RIT Department of Computer Science

Syllabus ----- Schedule

CSCI-635 Introduction to Machine Learning: Schedule

Fall Semester 2024 (2241)

RIT Academic Calendar

Disclaimer: We may get ahead of (or fall behind) this schedule, I will try to keep this up to date but regardless, quiz/homework topics will follow the actual lecture topic pace.

Week (Subject to change)	Topics	Homework	Reading	Special Events and Due Dates	Slides & Lecture Notes
1 (8/26+28+30)	Introduction, class logistics, **Review:** linear algebra		DL Ch. 1 & Ch. 2		Slides (1), (2)
2 (9/4+6)	Stochastic processes & probability, distributions, information theory		DL Ch. 3, TEoSL Ch. 1	HW #0 due 9/20	Slides (1), (2), (3)
3 (9/9+11+13)	Optimization, foundational principles of ML		DL Ch. 4 & Ch. 5		Slides (1), (2), (3), (4)
4 (9/16+18+20)	Learning theory, generalization, the ML pipeline, K-NN		DL Ch. 5		Slides (1), (2), (3)
5 (9/23+25+27)	Supervised learning: Linear regression		TEoSL Ch. 2.3, 3.1	HW #1 due 10/7	Slides (1), (2), (3)
6 (9/30, 10/2+4)	Logistic regression (LR) and classification		TEoSL Ch. 4.4		Slides (1), (2), (3)
7 (10/9+11+13)	Discriminative modeling with linear classifiers				Slides (1), (2)
8 (10/16+18+20)	Unsupervised learning: dimensionality reduction PCA (**Guest lec**)				Slides (1), (2)
9 (10/23+25+27)	Probabilistic graphical models (PGMs): naïve Bayes (NB)		NB vs. LR (Ng & Jordan '01)		Slides (1)
12 (10/30, 11/1+3)	Generative models/PGMs: Mixtures of Gaussians, clustering				Slides (1), (2), (3)
11 (11/6+8+10)	Clustering, decision trees, ensembling		Random Forests (Breiman '01)		Slides (1), (2), (3)
13 (11/13+15+17)	Artificial neural networks (ANNs), reverse-mode differentiation		DL Ch. 6		(1), (2)
12 (11/20)	ANNs: tricks of the trade, variational generative modeling				Slides (1)
14 (11/27+29, 12/1)	VAEs, violating i.i.d.: time-series		DL Ch. 10		Slides (1), (2), (3)
15 (12/4+6+8)	*ANNs*: recurrence, uncertainty modeling (**Guest lec**)			Final Exam/Project	Slides (1), (2), (3)
16 (12/13, 10:45am-1:15pm)	Final Project Presentations			Slides due 12/13, 11:59pm (Papers due 12/14, 8am)	

Updated: August 22, 2023