# San José State University College of Science / Department of Computer Science Introduction to Machine Learning, CS171-04, Fall 2022

**Course and Contact Information** 

Instructor: Samuel Chen, Ph.D.

**Office Location: TBD** 

Email: sam.chen@susj.edu

Office Hours: Tuesday & Thursday 9pm - 10pm (appointment only)

Class Days/Time: Tuesday & Thursday 7:30 pm -8:45 pm

Classroom: Online

Prerequisites: CS 146 Data Structures and Algorithms

## Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on Canvas Leaning Management System course login website at http://sjsu.instructure.com. You are responsible for regularly checking with the messaging system through MySJSU at http://my.sjsu.edu (or other communication system as indicated by the instructor) to learn of any updates.

### **Course Description**

complete lifecycle of industry model development and validation processes. Prerequisite: CS 146 (with a grade of "C-" or better); or instructor consent.

## **Course Objectives**

- To introduce students how Machine Learning algorithms was used in industry.
- To teach students about data preparation, data cleansing, feature engineering, and how to handle missing data
- To teach students about model fitting metrics such as loss function/ residuals/error terms
- Introduce model fitting mechanism such as maximum likelihood and gradient decent
- To teach students about model performance measurement method such as back test and cross validation
- To teach students about classification algorithms e.g., logistic regression, decision tree, random forest
- To teach students about unsupervised algorithms e.g., k-mean clustering, KNN
- To teach students about predictive modeling algorithms e.g., linear regression, generalized linear model, and time series analysis
- To teach students about Regularization , Shrinkage Methods

Written homework and project reports are also a requirement of the course. Homework and project reports must be turned in on time; late homework and reports will NOT be accepted. Both homework and project assignments are due at the beginning of the class period on the announced due date.

#### In Class Exercises, Pop Quizzes/Questions and Discussion Forum for Participation Points

Unannounced in class exercises and pop questions may be given anytime during class. The purpose of in class exercises and pop questions is to encourage you to learn, study and review the concepts and materials presented/discussed in the lecture. These will generally be problems covered in the today's or previous lecture. Another way to earn participation points is to ask or answer other students question, or share you opinion in the discussion forum in Canvas.

### **Midterm and Final Exams**

Exams will consist of questions and problems aimed at assessing student mastery of course topics. Conceptual questions may be in the form of essay or multiple-choice format. Python code problems will require to type Python commands or select the right answer from multiple choice. Calculation problems will require you to use calculator to solve the problems of statistics or metrics that covered in class. *You can bring 1 letter size cheat sheh (for mfulth (for mfultg ()Op)(Op) EtualTet*(*Tm TT*).

## Available Software and useful Links

• Anaconda individual edition with Python 3.8, at https://www.anaconda.com/products/individual

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 All pop quizzes and exams will be proctored in this course through Respondus Monitor (with eye- tracking) and LockDown Browser. A webcam during exams is required. Please note it is the instructor's discretion to determine the method of proctoring. If

- Plagiarism/Cheating will not be tolerable: 'F' will be given to your FINAL COURSE GRADE and will be reported to the Department and the University. (please be noted: obtaining HW solutions from someone or giving/showing your HW solutions to someone is also treated as plagiarism/cheating.)
- Attendance is crucial to doing well on pop quizzes, assignments and examinations.
- Students are responsible for all materials distributed on Canvas and discussed in the class.
  Attendance: University policy F69-24 at http://www.sjsu.edu/ senate/docs/F69-24.pdf states that students should attend all meetings of their classes, not only because they are responsible for

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13	11/15	Final Project Guideline and Discussion
13	11/17	Unsupervised Algorithm - Clustering, KMean
14	11/22	KNN (HW4 Due)
14	11/24	Thanksgiving
15	11/29	Final Project Presentation
15	12/1	Final Project Presentation
16	12/6	Final Project Presentation
16	12/8	Final Exam