



## I. **Scope covered**

Tentative topics are the following

### 1. **Introduction to Machine Learning and AI**

- a. Basic concepts
- b. Real-world applications
- c. Differentiating “Buzzwords”: data science, AI, Machine Learning and Deep Learning
- d. Focus of the workshop: Machine Learning foundations

### 2. **Types of learning**

- a. Supervised Learning
- b. Un-supervised Learning
- c. Semi-supervised Learning
- d. Reinforcement Learning

### 3. **Supervised learning algorithms**

- a. Classification – Naïve Bayes, Logistic regression, SVM
- b. Regression – Linear regression, KNN, Decision Tree Regression

### 4. **Un-supervised learning algorithms**

- a. Dimensionality Reduction – PCA
- b. Clustering – K-Means

### 5. **Neural Networks and Deep Learning**

- a. Perceptron model and MLP
- b. Deep Learning Models – CNN

### 6. **Large Scale Machine Learning in Practice**

- a. Learning from large datasets – Online learning and SGD (Stochastic Gradient Descend)
- b. Data Parallelism & Map-Reduce
- c. Frameworks and Libraries: Apache Spark MLlib, sckit-learn