**Machine Learning**

**Index**

1. Introduction to Machine Learnig
2. History and evolution
3. Artificial intelligence Evolution
4. Why Machine Learning
5. Where Machine Learning is used in Real World
6. Different Forms
   1. Statistics
   2. Data Mining
   3. Data Analytics
   4. Data Science
7. Regression
8. Algorithm
9. Classifications
10. Machine Learning Categories
    1. Supervised Learning
    2. Unsupervised Learning
    3. semi supervised Learning
    4. Reinforcement
11. Learning System Model
12. Training and Testing
13. Performance
14. Machine Learning Structure
15. What are we Seeking
    1. Underfitting
    2. Overfitting
    3. Bestfitting
16. Supervised Learning -Regression
    1. Correlation Analysis
    2. Fitting Slope
    3. Polynomial Regression
    4. Multivariate Regression
    5. Multicollinearity and Variation Factor
    6. Interpreting the OLS Regression Results
    7. Regression Diagnosis
    8. Regularization
    9. Non Linear Regression
17. Supervised Learning – Classification
    1. Logistic Regression
    2. Evaluating a Classification Model Performance
    3. ROC Curve
    4. Fitting Line
    5. Stochastic Gradient Descent
    6. Regularization
    7. Multiclass Logistic Regression
    8. Generalized Linear Models
    9. Supervised Learning – Process Flow
    10. Decision Trees
    11. Support Vector Machine (SVM)
    12. k Nearest Neighbors (kNN)
    13. Time-Series Forecasting
18. Unsupervised Learning Process Flow
    1. Clustering
    2. K-means
    3. Finding Value of k
    4. Hierarchical Clustering
    5. Principal Component Analysis (PCA
19. Semi-Supervised Learning
20. Reinforcement Learning
21. Active Learning
22. Passive learning
23. Scales of Measurement
    1. Nominal Scale of Measurement
    2. Ordinal Scale of Measurement
    3. Interval Scale of Measurement
    4. Ratio Scale of Measurement
24. Frame Work for Building Machine Learning System
    1. Knowledge Discovery Databases (KDD)
    2. Cross-Industry Standard Process for Data Mining
    3. SEMMA (Sample, Explore, Modify, Model, Assess)
    4. KDD vs. CRISP-DM vs. SEMMA
25. Exploratory Data Analysis (EDA)
    1. Univariate Analysis
    2. Multivariate Analysis
26. Machine Learning Python Packages
    1. Numpy
    2. Pandas
    3. Matplotlib