



Syllabus of Machine Learning Level 1

Mathematics for Data Science

Linear algebra

Matrices

Inverse Matrix

Determinant, Trace

Linear Dependence and Spans

Norms, Symmetric and Orthogonal Matrices

Eigenvalues and Eigenvectors

Eigendecomposition, SVD

Calculus

Critical Points

Integral

Function of many variables

Directional derivative

Gradient, Hessian, Jacobian

Probability

Sample space and Events

Conditional Probability

Independence of events

Bayes's Rule Random
Variables Distribution
Function Probability
Density Function
Expectation, Variance
Random vector
Covariance, Correlation

Machine Learning

Developer tools (terminal, git, visual studio code, anaconda)
Data Analysis tools (numpy, pandas)
Data Visualization tools (matplotlib, plotly)

Linear regression
Model evaluation
methods
Cross validation
Feature scaling
Ridge regression
Regression models for count data classification

Logistic regression
SVM
Soft and hard margin SVM

Decision Trees
Random forest
Ensemble methods

Introduction to Neural Networks
Introduction to Unsupervised Learning

