CMSC 395 Special Topics: Pattern Recognition

20th of August, 2018

Lecture:	MW 4:00-5:15pm, Ruffner 352
Website:	http://cs.longwood.edu/courses/cmsc395/f18/

Professor:	Julian Dymacek
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Office hours:	MW: 2–3pm
	TF: noon–1pm
	by appointment

Course Description

Selected topics in computer science. The topics may vary from semester to semester. May be repeated for credit when topics change. 3 credits.

Prerequisites

CMSC 162

Course Objectives

The successful student will:

1. Identify features and

2. Learn algorithms and data structures for clustering and dimension reduction.

3. Understand advantages and disadvantages of various implementations and algorithms for data analysis.

Textbook and Resources

1. Pattern Classification, by Richard O. Duda, Peter E. Hart, David G. Stork, Wiley, Second Edition, ISBN: 9780471056690.

Course Requirements

Tentative Course Schedule

Week	Date	
1	Aug. 20-22	Introduction, Bayes Law
2	Aug. 27-29	Maximum–Likelihood
	Sep. 3	*Labor Day* no class
3	Sep. 5	Clustering Introduction
4	Sep. 10-12	Nearest Neighbor, k–means
5	Sep. 17-19	Hierarchical Clustering
6	Sep. 24-26	Optimization methods
7	Oct. 1-3	Genetic algorithms
8	Oct. 8-10	Principal Component Analysis
	Oct. 15	*Fall Break* no class
9	Oct. 17	Principal Component Analysis
10	Oct. 22-24	Independent Component Analysis
11	Oct. 29-31	Non-negative Matrix Factorization
12	Nov. 5-7	Self–Organizing Maps
13	Nov. 12-14	Additional topics
14	Nov. 19	Project work day
	Nov. 21	*Thanksgiving* no class
15	Nov. 26-30	Review
	Dec. 5	**Final Exam:** Wednesday 3-5:30pm

Important university dates

Aug. 27	Last day of Add/Drop (5pm)
Sep. 28	Last day for Pass/Fail (5pm)
Oct. 31	Deadline to withdraw with "W"
Nov. 30	Last day of classes

Grading Scale

		A	100–91	A–	90
B+	89	B	88–81	B–	80
C+	79	C	78–71	C–	70
D+	69	D	68–61	D–	60
		59 and lower is an F			

Graded work

This course is programming intensive, you should budget your time to include reading, assignments, class, and homework. If you are stuck on something talk to me sooner rather than later. The entire course is cumulative so you cannot afford to get behind.

Homework & Quizzes: You are expected to be an active participant in the class. You should be present and engaged. Pop quizzes will be given in class and cannot be made up.

Homework: Homework will cover problems related to the in class material, no late work will be accepted.

Projects: There will be four projects assigned in the class. Projects will be larger assignments and require outside research and will be completed in groups. Project grades will be based on both individual and group performance.

Exams: There will be a final exam. The final exam will, by the nature of the course, be cumulative. Exams are to be your work alone and not discussed with anyone.

Breakdown

Projects:	50%
Final Exam:	20%
Homework & Quizzes:	30%

Policies

For a list of campus wide polices please see:
   http://www.longwood.edu/academicaffairs/syllabus-statements/

Honor Code

We will follow the Longwood Honor Code in this class. When completing work please do not lie, cheat, or steal.

1. Do not lie and claim someone else's ideas as your own: you must give proper attribution

2. Do not cheat and copy work from another student or the Internet

3. Do not steal someone else's work and submit it: your files are to be written by you

4. You are responsible for securing your code/work: do not let someone else have access to your work/files

If you are unsure if your action will violate the honor policy: don't do it. Feel free to talk with me if you have questions.

Infractions of these policies will be dealt with harshly under the Longwood Honor Code with cases turned in to the Honor Board. Any student convicted of an honor offense involving this class will automatically receive a lowered *final course grade*, potentially severe as an **F**. You should consider all work in this class to be pledged work, whether or not the pledge appears on the assignment.

Support

Programming (and mathematical proof) is a different way of thinking about problem solving. A solution is not necessarily easy or obvious. I strongly encourage you to follow along with the class in readings and activities. When you have questions, ask. In addition to my regular office hours, you can always email to schedule a time to meet. If my office door is open feel free to stop by, if my door is closed I'm not available.

Attendance and late work

You are expected to attend and participate in class. Attendance will be recorded in every class. In accordance with campus policy, missing more than 10% of scheduled class time to unexcused absences may, at my discretion, result in the loss of one letter grade. Missing 25% of class or more, whether excused or not, may result in an automatic failing grade.

Late work will not be accepted outside of exceptional circumstances such as serious medical or family emergencies. Most extensions will require a note from a Longwood administrator.

Laptops and other electronic devices are not to be used during class, except with permission.

Inclement weather policy

I don't plan to cancel class for weather unless the entire college shuts down. If extenuating circumstances cause me to cancel class, you will be notified by e-mail.