**Intro:**

Machine learning is growing out of AI

New capability for computers

Ex:

* Database mining -- large datasets from growth of automation/web e.g.; web click data, medical records, biology, engineering
* Application can't program by hand -- autonomous helicoper, handwriting recognition, NLP (learning by text parsing), computer vision (learn by parsing images)
* Self-customizing programs -- Amazon, netflix recommendation
* Understanding human learning (brain, real AI)

**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 on T, as measured by P, improves with experience E"

SPAM mail filter is one of the basic example, in this case computer program learns from the action we take on the mail (if we check it as a spam) so program learns from      our selection and next time try to put in the spam

**Machine learning algorithms:**

* Supervised learning
* unsupervised learning

others:

* Reinforcement learning
* recommender systems

**Supervised learning**

In supervised learning "right answers" given

*housing price prediction*

this is a kind of **regression problem**. Regression means we get continuous output values. we can predict continuous value output (price)

*breast-cancer study*

This kind of problems comes under **classification problem**. We get a discrete value output.

**Unsupervised learning**