CB&B 555 / CPSC 453 / CPSC 553 / GENE 555 (F16)

Schedule for Fall 2016

Aug. 31	Classes begin
Oct 18-24	October recess
Nov 18-24	November recess
Dec 9	Reading period begins

Thu 9/1	Lecture 1: Intro to High Dimensional Data (CyTOF/ScRNA-SEQ/GBM)
Tue 9/6	Lecture 2: Linear Dimensionality Reduction Methods (PCA, MDS)
Thu 9/8	Lecture 3: Visualizing data with tSNE
Tue 9/13	Lecture 4: Nonlinear Dimensionality Reduction Methods(Guy Wolf)
Thu 9/15	Lecture 5: Diffusion Maps (Guy Wolf)
Tue 9/20	Lecture 6: Trajectories and progressions
Thu 9/22	Lecture 7: Wanderlust and Wishbone (Manu Setty)
Tue 9/27	Lecture 8: Clustering: K-means and spectral
Thu 9/29	Lecture 9: Gaussian Mixture Models and Hierarchical Linkage
Tue 10/4	Lecture 10: Community Detection, Phenograph (Jacob Levine)
Thu 10/6	Lecture 11: Kernel Methods, SVM (P1 due)
Tue 10/11	Lecture 12: Constrained Programing, Kernel Density Estimation
Thu 10/13	Lecture 13: Entropy, Mutual Information and Estimation (Kevin Moon)
Tue 10/18	Lecture 14: DREMI and Gene/Protein Regulation
Thu 10/23:	No class fall break.
Tue 10/25:	Review Part 1
Thu 10/27	Lecture 15: Review Part 2
Tue 11/1	Midterm
Thu 11/3	Lecture 16: Neural Networks and Deep Learning
Tue 11/8	Lecture 17: Autoencoders , variational autoencoders (P2 due)
Thu 11/10	Lecture 18: CovNETS, RNNS
Tue 11/15	Lecture 19: Comp bio work at Yale (Alex)
Thu 11/17	Lecture 20: Comp bio work at Yale (Tobias)
Tue 11/22	Lecture 21: Population Genetics (Chris Cotsapas)
Tue 11/29	Lecture 22: Gut Microbiome Data (Noah Palm)
Thu 12/1	Lecture 23: Student Paper Presentations
Tue 12/6	Student Paper Presentations 1
Thu 12/8	Student Paper Presentations 2

Project 1	Dimensionality reduction (Due 10/6)
Project 2	Clustering (Due 11/8)
Final Project	Research Report (Due 12/14)

The class grade assignment will involve:
1. Two programming assignments: 15% each
3. Midterm exam 30%
4. Paper Presentation 10%
2. Final Project 30%