

**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

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**Syllabus**

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| --- | --- | --- | --- |
| **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 | |  |
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| Week 4 | **Clustering** | |  |
|  | ● | K-means clustering | |
|  | ● | DB Scan clustering | |
|  | ● | Hierarchical clustering | |
|  | **Regression** | |  |
|  | ● | Simple Linear regression | |
|  | ● | Multiple Linear regression | |
|  | ● | Polynomial regression | |
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Week 5 **Classification**

* KNN
* Decision Trees
* Random Forests
* Logistic regression

**Project (2)** Stock Market Clustering

**Project (3)** Board Game Reviews Prediction



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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



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