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CS229 - Machine Learning

Course Details	Show All

Course Description

This course provides a broad introduction to machine learning and statistical pattern recognition.

Topics include: supervised learning (generative/discriminative learning, parametric/non-parametric learning, neural networks, support vector machines); unsupervised learning (clustering, dimensionality reduction, kernel methods); learning theory (bias/variance tradeoffs; VC theory; large margins); reinforcement learning and adaptive control.
The course will also discuss recent applications of machine learning, such as to robotic control, data mining, autonomous navigation, bioinformatics, speech recognition, and text and web data processing.
Students are expected to have the following background:

Prerequisites: - Knowledge of basic computer science principles and skills, at a level sufficient to write a reasonably non-trivial computer program.
- Familiarity with the basic probability theory. (Stat 116 is sufficient but not necessary.)
- Familiarity with the basic linear algebra (any one of Math 51, Math 103, Math 113, or CS 205 would be much more than necessary.)

- Syllabus
- DOWNLOAD All Course Materials

Instructor

Handouts

Resources

Assignments

Course Sessions (20):   Show All

Lecture 1

Watch Online:	Download: Right Click, and Save As	Duration:
WATCH NOW	DOWNLOAD	1 hr 9 min

Topics: The Motivation & Applications of Machine Learning, The Logistics of the Class, The Definition of Machine Learning, The Overview of Supervised Learning, The Overview of Learning Theory, The Overview of Unsupervised Learning, The Overview of Reinforcement Learning

Transcripts

HTML   PDF

Lecture 2

Watch Online:	Download: Right Click, and Save As	Duration:
WATCH NOW	DOWNLOAD	1 hr 16 min

Topics: An Application of Supervised Learning - Autonomous Deriving, ALVINN, Linear Regression, Gradient Descent, Batch Gradient Descent, Stochastic Gradient Descent (Incremental Descent), Matrix Derivative Notation for Deriving Normal Equations, Derivation of Normal Equations

Transcripts

HTML   PDF

Lecture 3

Lecture 4

Lecture 5

Lecture 6

Lecture 7

Lecture 8

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