reasoning	[1.14]
Probabilistic reasoning over time	[1.15]
Making simple decisions	[1.16]
Making complex decisions	[1.17]
Learning from examplex	[1.18], [[3.5], [3.6]
Knowledge in learning	[1.19]
Natural language processing	[1.22]
Natural Llanguage for communication	[1.23]
Perception	[1.24]
Expert	
Learning probabilistic models	[1.20]
Reinforcement learning	[1.21], [3.10]
Robotics	[1.25], [3.19], [3.20]
Localization	[4.1], [4.2], [4.3]
Robotics planning	[4.4]
Control	[4.5]
SLAM	[4.6]

References

#	Reference	Link

1.	Russell, Norvig: Artificial Intelligence: A Modern Approach	TBD
1.1.	Introduction	Chapter 1
1.2.	Intelligent Agents	Chapter 2
1.3.	Solving Problems by Searching	Chapter 3
1.4.	Beyond Classical Search	Chapter 4
1.5.	Adversarial Search	Chapter 5
1.6.	Constraint Satisfaction Problems	Chapter 6
1.7.	Logical Agents	Chapter 7
1.8.	First-Order Logic	Chapter 8
1.9.	Inference in First-Order Logic	Chapter 9
1.10.	Classical Planning	Chapter 10
1.11.	Planning and Acting in the Real World	Chapter 11
1.12.	Knowledge Representation	Chapter 12
1.13.	Quantifying Uncertainty	Chapter 13
1.14.	Probabilistic Reasoning	Chapter 14
1.15.	Probabilistic Reasoning over Time	Chapter 15
1.16.	Making Simple Decisions	Chapter 16
1.17.	Making Complex Decisions	Chapter 17
1.18.	Learning from Examples	Chapter 18
1.19.	Knowledge in Learning	Chapter 19
1.20.	Learning Probabilistic Models	Chapter 20
1.21.	Reinforcement Learning	Chapter 21
1.22.	Natural Language Processing	Chapter 22
1.23.	Natural Language for Communication	Chapter 23
1.24.	Perception	Chapter 24
1.25.	Robotics	Chapter 25
2.	BerkeleyX Class: CS188.1x Artificial Intelligence	Link
2,1	Introduction to AI	
2,2	Search and Planning	
2,3	Constraint Satisfaction Problems	
2,4	Game Trees and Decision Theory	
2,5	Markov Decision Processes (MDPs)	
2,6	Reinforcement Learning (RL)	
3	Udacity CS271: Introduction to Artificial Intelligence	Link
3.1.	Welcome to AI	
3.2.	Problem Solving	
3.3.	Probability in AI	

3.4.	Probabilistic Inference	
3.5.	Machine Learning	
3.6.	Unsupervised Learning	
3.7.	Representation with Logic	
3.8.	Planning	
3.9.	Planning under Uncertainty	
3.10.	Reinforcement Learning	
3.11.	HMMs and Filters	
3.12.	MDP Review	
3.13.	Games	
3.14.	Game Theory	
3.15.	Advanced Planning	
3.16.	Computer Vision I	
3.17.	Computer Vision II	
3.18.	Computer Vision III	
3.19.	Robotics I	
3.20.	Robotics II	
3.21.	Natural Language Processing	
3.22.	Natural Language Processing II	
4.	Udacity CS373: Artificial Intelligence for Robotics	Link
4.1.	Localization	
4.2.	Kalman Filters	
4.3.	Particle Filters	
4.4.	Search	
4.5.	PID controller	
4.6.	SLAM	