CS 789: Introduction to Data Mining
Spring 2022

Instructor: Beiyu Lin
Phone: 702-895-4707
Office: SEB 3251
Email: beiyu.lin@unlv.edu
Class Time: TuTh: 5:30 PM – 6:45 PM
Office hours: TuTh: 4:00 PM – 5:15 PM
Class website: BeiyuLinCS.github.io/teach/spring_22/iot.html
UNLV WebCampus (https://www.it.unlv.edu/webcampus)

Catalog Description
Explores the basic methods and techniques in data mining and its applications to mining Internet of Things (IoT) data.

Textbook Recommended:
- Internet of Medical Things (Paradigm of Wearable Devices) - Manuel Cardona, Vijender Kumar Solanki, Cecilia E. García Cena
- From Machine-to-Machine to the Internet of Things - Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stamatis Karnouskos, Stefan Avesand, David Boyle
- Learning from Data: A Short Course - Yaser Abu Mostafa, Malik Magdon-Ismail, and Hsuan-Tien Lin
- Pattern Recognition and Machine Learning - Christopher M. Bishop
- The Elements of Statistical Learning: Data Mining, Inference, and Prediction - Trevor Hastie, Robert Tibshirani, and Jerome Friedman
- Machine Learning: A Probabilistic Perspective (Adaptive Computation and Machine Learning series) – Kevin P. Murphy

Student Learning Outcomes

Upon completion of this course, students will:

- Develop an appreciation for capabilities and limitations of IoT data and data mining techniques

- Understand the mathematical, statistical, and theoretical foundations of a wide variety of data mining, machine learning, and artificial intelligence algorithms

- Implement data mining algorithms to analyze data in multiple domains

- Evaluate the model performance

Prerequisites
CS 302 and Math 251

Grading

Grades will be based on following:

Homework(3)	30%
Project Report(1)	35%
Project Presentation	15%
Critical Questions(9)	10%
Guest Speaker Summary(4)	8%
Extra Credits	2%

Grades will be posted throughout the semester.
Grading is as follows:

A	A-	B+	B	B-	C+	C	C-	D	F
>90	90-85	85-80	80-75	75-70	70-65	65-60	60-55	55-45	<45

Graded assignments will be returned to you as soon as possible. It is your responsibility to check the grade summaries for posting errors.
- Any score issues must be identified to the instructor within a week after grade releases.
- If you fixed the problems in the assignment within a week, I would restore half of the points in order to encourage you to keep practicing.
- Scores are final after that.
- Late work will take10% off for 24 hour period and 30% off for 48 hour period.

1. ***Critical Questions and Summaries of Guest Speakers***

Critical Questions: You will have one required reading for almost all class periods.

Prior to the beginning of those class periods labeled as critical question due, you are to submit to Blackboard with three sentences as below which demonstrates that you have thoughtfully read and evaluated the paper for the class period. We will use the questions to enrich classroom discussion about the material. The submission page is under the Assignments tab in Blackboard.

Critical questions:
  i.   one sentence to summarize the paper;
  ii. one sentence to highlight the innovative part of the paper;
  iii. one question to suggest the improvement of the paper.

Summaries: We will bring in 5 experts this semester who will talk about state-of-the-art research in data mining and machine learning as well as its applications. You will be required to write a *one-page* discussion of *4 of the 5* invited talks. The summaries are due prior to the beginning of the next class period and are to be submitted to Blackboard. The submission page is under the Assignments tab in Blackboard. The write-up will include:

  i.   a summary of the talk and paper (if provided)
  ii. a discussion of how the work fits within the context of the materials being discussed in class
  iii. your ideas about how the speaker's work could be improved or extended in the future

Academic Misconduct
Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution.

An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the Student Academic Misconduct Policy (approved December 9, 2005) located at:
http://studentconduct.unlv.edu/misconduct/policy.html

Department of Computer Science Academic Integrity Policy
Each student enrolled in a course offered by the Department of Computer Science is expected to do his/her own work when preparing written or programming assignments, as well as, examinations. He/she must adhere to the academic integrity policy provided by his/her instructor and the university. It is also each student's responsibility to notify the instructor if he/she becomes aware of any activities that would violate the academic integrity policy of the class.

Academic Integrity Policy
Each student is required to do his/her own work on examinations, written and programming assignments and exercises without outside assistance except as noted below. It is also each student's responsibility to notify the instructor if he/she becomes aware of any activities that would violate the academic integrity policy of the class.

Consequences of violating the academic policy:
·   an Alleged Academic Misconduct Report will be completed, and a copy sent to the Office of Student Conduct
•   1st violation - student(s) will receive a grade of zero on the assignment/examination
•   2nd violation - a grade of F will be issued for the course; no further assignments/labs/exams can be completed for credit

Drop Policy
The last day to drop the course without a refund/change from credit to aaudit is Friday, April 1, 2022.

Copyright
The University requires all members of the University Community to familiarize themselves with and to follow copyright and fair use requirements. **You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws.** Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: www.unlv.edu/provost/copyright.

Disability Resource Center (DRC)
The UNLV Disability Resource Center (SSC-A 143, http://drc.unlv.edu/, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an

appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor before or after class to discuss your accommodation needs.

Religious Holidays
Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor within the first 14 calendar days of the course for fall and spring courses (excepting modular courses), or within the first 7 calendar days of the course for summer and modular courses, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: http://catalog.unlv.edu/content.php?catoid=6&navoid=531.

Transparency in Learning and Teaching
The University encourages application of the transparency method of constructing assignments for student success. Please see these two links for further information:
  https://www.unlv.edu/provost/teachingandlearning
  https://www.unlv.edu/provost/transparency

Incomplete Grades
The grade of I - Incomplete - can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student's control, and acceptable to the instructor and the Department, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

UNLV Writing Center
One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student's Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: http://writingcenter.unlv.edu/

UNLV Library Resources
Students may consult https://www.library.unlv.edu/consultation with a librarian on research needs. For this class, the subject librarian is Sue Wainscott. See: https://www.library.unlv.edu/contact/librarians_by_subject for more information. UNLV Libraries provides resources to support students' access to information. Discovery, access, and use of information are vital skills for academic work and for successful post-college life. Access library resources and ask questions at https://www.library.unlv.edu.

Rebelmail
By policy, faculty and staff should e-mail students' Rebelmail accounts only. Rebelmail is UNLV's official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students' e-mail prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu.