Machine Learning Workshop

Agenda:

Basic theory on ML

- Introduction to Machine Learning(ML)
- Why ML is growing in importance ?
- How ML is similar to human cognitive perception ?
- Basic terms in ML and their meaning
- Supervised classification as a class of ML algorithms
- Introduction to Scatter plots
- Decision surfaces
- Terrain classifier problem as a classic example of supervised algorithms
- Introduction to Naive Bayes and Bayes theorem
- Using Naive Bayes to build a model on terrain classifier data set [Hands On]
- ML usage in software industry
- Further learning

Hands on using Python and SciKit-Learn

- Introduction and installation of SciKit-Learn
- Creating a terrain classifier Data Set
- Visualizing the Data Set as a graph
- Splitting Data Set into training data and test data
- Using Naive bayes classifier to build the trained model

- Printing the accuracy of the trained ML model
- Predicting the result for test data
- Visualizing the trained model and the decision surface
- Effect of different parameters in SciKit learn API's

If time permits will touch upon

- Outliers in data sets
- Support vector machines as another ML algorithm
  - Hyperplanes
  - Condition on hyperplanes
  - Tricky data sets in SVM's
  - Features in SVM's
  - Non linear data in SVM's
  - Overfitting

Pre-requisites and System requirements:

- Basics of python programming
- Ubuntu systems with the following:
  - Python (preferably 2.7.x) [mostly present by default]
  - Pip
  - NumPy & SciPy
  - SciKit-Learn