CE40957: Statistical Learning
Department of Computer Engineering
Sharif University of Technology
Spring 2015: Saturdays & Mondays: 13:30-15:00

Instructor:
Hamid R. Rabiee
Office: CE-804 & DML (CE 803)
Office Hours: Sat. & Monday: 8:00-9:00 or by appointment (through email)
Office Phone: 6616-6683

Email: rabiee@sharif.edu
URL: http://sharif.edu/~rabiee/

TAs:
Ali Zarezade
Office: DML (CE-803)
Office Hours: Sat. & Monday: 15:00-16:00
Email: zarezade@ce.sharif.edu

Ali Khodadadi
Office: DML (CE-803)
Office Hours: Sat. & Monday: 15:00-16:00
Email: khodadadi@ce.sharif.edu

Course Website:
http://ce.sharif.edu/courses/93-94/2/ce957-1/

Prerequisites:
Engineering Probability and Statistics (40181), Stochastic Process (40695), Machine Learning (40717)

Course Objectives:
To became familiar with some advanced tools in machine learning including nonparametric Bayesian, point process, deep learning and big data.
Course Textbooks & References:


Grading:
Mostly based on performance in presentations and class activity. There will be also some practical homework and a final project.

- Class activity 10%
- Homework: 10%
- Project: 20%
- Presentation 30%
- Exam: 30%

Syllabus

**Nonparametric Bayesian (Week 1-5):** Dirichlet Process, Indian Buffet, Gaussian Process and Exchangeability

- Chapter 1,2,3,4 and 6 of *Lecture Notes on Bayesian Nonparametrics*.
- Chapter 2 of *Gaussian processes for machine learning*.

**Point Process (Week 6-9):** Poisson Process superposition and mapping property. Completely random measure and Dependent random measure. Temporal Point Process, Hawks process.

- Chapter 1,2 and 3 of *Poisson Process*.
- Rasmussen, Jakob G. "Temporal point processes the conditional intensity function". 2011.
Deep Learning (Week 10-12): Deep Autoencoders (unsupervised), Pre-Trained Deep Neural Networks (Hybrid) and Deep Stacking Networks (supervised).

- Chapter 3, 4, 5 and 6 of *Deep Learning: Methods and Applications*.

Big Data (Week 13-15): Big data system, Hadoop technology, Spark, MLib and H2O. Big data analytics, scalable algorithms.

- Chapters 4, 7, 11 and 12, *Mining of Massive Datasets*.

Enjoy the course & Good luck!