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# The Valley Bootcamp

## Python + Machine Learning

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### Instructor

Sunil D S

Principal Architect, Niki.ai

Ex IBM Research, New York

## 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
- Understand MVC and become proficient in databases and cloud computing
- Build REST APIs using Flask
- Build front-end using Templates
- Use MongoDB for persistence
- Deploy on EC2 for the whole world to use your web application
- Cloud technologies - EC2, DynamoDB
- Learn various ML techniques and apply them on real world data sets
- Perform evaluation of models and compare different techniques

## Instructor

Sunil D S

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# Syllabus

Week	Topic
Week 1	Install Ubuntu / VirtualBox Explore Linux commands and shell scripting Install Python, PIP, Virtualenv, Git Setup Slack, GitHub, Google Drive
Week 2	Data structures in Python Functions, Classes (OOPS), Packages in Python Introduction to MVC architecture HTTP, REST Explore HTTP requests using Google Chrome
Week 3	Create REST APIs using Flask Use Postman to test your APIs Add HTML forms to interact with REST APIs Use Flask Templates
Week 4	Capstone Project - building "Mini Amazon"
Week 5	Capstone Project - building "Mini Amazon"
Week 6	Cloud Computing Create AWS account Deploy "Mini Amazon" on EC2 Use DynamoDB for persistence
Week 7	Interview preparation - Data structures and Algorithms
Week 8	Intro to ML Unsupervised, Supervised Clustering, Classification, Regression Jupyter Notebook pandas, numpy, ggplot, sklearn Reading data Data visualization
Week 9	Clustering <ul style="list-style-type: none"><li>• K-means clustering</li><li>• DB Scan clustering</li><li>• Hierarchical clustering</li></ul> Regression <ul style="list-style-type: none"><li>• Simple Linear regression</li><li>• Multiple Linear regression</li><li>• Polynomial regression</li></ul>

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Week 10    Classification

- K-NN
- Decision Trees
- Random Forests
- Logistic regression

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Week 11    Classification

- Naive Bayes
- SVM
- Kernel SVM

Model evaluation  
Ensemble learning  
Dimensionality reduction - PCA

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Week 12    Artificial Neural Networks  
Perceptron, Optimization, Loss function  
Deep Learning  
**Project** - Linear regression using Perceptron (TensorFlow)  
**Project** - Image processing with MNIST dataset (TensorFlow)