Week 1.1 Introduction

What is Machine Learning?

> A computer program is said to learn from experience E with respect to some task T and some performance measure P, if its performance T, as measured by P, improves with experience E.

- Example (email program):
  - Task T: classifying emails as spam or not spam
  - Experience E: watching you label emails as spam or not spam
  - Performance P: the number (or fraction) of emails correctly classified as spam/not spam

Supervised Learning

- "right answers" are given
- **Regression:** Predict continuous valued output
- **Classification:** Discrete valued output
- Example:
  - Predict how may of items will sell over the next 3 months ==> regression
  - Decide if has been hacked/compromised for each customer account ==> classification

Unsupervised Learning (Clustering)

- There is no feedback based on the prediction results
- Cocktail party problem
- Language: **Octave**