Introduction to Machine Learning

Course Syllabus

Days	What You Will Learn	Topics
Day 0	Getting started	Machine Learning, Classifications of ML problems (Supervised, Reinforcement and Unsupervised) with examples
Day 1	Tools for Machine Learning	Python, Conda, JupyterLab, Python libraries for ML(SciPy, NumPy, Matplotlib, Pandas), Data visualization, Linear Algebra for ML
Day 2	Linear regression	Cost function, Model and hypotheses representation, Gradient Descent, Feature scaling and Mean normalization
Day 3	Logistic regression	Classification and decision boundary, Sigmoid function, Multiclass classification, Bias and Variance, Regularization
Day 4	More Supervised Algorithms	Linear Discriminant Analysis, K-Nearest Neighbors, Decision Trees
Day 5	Performance measurement	Learning curves, Training/Test/Cross Validation sets, Error Metrics (Precision, Recall, F1 Score), Confusion matrix, K-fold improvement
Day 6	Support Vector Machines	Large Margin classifiers, Kernels (Gaussian and Linear), SVM software packages
Day 7	Unsupervised Learning Algorithms	K-means clustering, Dimensionality reduction and Principal Component Analysis
Day 8	Anomaly Detection	Density estimation, Gaussian distribution, Multivariate Gaussian distribution
Day 9	Recommender systems	Content-based recommendations, Collaborative filtering, Predicting content ratings
Day 10	Hands on project	Applied Machine Learning
Day 11	What to do next?	Advice for applying Machine Learning, Deep Learning and Neural Networks, Project ideas and future plans