LECTURE 1

MACHINE LEARNING BASICS

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Basic Concepts

01. What is ML?

02. What is Learning?
    - Supervised
    - Unsupervised

03. What is Regression?

04. What is Classification?

Machine Learning

01. Limitations of Explicit Programming
    - Spam Filter : Many Rules
    - Automatic Driving : Too Many Rules

02. Machine Learning

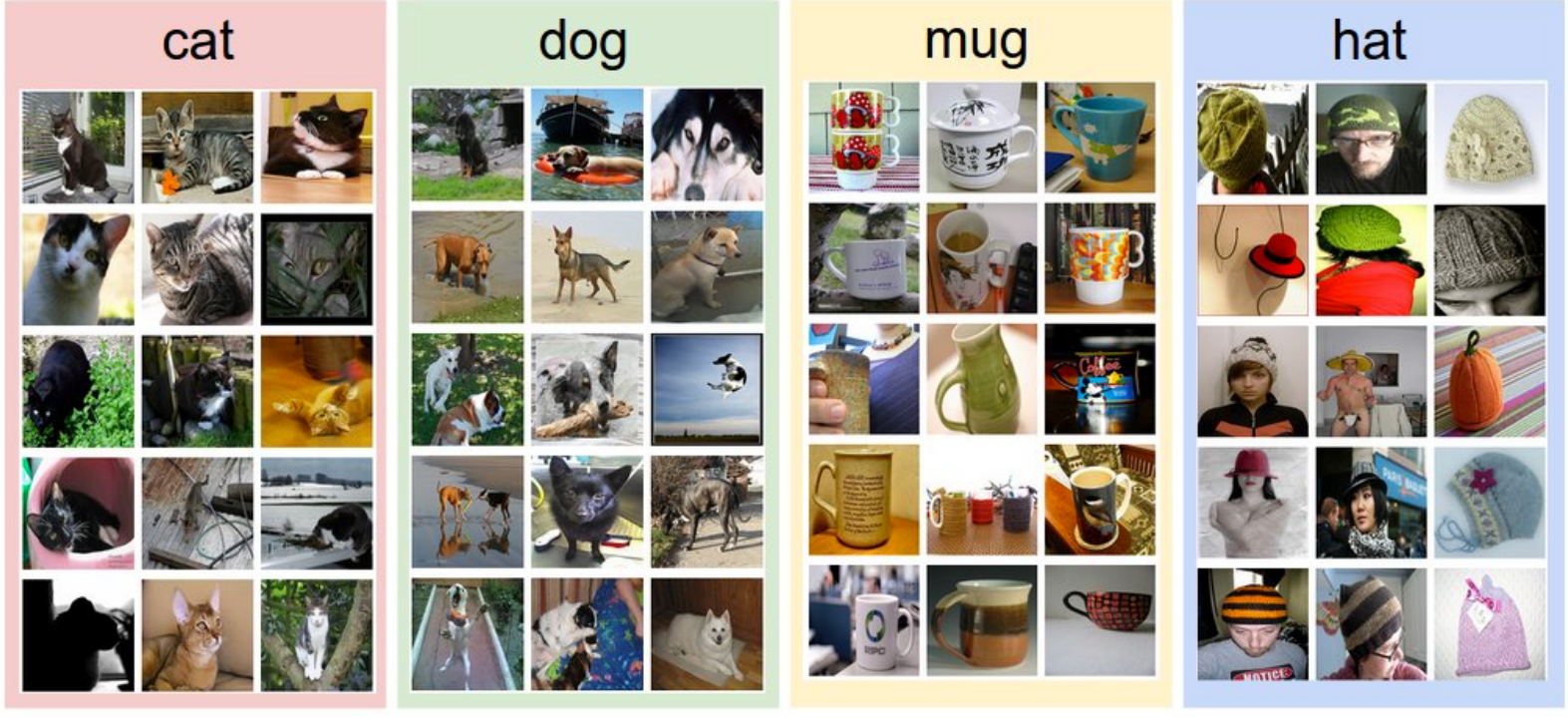
"Field of study that gives computers the ability to learn without being explicitly programmed" Arthur Samuel (1959)

Supervised/Unsupervised Learning

01. Supervised Learning
    - Learning with Labeled Examples - Training Set

Supervised Learning

An Example Training Set for Four Visual Categories.



http://cs231n.github.io/classification/

Supervised/Unsupervised Learning

01. Supervised Learning
    - Learning with Labeled Examples

02. Unsupervised Learning : Un-labeled Data
    - Google News Grouping
    - Word Clustering

Supervised Learning

Most Common Problem Type in ML

- **Image Labeling :** Learning from Tagged Images
- **Email Spam Filter :** Learning from Labeled (Spam or Ham) Email
- **Predicting Exam Score :** Learning from Previous Exam Score and Time Spent

Training Data Set

AlphaGo

Types of Supervised Learning

01. Predicting Final Exam Score Based on Time Spent
    - Regression

02. Pass/non-pass Based on Time Spent
    - Binary Classification

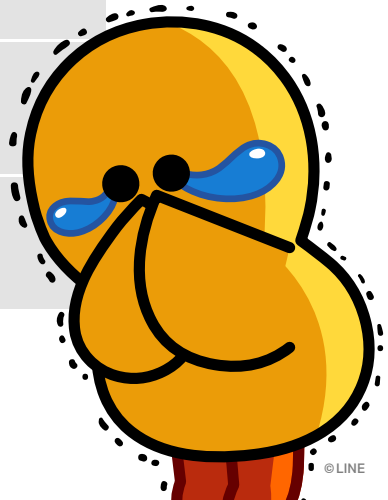
03. Letter Grade (A, B, C, D and F) Based on Time Spent
    - Multi-label Classification

Predicting Final Exam Score Based on Time Spent

X (hours)	Y (score)
10	90
9	80
3	50
2	30

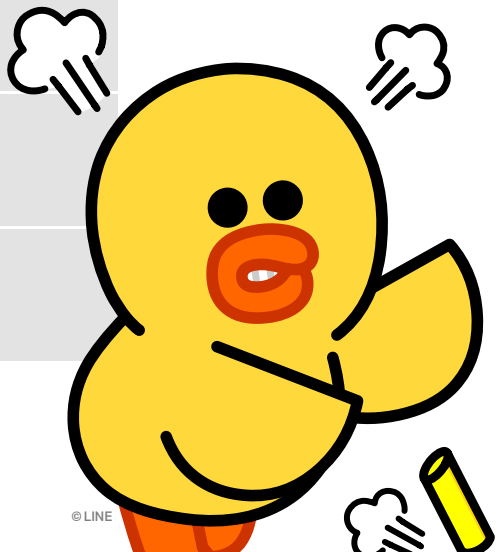
Pass/non-pass Based on Time Spent

X (hours)	Y (pass/fail)
10	P
9	P
3	F
2	F



Letter Grade (A, B, ...) Based on Time Spent

X (hours)	Y (grade)
10	A
9	B
3	D
2	F



NEXT LECTURE

LINEAR REGRESSION