
The Valley Bootcamp

Machine Learning

Overview

The Valley Bootcamp is a coding boot camp based out of Bangalore. We excel in providing high quality, hands on training by industry experts. Our students undergo rigorous training in software development and advanced topics. We try to bridge the growing gap between graduation and employment.

Goals

- Get used to Python development setup Python, Pip, Virtualenv, PyCharm
- Learn about data structures, functions, packages
- Learn how to use Git and GitHub
- Conquer the objectives of OOPS concepts
- Learn various ML techniques and apply them on real world data sets
- Perform evaluation of models and compare different techniques

Syllabus

Week	Topic
Week 1	Setup/Getting Started/Python Install Ubuntu / VirtualBox Explore Linux commands and shell scripting Python datatypes and basic syntax
Week 2	Python Loops, Iterations, Conditionals, Logic, Simple Programs, OOP
Week 3	Machine Learning Unsupervised, Supervised Clustering, Classification, Regression Jupyter Notebook pandas, numpy, ggplot, sklearn Reading data Project (1) Data visualization
Week 4	Clustering <ul style="list-style-type: none">• K-means clustering• DB Scan clustering• Hierarchical clustering Regression <ul style="list-style-type: none">• Simple Linear regression• Multiple Linear regression• Polynomial regression
Week 5	Classification <ul style="list-style-type: none">• KNN• Decision Trees• Random Forests• Logistic regression Project (2) Stock Market Clustering Project (3) Board Game Reviews Prediction

Week 6

Classification

- Naive Bayes
- SVM
- Kernel SVM

Model evaluation Ensemble learning
Dimensionality reduction
PCA Anomaly detection

Project (4) Credit Card Fraud Detection

Project (5) Breast Cancer detection algorithm

Week 7

Introduction to Deep Learning
Artificial Neural Networks
Perceptron, Optimization, Loss function

Project (5) Linear regression using Perceptron (TensorFlow)

Week 8

Introduction to image pre-processing,
Convolutions, CNNs, Transfer Learning
Object detection, Siamese networks,
Triplet loss, facial recognition

Project (6) Image processing with MNIST dataset (TensorFlow)

Project (7) Object Detection Model for self-driving cars

Project (8) Facial Recognition application

Week 9

Introduction to RNNs, LSTMs, new models,
Word2Vec, Video Processing, Text based models
Trigger Word Detection

Project (9) IMDB review classification with RNNs (TensorFlow)

Week 10

Introduction to Big Data at scale
Intro to Spark, Hadoop, AWS
Capstone Project, Scope and Future paths

Project (10) Predict Sales on the Rossman Dataset using a Neural Network
