

Machine Learning

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Content

1. The Big Picture

2. Supervised Learning

- Linear Regression, Logistic Regression, Support Vector Machines, Trees, Random Forests, Boosting, Artificial Neural Networks

3. Unsupervised Learning

- Principal Component Analysis, K-means, Mean Shift

Unsupervised Learning

- Principal Component Analysis (PCA)
- **Clustering**
 - K-Means
 - Mean-Shift

K-Means

- Pick a number of clusters **k**
- Initialize **centroids** randomly
- Problem of **local optima**
 - Run K-means a lot of times
- **Sensible** to **initial** conditions
- Have to **specify k** !

Repeat until convergence:

Assign each example to the cluster of the **nearest** centroid
Compute the **mean** in each cluster
Put the mean as the **new centroid**

