Instructor: Dr. Maryam Pishgar
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Phone number: 949-656-0063
Office Hours: Tuesday 3:30-4:30 PM or by appointment - Professor Pishgar's office - GER 216

Teaching Assistant: Shijie Gao
Office hour: Friday 11:00-1:00 PM
Email: shijiega@usc.edu

Teaching Assistant: Zuhayer Mahtab
Office hour: Tuesday 5:00 PM - 6:00 PM || Friday 3:00PM - 4:00PM
Email: mahtab@usc.edu

Please be sure to send email to any of the TAs for appointments.

Optional textbooks

1.The Elements of Statistical Learning, Data Mining, Inference, and Prediction (optional), by

Robert Tibshirani

Workload

- Three homework assignments for the semester
- No late homework/project/presentation will be accepted
- Start your homework assignments early
- One heavy final project

Examinations

- Two: 1 Midterm exam, 1 Final exam

Grade Distribution

- Homework 15%, Midterm 15%, Final 15%, Project/Presentation 50%, Participation 5%

Goals

This course aims to learn data mining methods with advanced machine learning algorithms for practical implementations and experimentation.

Upon successful completion of this course, students will be able to:
- SLO1: Students will be able to demonstrate the different types of unsupervised algorithms.
- SLO2: Students will be able to demonstrate using dimensional reduction techniques and understand mathematical aspect of it
- SLO3: Students will be able to implement an end-to-end data mining project.

- SLO4: Students will be able to describe the main approaches for dealing with time series data
- SLO5: Students will be able to analyze the impact of unsupervised learning models on real-world application.

SCHEDULE

Class days	Homework	Date assigned Topic
Aug 26		Introduction / Syllabus
Aug 28		Review session (go over data analysis pipeline)
Sep 2		**No Class (Labor Day)**
Sep 4	HW 1 Unsupervised learning	Unsupervised learning
Sep 9	HW 2 Dimension reduction	Dimension reduction methods
Sep 11		Introduction to Use Server
Sep 16		Reinforcement learning
Sep 18		Introduction of Physionet database
Sep 23		Introduction of the Main Project (Form Groups)
Sep 25		Introduction of the Main Project
Sep 30		Review for Midterm Exam/ Class Activity
Oct 2		**Midterm Exam**
Oct 7		Group Meeting
Oct 9		**Preliminary Presentation**
Oct 14		**Preliminary Presentation**
Oct 16		**Preliminary Presentation**
Oct 21		Recommendation system
Oct 23		Introduction to Map-Reduce System
Oct 28	HW 3 Time series	Time series (Shijie Gao)

Oct 30		Time series (Zuhayer Mahtab)
Nov 4		Group Meeting
Nov 6		Anomaly detection
Nov 11		**Veterans Day Holiday**
Nov 13		Statistical Analysis
Nov 18		Review for Final Exam/Class Activity
Nov 20		**Final Exam**
Nov 25		**Final Presentation**
Nov 27		**Thanksgiving Holiday**
Dec 2		**Final Presentation**
Dec 4		**Final Presentation**

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific- misconduct.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity http://equity.usc.edu or to the Department of Public Safety http://capsnet.usc.edu/department/department-public-safety/online forms/contact-us. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage http://sarc.usc.edu describes reporting options and other resources.

Support Systems:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call engemannshc.usc.edu/counselingFree and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call suicidepreventionlifeline.org Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, seven days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 – 24/7 on call engemannshc.usc.edu/rsvp Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Off ice of Equity and Diversity (OED) | Title IX - (213) 740-5086
equity.usc.edu, titleix.usc.edu
Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

Bias Assessment Response and Support - (213) 740-2421
studentaffairs.usc.edu/bias-assessment-response-support Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776
Dsp.usc.edu Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test-taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710
studentaffairs.usc.edu/ssa Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101
diversity.usc.edu Information on events, programs, and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various student resources.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu
Emergency assistance and avenues to report a crime. Latest updates regarding safety, including how instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
Dps.usc.edu

Non-emergency assistance or information.