

STOR565: Machine Learning

Lecture 1: Overview

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UNC Chapel Hill

Jan 9, 2025

Outline

- Course information
- Tutorial 1: Python Basics using Colab

Course Information - Instructor

Instructor:

- Name: Yao Li
- Email: yaoli@email.unc.edu
- Office Hours: W 2PM-3PM, Hanes 334
- Course Website: <https://liyao880.github.io/stor565/>

Course Information - Tutorial

Tutorial

- Length: 30 - 40 min
- Topic: homework review and coding
- Time: Check the [Course Website](#)

Don't forget to bring your laptop on tutorial day.

Course Information - Assistant

TA:

- Name: Shaleni Kovach
- Email: shaleni@email.unc.edu
- Office Hours:
 - M 2PM-3PM, Hanes B5
 - F 10AM-11AM, [Zoom](#)

Grader:

- Name: TBA
- Email: TBA

Course Information - General

- No chatting during the lecture
- There is no textbook. Most of the topics are covered in
 - “An Introduction to Statistical Learning” (by James, Witten, Hastie, and Tibshirani.)
 - “Elements of Statistical Learning” (by Hastie, Tibshirani, and Friedman)

Topics

- Machine Learning Foundation

Overview

Review (Probability, Optimization, etc)

Linear Regression and Extension

Classification Models

Dimension Reduction

Clustering Methods

Tree-based Models

Matrix Factorization

- Advanced topics:

Neural Networks for CV

Neural Networks for NLP

Generative Models

Grading

- Homework (40%)
 - 5 homeworks (tentative)
- Final project (40%)
- Quiz and Participation (20%)

A	94 to 100	B	83 to 86.99	C	73 to 76.99	D	60 to 66.99
A-	90 to 93.99	B-	80 to 82.99	C-	70 to 72.99	F	0 to 59.99
B+	87 to 89.99	C+	77 to 79.99	D+	67 to 69.99		

Homework

- Around 5 - 7 homeworks will be assigned and will be collected via Canvas.
- Late homework will receive a grade of 0.
- You are allowed to work with other students but identical solutions will receive 0.
- Questions regarding HW grade should be addressed to the grader.

Participation

Quiz:

- There will be around 8-10 in-class quizzes.
- The final participation score would be $20 \times n \times \frac{m}{n}$
- n : the total number of quiz questions.
- m : total score you earned from these quiz questions.

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Extra credit: Class participation

- Answer questions in class
- k : the total number of questions you attempted during class.
- Adjusted final participation score: $\max\left(20, 20 \times \frac{m+k}{n}\right)$

Extra Credit Opportunity

Paper Presentation

- Score: 5 credits out of the total grades.
- Check the paper list on the course website.
- Around 4 papers in total.
- Discuss with the instructor.
- Each student can only do it once. Each paper can have at most two presenters.

Final project

- Group of 5 students.
- Form the group before January 22nd, and sign up using the shared [spreadsheet](#).
- Four parts:
 - ① Project Proposal (10%)
 - ② Project Presentation (30%)
 - ③ Project Paper (50%)
 - ④ Peer score (10%)

Final project - Topics

- Work on some research projects:
 - Solve an interesting problem or new problem with existing method
 - Develop a new algorithm
 - Compare state-of-the-art algorithms on some problems
 - ...
- I'll recommend some topics in the course.

Final project - Proposal

Project Proposal:

- Page limit: 2 (excluding reference)
- Latex template at [link](#)
- Contains:
 - 1 Problem Description
 - 2 Related Works
 - 3 Proposed Work
 - 4 Evaluation Metric
 - 5 Reference
- Project Proposal Meeting

Final project - Presentation

Project Presentation:

- All groups will present their final projects in the last three lectures.
- Every group member is expected to contribute to the presentation and join the Q&A session.
- The length of the presentation depends on the number of groups (10–20min).

Final project - Paper

Project Paper:

- Each team must submit a written project report:
 - Introduction
 - Related Works
 - Proposed Work
 - Experiments
 - Conclusion and Future Directions
- It is required to use the [NeurIPS Latex style files](#) and submit the report in PDF format.
- The report should be less than 8 pages (excluding references).

Final project - Peer Review

Peer score:

- Each group member should score every person in their group on a continuous scale from 0 (Bad) to 10 (Good).
- Deadline: same as the project paper
- Survey: [link](#)
- 2 points penalty for late or no submission

Final project - Important Dates

Important Dates:

Part	Description	Method of Submission	Due Date (Time)
P1	Project Proposal	Canvas	Feb. 16 (11:59PM)
	Proposal Meeting	Hanes 334	Feb. 18 / Feb. 20 (9:30AM-10:45AM)
P2	Presentation Slides	Canvas	Before the Presentation Day
	Final Presentation	Class	Last three lectures
P3	Final Report	Canvas	Apr. 27 (11:59PM)
P4	Peer Score	Google Survey	Apr. 27 (11:59PM)

Thank you