

ECE 884 Deep Learning

Lecture 1: Introduction

01/19/2021

Self introduction

- Dr. Mi Zhang, Associate Professor of Electrical and Computer Engineering
- Research Areas:
 - AI + Mobile Computing, Internet of Things == Artificial Intelligent of Things
 - AI for Healthcare Applications

Your turn

- Major?
- Master or PhD Student? Which Year?
- If PhD, what is your research area?
- Are you familiar with linear algebra, probability, and statistics?
- Do you have the basic knowledge in machine learning or pattern recognition?
- Do you have a solid programming background? If so, in which language?
- Do you have any experience in building systems? (e.g., mobile apps, ARMs, robots, distributed systems)
- What do you want to learn from this course?

Class Info

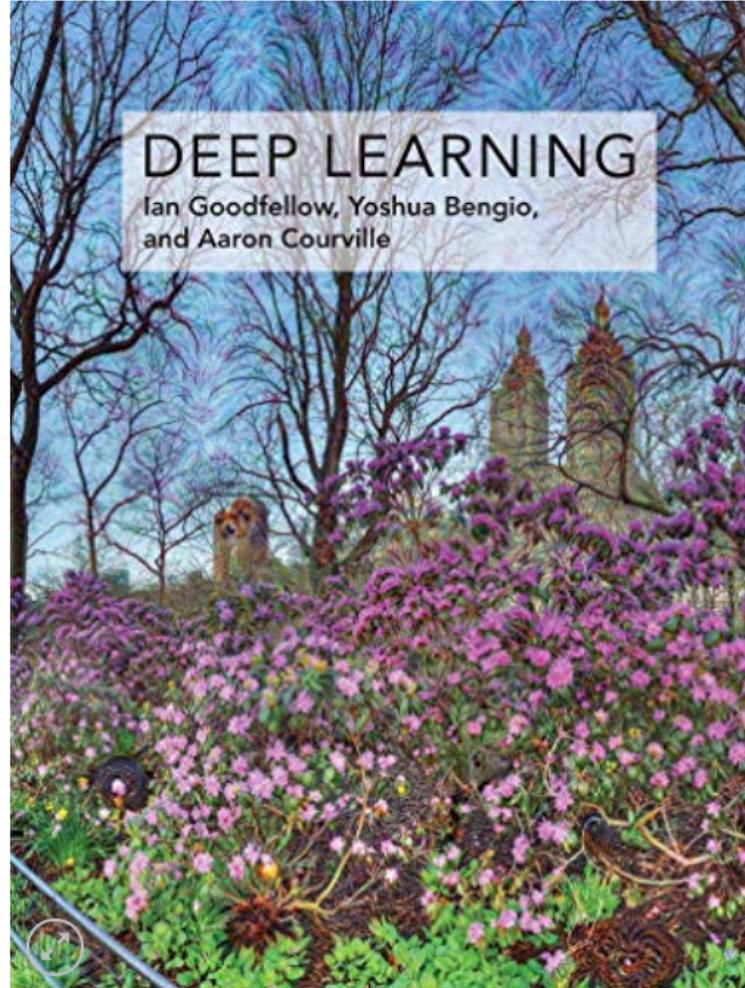
- Tu Th: 10:20 am to 11:40 pm
- Zoom: <https://msu.zoom.us/j/96813594261> (Passcode: 679307)
- Course Website: Desire2Learn (D2L) website (<https://d2l.msu.edu/>)
- Office Hours: Tu Th: 11:40 am - 12:30 pm or by appointment
- Slack workspace: MSU-ECE884-2021: https://join.slack.com/t/msu-ece884-2021/shared_invite/zt-l1ug32li-ewx2T5ysbascUqgbMyRldQ
- Google Sheet:
<https://docs.google.com/spreadsheets/d/1MQbhnmQP8OXbRV3xLxOmwMliPqqzXu76z5P2gXIj3E/edit?usp=sharing>

Prerequisites

- Familiar with linear algebra, probability, and statistics.
- Have the basic knowledge in machine learning or pattern recognition.
- Solid in programming skills and python.

Optional Textbook

- Deep Learning
- An MIT Press book
- Ian Goodfellow and Yoshua Bengio and Aaron Courville



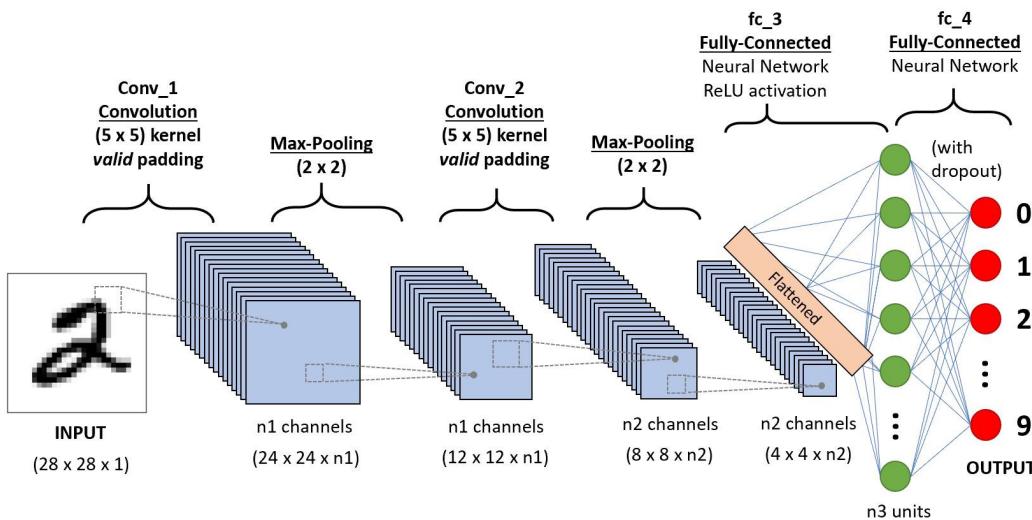
Programming Platform

- Google Colab:
<https://colab.research.google.com/notebooks/intro.ipynb>



What this course is about

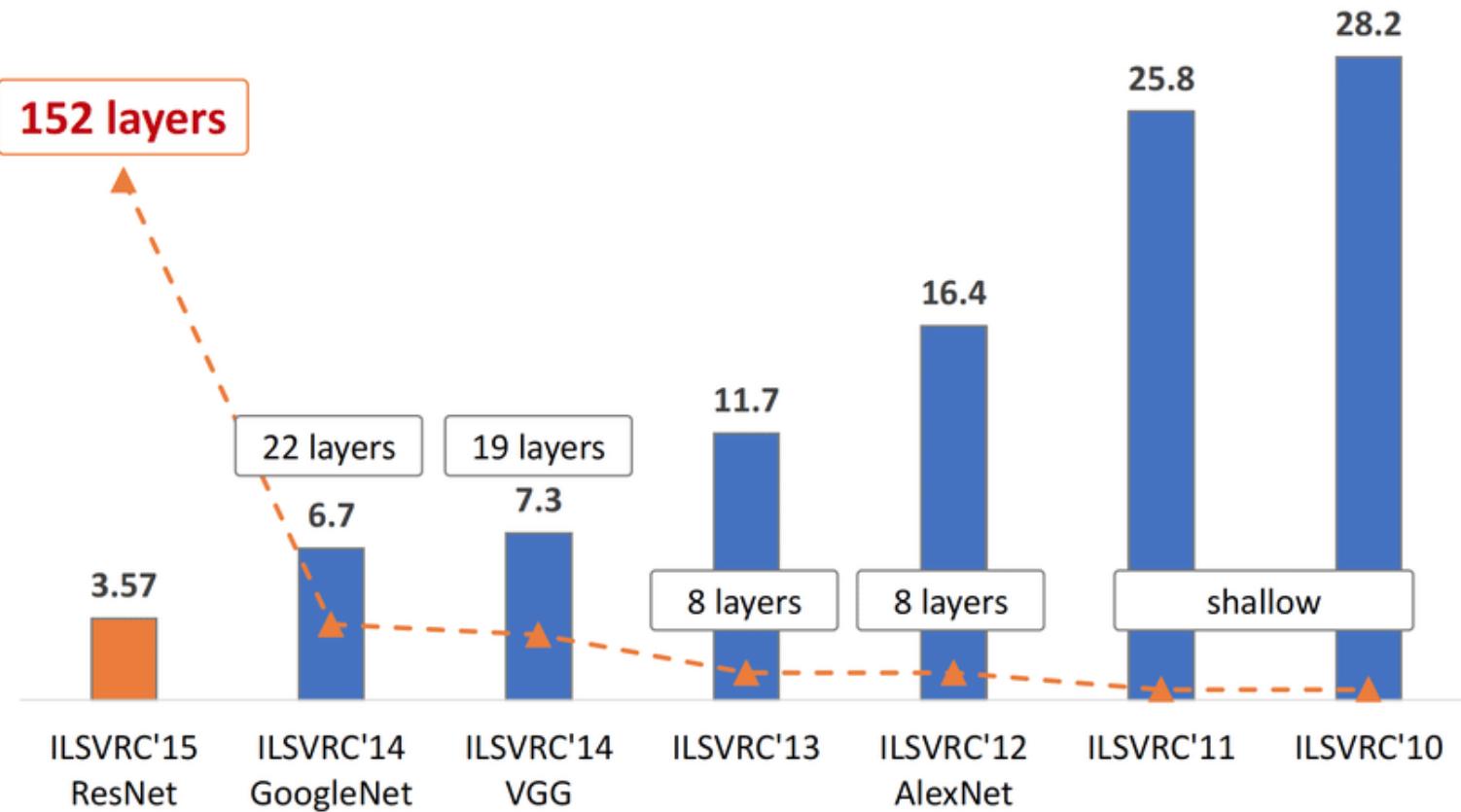
Deep Neural Networks



Deep Learning Systems and Applications

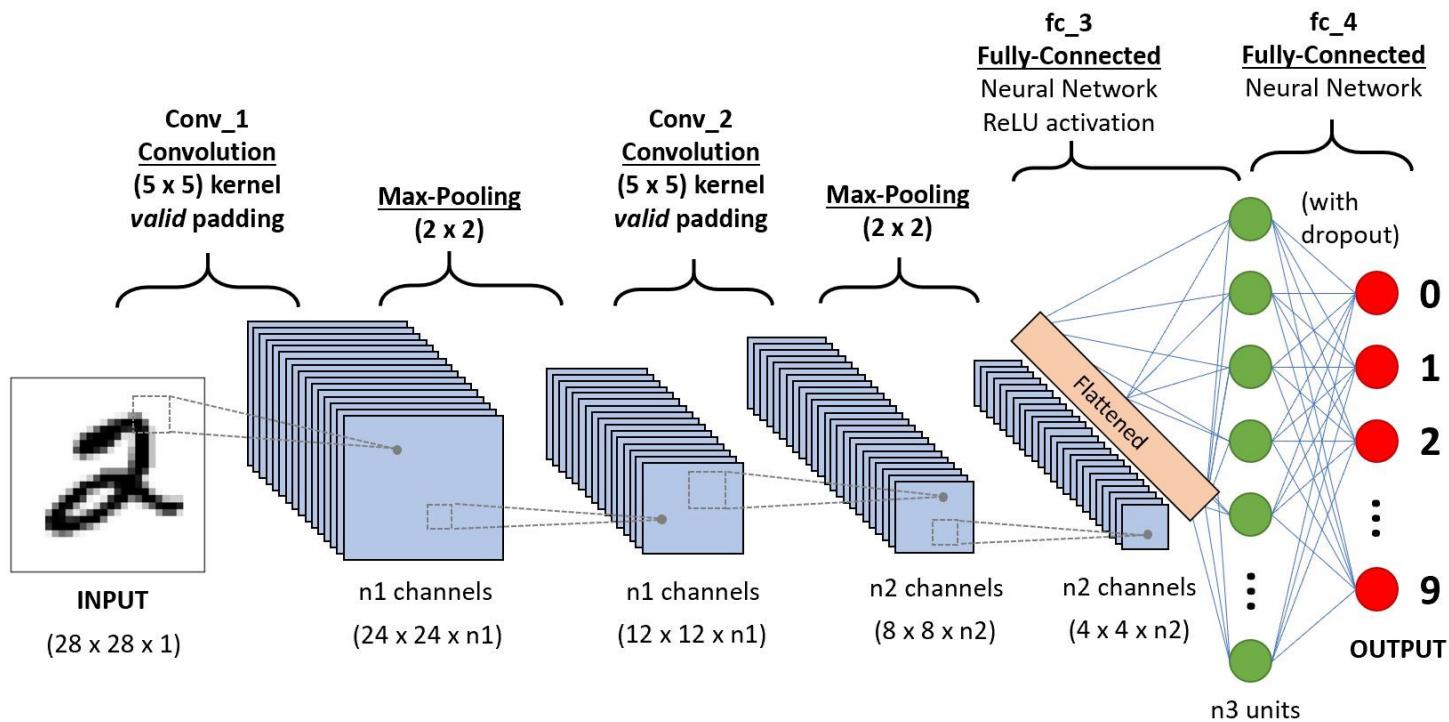


Section 1: Basics of Deep Neural Networks



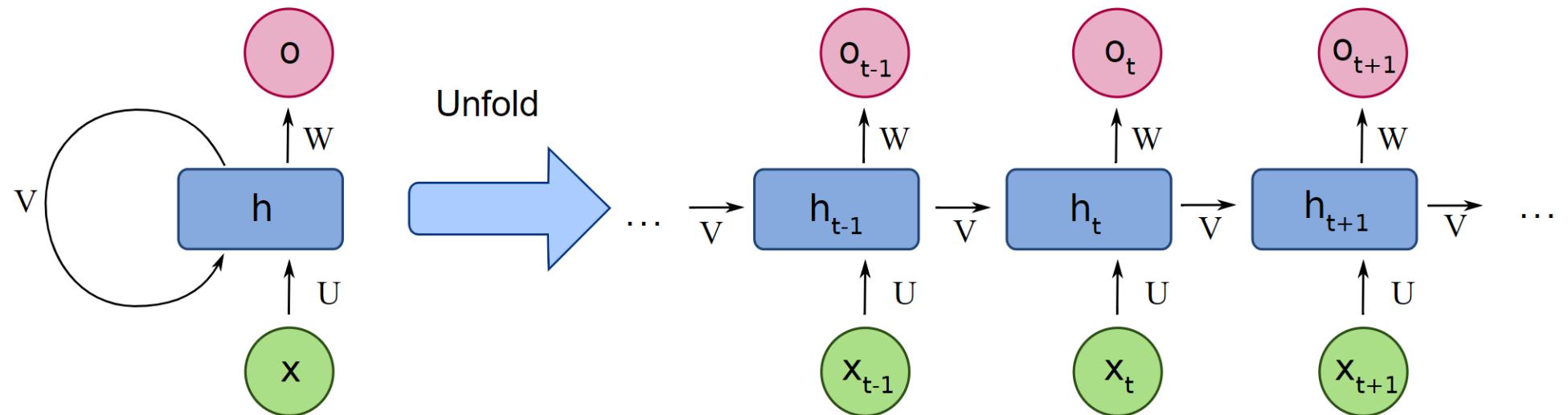
Section 1: Basics of Deep Neural Networks

Convolutional Neural Networks



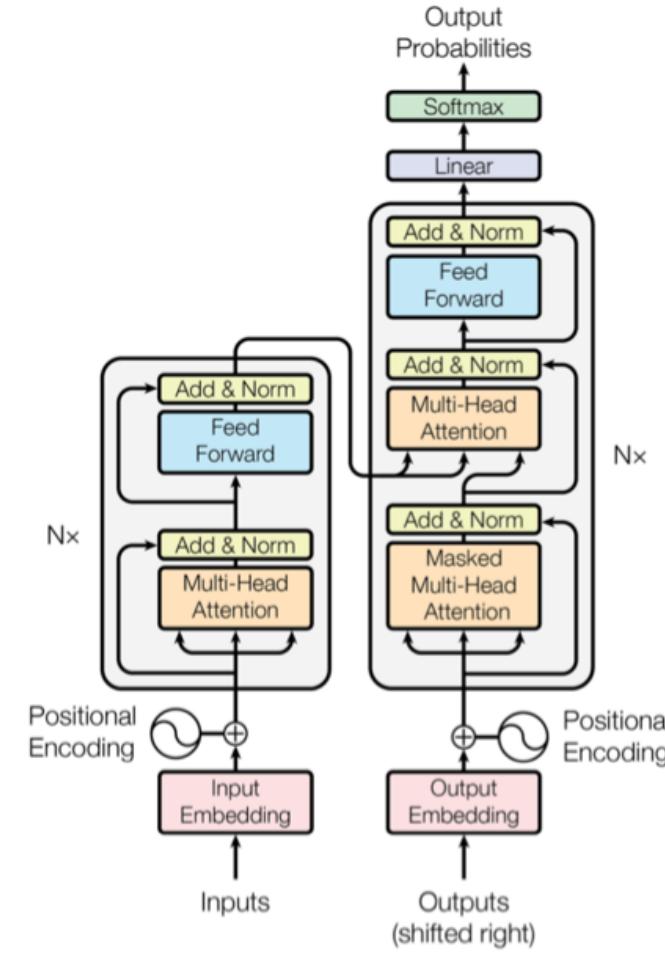
Section 1: Basics of Deep Neural Networks

Recurrent Neural Networks



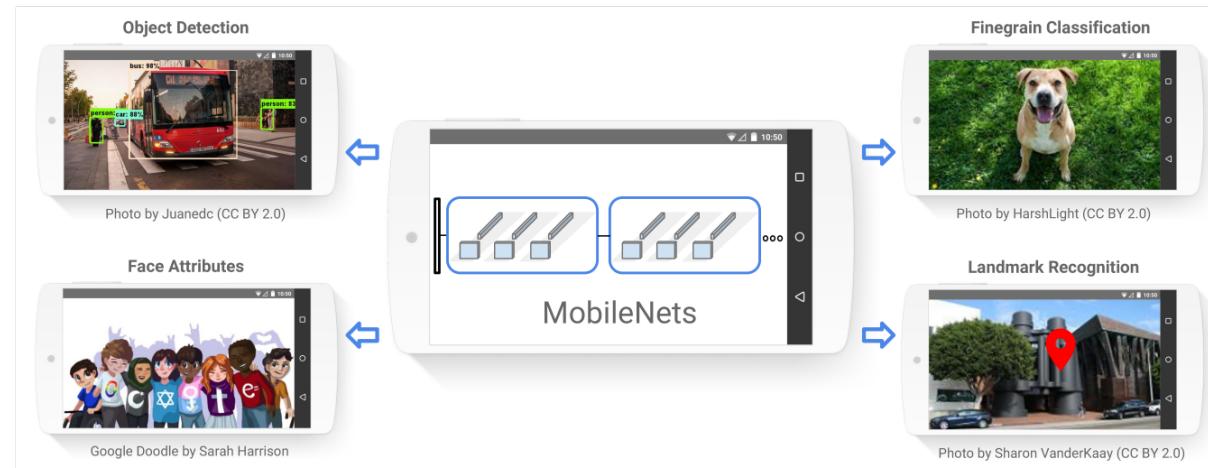
Section 1: Basics of Deep Neural Networks

Transformers



Section 1: Basics of Deep Neural Networks

MobileNet



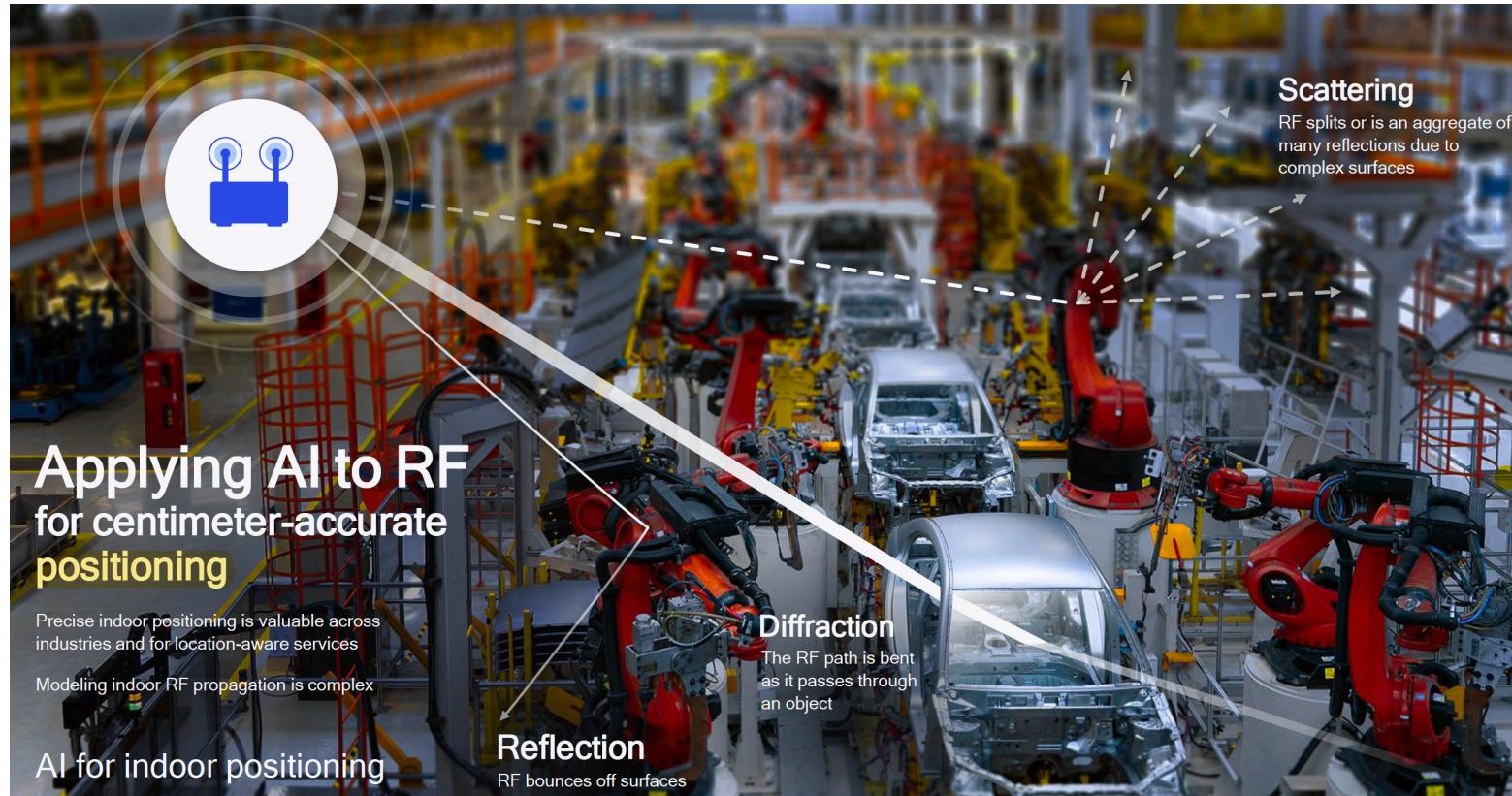
Section 2: Deep Learning Systems and Applications

Video Analytics Systems



Section 2: Deep Learning Systems and Applications

Wireless Systems



Assignments

- Paper reading reports and presentations (40%) - Individual
 - Paper reports
 - Paper presentations and discussions
- Semester long project (60%) - Group
 - Select one application area / topic
 - Propose an idea on what you want to do
 - Final presentation and demo

What this course will **NOT** teach you

- Not teaching you linear algebra, probability, and statistics.
- Not teaching you how to program with Python.
- Not teaching you how to debug (We do **NOT** have a TA).
 - You have to learn how to use Google Colab / TensorFlow, how to code in Python, how to debug your code by yourselves.