FYS: Artificial Intelligence in Healthcare Syllabus

John Lalor

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Description

The first year seminar is intended to be an exploration of computer science for first-year CS majors and exploratory track students where we focus on a single topic. In this section we will discuss artificial intelligence (AI) in healthcare. We will use topics in healthcare to introduce concepts in AI and talk about how different methods in AI have made an impact in healthcare. We will also discuss the topics related to deploying AI models in healthcare, such as interpretability and bias.

Course Logistics

Where: Hasbrouck Laboratory Addition Room 107

When:

- Section 3: Tuesdays 4:00 - 5:00 PM
- Section 5: Tuesdays 5:30 - 6:30 PM

Course Instructor: John Lalor

- Email: lalor@cs.umass.edu
- Office: CS Building Room 216
- Office hours: TBD

Course website: http://jplalor.github.io/fys18.html

Consult the course website for up-to-date course information and lecture slides.

Topics

Below is a rough outline of the topics that we'll cover in class. A typical class meeting will consist of about 30 minutes of lecture introducing one of the topics below, followed by a 20-25 minute activity related to the topic.

- Supervised learning
- Unsupervised learning
- Natural language processing
- Ethics of AI
- AI interpretability
- Standards and ontologies
- Clinical reasoning and probabilistic inference
- Causal inference

There will also be content that is shared among the FYS sections. When finalized it will be added to the schedule.

Grading

- 20%: Attendance and participation
- 20%: Homeworks
- 20%: Piazza postings
- 20%: Midterm project
- 20%: Final project

The numerical cutoff for final course letter grade assignment will be made after all grading is completed. As a rough guide, expect to require at least a 93 to get an A, a 90 to get an A-, an 87 to get a B+, an 83 to get a B, an 80 to get a B-, and so on.

Attendance: Students are expected to attend class and participate in in-class discussions and activities. Refer to the Academic Regulations section at the bottom for policies about missed classes.

Homeworks: Homeworks will be a combination of short written reflections on class material and student activities based on common FYS content. Assignments will be due at the start of each class. Late assignments will not be accepted. Each completed assignment will be worth 2% of the final grade, and there will be more than 10 assignments, so a missed assignment may not have a negative impact on your grade. Students can expect to have an assignment each week.

Piazza: We will use Piazza in this course to discuss material from class. Piazza is an online discussion management system. Students are expected to participate in the discussions on Piazza, either by answering questions from students or posting questions to start a new discussion. Over the course of the semester students will be expected to make at least 10 meaningful posts on Piazza. Each post will be worth 2% of the grade.

Projects: Details of the midterm and final projects will be made available closer to their respective due dates.

This FYS is a one-credit course. As a general guideline, the university suggests that students spend two to three hours outside of class per credit hour in class. You can expect to spend about two hours per week on this course outside of class.

Communication Policy

If you have general questions related to class, assignments, etc. please use Piazza. That way if it is a common question it can be answered once and other students can benefit. Other students may also be able to answer the question as well. If you have specific questions that do not warrant a post on Piazza, please email me.

Technology Policy

Laptops, cellphones, and other technology are not permitted during class.

Other Academic Regulations

The Office of the Registrar publishes Academic Regulations yearly. You should be familiar with them. Particularly relevant are the policies on attendance, absences due to religious observance, and academic honesty. Links to the Office of the Registrar and the Academic Regulations are available on the course webpage.