ECE421 Week 1

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ECE421 Course Info

https://docs.google.com/spreadsheets/d/e/2PACX-1vRUK3Fm0IFLHNxh1yKRssrEUolh-COzyp-3zGsovXtdKv_cQR90TpA91kpnkGCS6wzxgqjYWkL5aI1f/pubhtml

MAKE SURE TO USE OFFICE HOURS!!

- ☐ **FRIDAY NIGHT Participation Form**
- ☐ **WEEKEND Asyn Videos**
- ☐ **MONDAY 1PM Vote for questions**
- ☐ **TUESDAY Lecture**
- ☐ **THURSDAY NIGHT Assignment**

Assignment INFO: **BOTH CROWDMARK AND QUERCUS**

What is Machine Learning

Programs a single algorithm that learns from data:

$def \quad learning\_algorithm(X, Y)$

$\quad returnalgorithm$

$\quad algorith(x) = y$

Why use machine learning

For many problems, its hard to program the correct behavior by hand: facial and speech rocogonization. Also, the algorithm may need to change throughout time (adapt). And we might believe such algorithm that performs better than human.

Types of Machine Learning

1. Supervised learning: with labeled input and output. The goal is to predict correct label.

2. Reinforcement learning: reward signal. Algorithm detect how to maximize reward signal when performing a task.

3. Unsupervised learning: unlabled data. Typically used for looking for special patterns in data.

A typical ML pipeline

1. Input representation: what each dimension of x contains
2. Model hypothesis class: $y = g(wx + b)$
3. Training algorithm to find parameters (w and b)
4. Test this model