Welcome to the Machine Learning Course

This course provides a thorough grounding in a wide range of machine learning methods, for classification, regression, conditional probability estimation, clustering, and dimensionality reduction.

* Taxonomy of prediction problems
* Nearest neighbor methods and families of distance functions
* Generalization: what it means; overfitting; selecting parameters using cross-validation
* Generative modeling for classification, especially using the multivariate Gaussian
* Linear regression and its variants
* Logistic regression
* Optimization: deriving stochastic gradient descent algorithms and testing convexity
* Linear classification using the support vector machine
* Nonlinear modeling using basis expansion and kernel methods
* Decision trees, boosting, and random forests
* Methods for flat and hierarchical clustering
* Principal component analysis
* Autoencoders, distributed representations, and deep learning

Lecture-1: Prediction Problem: Machine Learning Basics with the K-Nearest Neighbors Algorithm

Link1: <https://towardsdatascience.com/machine-learning-basics-with-the-k-nearest-neighbors-algorithm-6a6e71d01761>

Link2: <https://people.revoledu.com/kardi/tutorial/KNN/KNN_Numerical-example.html>

Lecture-2: overfitting; selecting parameters using cross-validation

https://d2l.ai/chapter\_multilayer-perceptrons/underfit-overfit.html#training-error-and-generalization-error