

기계학습 개론 (2016 년도 2 학기)

Introduction to Machine Learning (Deep Learning)

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Course Home Page: <http://bi.snu.ac.kr/Courses>

Course Description:

Machine learning studies architectures and algorithms for automatically constructing models (or computer programs) from observed data. Machine learning systems design software not by manual programming but by automatic programming through feeding data, and thus can improve their performance on their own by observing more data. Deep learning is a class of machine learning models that employs many layers of neural network structures and, recently, has revolutionized the AI industry by solving many difficult problems, such as image recognition, speech recognition, natural language processing, self-driving cars, and autonomous robots. This course gives an introduction to machine learning and neural networks with an emphasis on deep learning models. We study the basic mathematical algorithms of various deep learning models and their applications in vision, speech, language, robotics, games, and digital media. Course attendants are expected to do their own deep learning AI project on a problem chosen by the participants.

Week 1: Artificial Intelligence and Machine Learning

Week 2: Neural Networks and Delta Learning

Week 3: Multilayer Neural Networks and Backpropagation Learning

Week 4: Deep Learning: What, Why, and How?

Week 5: Models of Deep Learning

Week 6: Convolutional Neural Networks (CNN)

Week 7: Applications of CNN

Week 8: **Mid-term Exam**

Week 9: Deep Belief Networks (DBN)

Week 10: Applications of DBN

Week 11: Deep Hypernetworks (DHN)

Week 12: Applications of DHN

Week 13: Recurrent Neural Networks (RNN)

Week 14: Applications of RNN

Week 15: Recent Advancements in Deep Learning

Week 16: **Final Exam**

