

## Introduction to Machine Learning

Workshop Title:	<b>Machine Learning De-Mystified</b>
Workshop Description:	The program is designed to give participants a hands-on introduction to machine learning. They will be exposed to the concepts of machine learning including the different types of machine learning, the underlying statistical models. They will also learn applications of machine learning, advantages and limitations
Skills/Knowledge:	Candidates will gain firsthand knowledge about different types of machine learning models, how they work, pros and cons and use the same to generate models using tools such as Weka.
Training Outcomes:	By end of this session, participants will be aware about... <ol style="list-style-type: none"><li>1. What machine learning is</li><li>2. How is a machine learning project implemented</li><li>3. How to select appropriate machine learning algorithms</li><li>4. How to identify machine learning opportunities in their environment</li><li>5. Usage of Weka (tool for machine learning)</li></ol>
Duration:	The workshop is of 3 days duration.
Prerequisites:	Curious to know what machine learning is. Curiosity and Enthusiasm is most important pre-requisite. Need not be exposed to statistics, probability theories
Session Plan:	Refer to page 2.0
Lab Activity:	We can design hands-on based on customer needs. For e.g. sentiment analysis using streaming data or predictive maintenance using logs etc.
Evaluations:	None.
Follow-up:	Based on participant needs, in-depth introduction to machine learning which will involve statistics and probability theories at the core.

Table of Content:

Topic / Sub topic Name	Duration in Hours
<b>What is machine learning (ML)</b>	2
a. ML the ROI layer in hadoop stack	
b. What does ML do	
c. When is ML useful technique	
d. Advantages of ML (predictive and prescriptive analytics)	
<b>Types of machine learning approaches</b>	1
a. Supervised Machine Learning and corresponding algorithms	
b. Unsupervised Machine Learning and corresponding algorithms	
<b>Preparing for ML projects</b>	1
a. Defining the objectives	
b. Identifying the required data items	
c. Identifying sources of data	
d. Data cleansing	
e. Preparing data for ML	
<b>Representing real world in mathematical space</b>	3
a. Dimensions and attributes	
c. Identifying appropriate dimensions for ML models	
d. Dimensionality reduction	
<b>Statistical models for ML, what are they &amp; different types (Conceptual)</b>	8
a. Naive Bayesian classifiers	
b. Regression	
c. Linear models	
d. Neural networks	
e. Decision trees	
f. Cluster analysis	
g. When to use which model	
<b>Applying ML techniques (Tailored to customer requirements) For e.g.</b>	3
a. Sentiment analysis	
b. Web log analysis	
c. Market Basket analysis	
<b>Assessing model quality</b>	4
a. concepts of testing and validating models	
b. Over fitting and under fitting	
c. Model generalization	
<b>Introduction to Weka</b>	2