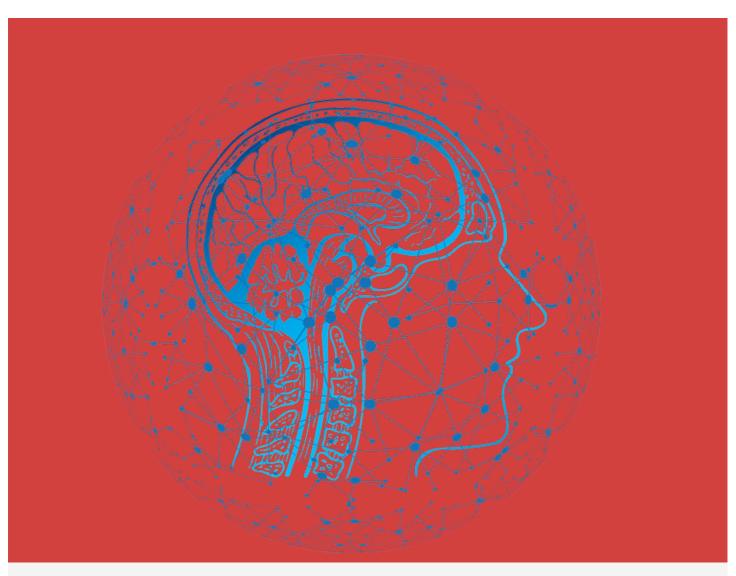


### **CLASS OVERVIEW**

This course covers the fundamentals of deep neural networks at the graduate level. We introduce multi-layer perceptrons, back-propagation, and automatic differentiation. We will also discuss Convolutional Neural Networks, Recurrent Neural Networks, Transformers, and advanced topics in deep learning. The course will be a combination of lectures, presentations, and machine learning competitions.

- Lecturer: Qi (Rose) Yu (<u>roseyu@ucsd.edu</u>)
- *TA*:
  - Rui (Ray) Wang (<u>ruw020@ucsd.edu</u>)
  - Abhishek Tanpure (<u>atanpure@ucsd.edu</u>)
  - Panini Bhamidipati (abhamidipati@ucsd.edu)
- Lecture: 3:30 pm 4:50 pm PT, Tuesday, Thursday, CENTR 212
- Discussion: 12:00 pm 12:50 pm PT, Friday, CSB 002
- Office Hour:
  - Rose Yu | 5:00 pm 6:00 pm | Monday | EBU3B 3208
  - Rui (Ray) Wang | 9:00 am 10:00 am | Friday | B240A CSE Basement
  - Abhishek Tanpure | 5:00 pm 6:00 pm | Tuesday | B270A CSE Basement
  - Panini Bhamidipati | 5:00 pm 6:00 pm | Thursday | B270A CSE Basement
- Canvas: <a href="https://canvas.ucsd.edu/courses/45077">https://canvas.ucsd.edu/courses/45077</a>
- Piazza: https://piazza.com/ucsd/spring2023/cse251b



# **SYLLABUS**

Week 1 (April 3rd)	Introduction and Background	HW 1 release
Week 2 (Apr 10th)	Multi-layer perceptron	
Week 3 (Apr 17th)	Automatic Differentiation	HW 2 release
Week 4 (Apr 24th)	Convolutional neural network	
Week 5 (May 1st)	Recurrent neural network	HW3 release
Week 6 (May 8th)	Mid-term week	
Week 7 (May 15th)	Deep learning implementation	HW 4 release
Week 8 (May 22nd)	Attention and Transformer	Milestone report due
Week 9 (May 29th)	Graph neural network	

### **LECTURES**

#### Lecture Slides

#### Latex Template

- Homework Template
- Presentation Template
- Project Template

### CLASS ASSESSMENT

- 40 % homework (10% x 4)
- 35 % Kaggle competition
  - 5 % milestone report
  - 10 % final report
  - 10 % final presentation
  - 10 % competition ranking
- 25 % Mid-term exam

## **RESOURCES**

#### Kaggle Competition

Competition Page

#### **Reading Materials**

- [1] Machine Learning Crash Course
- [2] <u>Deep Learning Book</u>
- [3] <u>Learning from Data</u>

#### Other Tutorials

- Deep Generative Models.
- Generative Adversarial Networks.
- <u>Dive Deep Into Deep Learning</u>

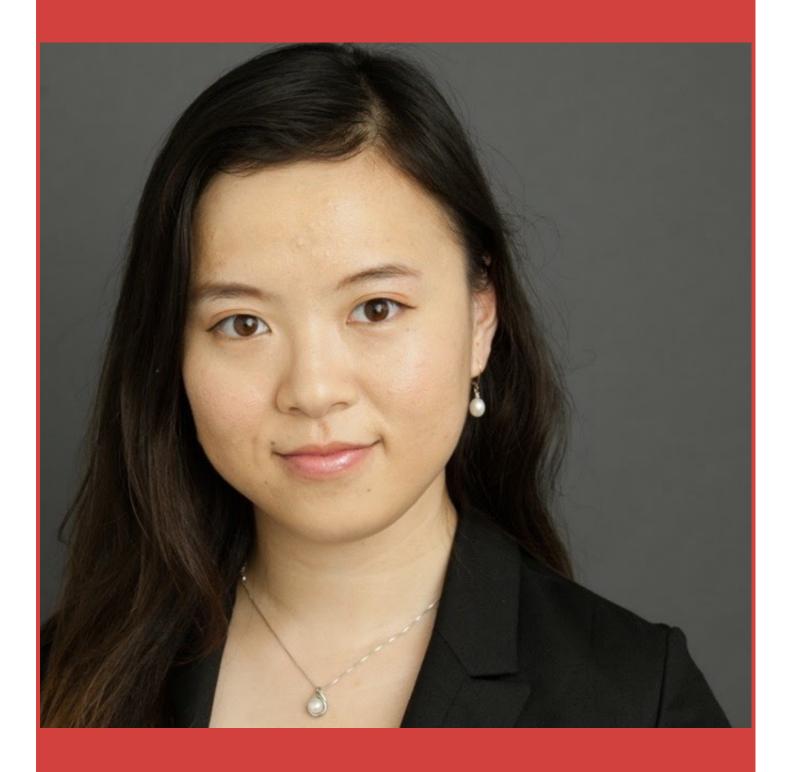


### **Q**: What are the pre-requisites?

- (MATH 31BH or MATH 20C) and (ECON 120A or ECE 109 or CSE 103 or MATH 181A or MATH 183, MATH 170A);
- Proficiency in Python.

#### Q: Can first year undergraduates take this course?

- Restricted to students with sophomore, junior, or senior standing within the CS25, CS26, CS27, CS28, EC26, and DS25 majors.
- All other students will be allowed as space permits.



#### About me

My Chinese name is Qi Yu. That is also the instructor's name in the registrar's office. I publish under the name Rose Yu. You can learn more about my research at <u>my personal website</u>.

Rose Yu roseyu@eng.ucsd.edu