COSC 480 - Topics in Computer Science
Deep Learning
Fall 2018
Syllabus

Deeply learning about deep learning.

Just the Facts

Course Number: COSC 480
Title: Topics in Computer Science - Deep Learning
Semester: Fall 2018
Meeting Time: TR 2-3:50pm
Locale: Schaefer 165
Instructor: Alan Jamieson
Office: Schaefer 154
Office Hours: TR 1-2pm, T 4-6pm
Email: acjamieson@smcm.edu
Google Messenger: acjamieson@smcm.edu
Slack: via Alan's COSC480 Group
Online Office Hours: Most evenings and weekends
Recommended Textbooks: None, but students should sign up for Intel's AI academy
Website: http://ripark.github.io/f18/cosc480

Catalog Description: This course is a rigorous study of an important field in computer science. Examples: data security; bioinformatics; natural language processing; compilers. A detailed course description will be available before registration. The course may be repeated for credit where the topic is not repetitive. Prerequisite: COSC 201 or permission of the instructor.

Overview: Deep learning is a fascinating extension of AI. It is also a great story of a sub-discipline of CS long considered dead (see: AI winter). How can we use biology to inform the algorithmic systems we build? How do we use what we know about our brains to make algorithms more powerful and independent? These are the core questions behind deep learning and even though it has been hot for a few years now, we are only scratching the bare surface of what we can do with these techniques.

Purpose: The purpose of this course is to give you the baseline knowledge required to implement appropriate deep learning techniques for a given problem. We will be going through the theory behind deep learning, and learning about specific deep learning tools that allow a programmer to quickly create and run deep learning networks. We will also discuss a variety of specific applications for deep learning and why deep learning is particularly suited for those problems.

Grade Distribution:

> Labs/quizzes/homework - 20%
> Miniprojects (2) - 15% each
> Major Project - 40%
> Major Project Presentation - 10%

You will be expected to participate in class by asking questions and answering questions posed by myself and those in class. Rather than a drab lecture, the class sessions will be run in a discussion style environment. Activity and debate are highly encouraged. In addition to this, there will be coding exercises and every student will be expected to submit at least one solution throughout the semester. Failure to do so will result in a grade penalty.

Learning Objectives: At the completion of COSC 480, students will be able to:

explain the aspects of the topic of the course
implement problem work in the topic of the course

design solutions to large problems in the topic of the course

Final Information: There will not be a final exam in this class, but teams will be presenting their final projects during the final period Monday, December 10 at 7pm in Schaefer 165. Failure to attend the presentations will result in an F for the course.

Assignments: There will be three projects in this course, focused on the case studies in applied deep learning that we will go through during the semester. The first two projects will be direct extensions or adaptations of the first two case studies, and thus will be smaller and simpler than the final project. The third project will still be an adaptation of a case study, but will involve far more work and will be over a much longer time period. In addition, the third project will have a presentation component and groups will be required to present their solution during the final exam period.

Blackboard Use: I will be utilizing Blackboard primarily for your grades in this course. Course materials will be provided on the course website.

GitHub Use: Major project files and some other sources will be maintained on GitHub. Any questions, concerns or objections should be noted during the first week of classes. You will be given a primer on how to use GitHub during the first part of the semester.

Policies

Cell Phones: Please, turn off or turn to silent any cell phones prior to getting to class. If they go off in class they are distraction not only to myself, but to everyone else in the class as well. Habitual offenders will be excused from the class with a 0 for any quizzes and class participation for that day.

Computer Use: Computer use in this lab is for academic use only. If you bring a laptop with you to this class I expect you to be only using it for purposes related to this class. The same goes for the computers in this lab.

Attendance and Tardiness: Attendance is highly recommended. Missing a class not only causes you to miss the information disseminated in that lecture, but can cause you to miss important information in regards to assignments and the potential of receiving a 0 for a quiz that day. I start class promptly on the hour and expect the students to be in class at that time. If you have circumstances that can prevent you from being in class on time, please let me know as soon as possible. Habitual offenders will be excused from the class with a 0 for any quizzes and class participation for that day.

Exams and Quizzes: There will be no exams in this class. Every class has the potential of having a quiz to reinforce the ideas from the previous class. These will not be announced ahead of time. They will be 1-3 question quizzes that can be easily done in 15 minutes either at the start or the end of the class period.

Assignments: Assignments and other outside of class work should be done on an individual basis unless otherwise specified in the description of the assignment. Assignments and other outside of class work will not be taken late except under extraordinary and documented circumstances.

Late Policy: You are allowed 2 "slip-days" throughout the semester. This means that you may turn in an assignment late, where each day it is late will reduce your number of slip-days by 1. So, you could turn in a project 2 days late, but then you wouldn't have any further slip-days left for the rest of the semester. Once you are out of slip-days, if you turn in the assignment late, you will earn a 0 for that assignment. As a further encouragement to turn in assignments on-time, each slip-day you have left at the end of the semester will add 0.5% to your final average. You may not use slip-days on presentations.

Extra Credit: I may or may not be offering any extra credit opportunities in this class.

Communication: The simplest way to get in touch with me is by coming by my office during my office hours or contacting me via email. The easiest way to get in touch with me "after hours" is to send me an email. I habitually check my St. Mary's email account all hours of the day. If you come by my office and the door is open, feel free to stop in to chat. The open door indicates that I'm not working on anything that has to keep my undivided attention at that time so do not feel that you are interrupting me or anything like that. I do make appointments if you have a certain time that you'd like to meet with me. If it fits in my schedule (meaning I'm not teaching class during that time) I will be happy to meet with you.

Academic Honesty: Academic misconduct policies are covered in the Student Code and Student Rights and Responsibilities, Article III. Pay close attention to the definitions of academic misconduct noted in Section 1. This can be found in the Student Handbook.

Disability: If you have any kind of disability that can affect your performance in this class, please let me know privately through email or stopping by my office.

Schedule: The schedule for the class will be posted to the class website. The schedule is subject to change (multiple times).

Closing: The most important thing in any of my classes is that you are learning and expanding your horizons. If you are having any undue difficulty with your work as it pertains to this class, please contact me as soon as possible. Always remember that professors succeed when you don't need us any longer. I want you to be bouncing ideas off of each other throughout the class and it is my hope that by the end of the semester that you are driving the class session rather than me.