

CAP 6545: Machine Learning in Bioinformatics

Lecture: MW 4:30PM - 5:45PM

Location: BA1 0214

Instructor: Dr. Haiyan Nancy Hu

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Office Hours: MW 3:30PM - 4:30PM

Description:

In this class, we will provide an overview of the machine learning methods and their applications in Bioinformatics. We will also outline some research problems that may motivate the further development of machine learning tools for biological data analysis.

Bioinformatics is an active and interdisciplinary research area. This course is open to all students with background such as computer science, biology, mathematics or statistics who are interested in bioinformatics research.

Prerequisite:

No formal prerequisite and open to all graduate students.

Homeworks:

Reading and critiquing classic papers

A class project related to machine learning in bioinformatics.

Grading:

Paper presentation (30%), assignments (15%), Class participation (5%),
Final project presentation and report (50%)

90-100: A; 80-90: B; 70-80:C; 60-70: D; 0-60: F

Preliminary Schedule:

Date	Topic
W1: 01/11	Introduction/Administrivia
01/13	Bioinformatics overview I
W2: 01/18	No Class

01/20	Bioinformatics overview II
W3: 01/25	Machine Learning Foundations: the Probabilistic Framework I
01/27	Machine Learning Foundations: the Probabilistic Framework II
W4: 02/01	Probabilistic Modeling and Inference
02/03	EM
W5: 02/08	EM Applications
02/10	Hidden Markov Models
W6: 02/15	Hidden Markov Models applications
02/17	Hidden Markov Models applications
W7: 02/22	Hidden Markov Models applications
02/24	Support Vector Machine
W8: 02/29	Support Vector Machine applications
03/02	Support Vector Machine applications
W9	No Class
W10: 03/14	Support Vector Machine applications
03/16	Bayesian Network
W11: 03/21	Bayesian Network applications
03/23	Bayesian Network applications
W12: 03/28	Bayesian Network applications
03/30	Bayesian Network applications
W13: 04/04	Boosting and Bagging
04/06	Boosting and Bagging applications
W14: 04/11	Final project presentation and discussion
04/13	Final project presentation and discussion
W15: 04/18	Final project presentation and discussion
04/20	Final project presentation and discussion
W16: 04/25	Final project presentation and discussion

Academic Mis-conduct:

Please read school's policy on Academic misconduct and cheating on <http://www.goldenrule.sdes.ucf.edu>