Special Topics in CS: Healthcare Data Analytics
Course Number: COMP.5500 – 202 (#15201)

Description
Data Science, one of the hottest topics of the century, is practical applications of machine learning with a complete focus on solving real-world problems. In this course, I will share my industrial experiences as healthcare data scientist by introducing fundamentals of data science or data analytics including concepts of statistics, machine learning, deep learning and causality and their applications on healthcare. We will learn the necessary skills to manage, analyze and interpret healthcare data. In addition, we will work “hands-on” with the Python programming language and its associated data analysis libraries. After taking this course you should understand what a Healthcare Data Scientist is. The roles of a professional Healthcare Data Scientist come in many flavors. With this class you will be able to identify where you fit in the data science spectrum and approach applicable problems data-analytically.

Design of the Course:
The entire course will be divided into two phases, (i) Regular lectures and hands-on lab sessions and (ii) final project. Regular lectures and hands-on lab sessions will include the following topics: basics of statistics and probability, tools and data management, statistics and exploratory data analysis and fundamentals of machine learning, deep learning and causality application on healthcare data. It will also include 2-3 take home assignments on real healthcare data. Final project mentoring phase will include a project proposal, mid-project report, final project report and presentation. It will also include pre-appointment based bi-weekly mentoring session for progressing the final project.

Grading:
25% take home assignments (2-3 assignments)
50% final project (proposal, mid-project report, final project report and presentation)
25% participation (class attendance, responses, in lab session participation)

Prerequisite:
Students must know basic Python programming. Students who completed Artificial Intelligence, Machine Learning, Data Mining or similar courses in graduate level are best fit.

Who should take the course:
Students who are seeking data science internship or entry-level full-time jobs in industries.

Proposed Time
Every Thursday from 6:30 PM to 9:20 PM

For Undergraduate Students
For undergraduate students who are willing to take this course, drop me an email with the list of completed courses.