

# Welcome

# EE2211 Introduction to Machine Learning

## Lec 0



Wang Xinchao



Yueming Jin

# Welcome to EE2211!

- Team

- Lecturers

- Xinchao Wang (Lec 1-3, Lec 10-12)
    - Yueming Jin (Lec 4-9)

- Python Tutor

- Liu Songhua (Week 1-2)

- Graduate Assistants (i.e., Graders)

- Yu Runpeng
    - Ai Yihao
    - Guo Jingyuan
    - Shen Qiuhong
    - Wang Shizun
    - Yan Weilong

- Support and Coordinators

- Celine Cheong

- Tutors

- Goh Shu Ting
    - Hou Linxin
    - Prof Mehul Motani
    - Neil Banerjee
    - Qingqing Ni
    - Sangit Sasidhar
    - Yutong Du
    - CHAN EE HONG
    - ERIK MAURITS SPAANS
    - JEROME TEO SZE YONG
    - PANG KAI LIN
    - TEOH JING YANG
    - YU JUEZHAO
    - ZHU SHAOHAN STEVEN

# Course Contents

- Introduction and Preliminaries (Xinchao)
  - Introduction
  - Data Engineering
  - Introduction to Probability and Statistics
- Fundamental Machine Learning Algorithms I (Yueming)
  - Systems of linear equations
  - Least squares, Linear regression
  - Ridge regression, Polynomial regression
- Fundamental Machine Learning Algorithms II (Yueming)
  - Over-fitting, bias/variance trade-off
  - Optimization, Gradient descent
  - Decision Trees, Random Forest
- Performance and More Algorithms (Xinchao)
  - Performance Issues
  - K-means Clustering
  - Neural Networks

# Logistics

- **Schedule**
  - **12 Weeks Lectures**, starting from Week 1
  - **12 Weeks Tutorials**, starting from Week 2
  - **2 Programming Tutorials** (optional and highly recommended)
    - Week 1 – 2, Friday
    - Right after the lecture (i.e., 2 to 3 PM)
  - **1 Mid-term Quiz** (using ExamSoft)
    - Tentatively held offline on 9 March 2024 (Recess Week)
    - Content up to Week 5 (inclusive)
  - **1 Briefing Session on ExamSoft**
    - Tentative on Week 3, exact time to be confirmed with CIT Staff
  - **1 Final Exam** (using ExamSoft)
    - Held on 3-May-2024
  - **3 Assignments**
    - Assignment 1: released on Week 4, due on Week 6 (tentatively)
    - Assignment 2: released on Week 6, due on Week 9 (tentatively)
    - Assignment 3: released on Week 9, due on Week 13 (tentatively)

# Logistics

- 3 Assignments (36%) + Tutorial Attendance (4%)
- 1 Mid-term (30%)
- 1 Final Exam (30%)
  
- Held online:
  - Lectures
  
- Held offline (in classrooms):
  - Tutorials
  
- Videos of lectures are made available after lectures.

# Responsibility of Team Members

- All members, together, strive to serve you well! However, we have a huge class of >600 students!!
- The lecturers will spare no effort in helping you, but it wouldn't be possible for us two to answer \*all\* questions from 600 students on time...
- Therefore, to get the most prompt and high-quality answers to your questions, when you have:
  - Logistic-related Questions, go to Lecturers
  - Lecture-related Questions, go to Lecturers
  - Fundamental Python Questions (Week 1-2), go to GAs
  - Tutorial-related Questions, go to Tutors
  - Assignment-related Questions, go to GAs
- We will also actively use **Canvas Discussion** to answer questions so that everyone benefits! Feel free to post questions there!

# Reference Books

- [Book1] Andriy Burkov, “The Hundred-Page Machine Learning Book”, 2019.  
(read first, buy later: <http://themlbook.com/wiki/doku.php>)
- [Book2] Andreas C. Muller and Sarah Guido, “Introduction to Machine Learning with Python: A Guide for Data Scientists”, O’Reilly Media, Inc., 2017.
- [Book3] Jeff Leek, “The Elements of Data Analytic Style: A guide for people who want to analyze data”, Lean Publishing, 2015.
- [Book4] Vincent Tan, “Introduction to Machine Learning for EE2211”,  
<https://vyftan.github.io/papers/ee2211book.pdf>
  - Follows the flow of the lectures and contains many additional “theory” practice problems (no solutions yet)



# Something to Note...

- The topic of machine learning, per se, is a mixture of concepts and applications.
- **Lectures** are treated as the “**theory**” part and **tutorials** as the “**practice**” part.
- Hence,
  - During lecture, we focus on learning concepts
    - Unfortunately, we won’t be able to spend much time showing code since we will only have 2 hours, especially for Lecs 1-3 and Lecs 10-12 (but don’t worry, there won’t be coding questions for these two parts either. ;-) )
  - During tutorials, we focus on reviewing concepts and coding
    - The tutors will discuss coding and some concepts with you
    - You may somehow treat tutorial as a small lecture for coding as well...
- We understand that our students come from different departments all across CDE
  - Don’t worry too much if you consider your coding skills to be not perfect, you will have chances to learn and improve in EE2211. ;-)
  - The whole team is here to offer help whenever your need!
  - In past semesters, very majority of students end up doing great!

# Something to Note...

- In a couple of week, we might slightly go beyond 1 hour and 40 mins
  - We will need to explain the concepts clearly
  - Feel free to leave if you have to at 1hour 35 mins; the lectures are recorded.

**We are here to help!**  
**Let us know your questions!**