Full Stack Data Science Bootcamp

Instructors:

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Curriculum:

Python Basics

- Python Introduction, Installation and Setup Preview
- Python Basics & Conditionals Preview
- Conditionals & Loops
- Working with Loops
- Working with Strings & Lists
- List manipulation
- Tuple, Set & Dictionary
- Working with Functions
- Functions, Generators & File Handling
- Logging and debugging
- Modules and Exception

OOPS

- OOPs, Classes & Objects Preview
- OOPS, Abstraction & Inheritance Preview
- Inheritance, Polymorphism & Intro to Databases

Databases

- Working with SQL & Python Preview
- SQL Continued, MongoDB installation & Working with MongoDB
- Working with Cassandra & Python

Pandas

- Introduction to Pandas Preview

- Pandas Basics

- Pandas Data Manipulation

- Working with Pandas

Numpy

- Introduction to Numpy Preview

Matplotlib

- Working with Pandas & Matplotlib

Plotly

- Working with Plotly

Seaborn

- Working with Seaborn

EDA

- EDA

Web Frameworks

- Rest API, Flask & Working with Postman Preview

- Working with Flask & Debugging Calculator Application

Python Projects with Deployment

- Project Discussion Review Scraper with Deployment on Heroku, AWS and Azure Preview

- Project Discussion Advance Review Scraper

Stats

- Different types of Statistics Preview

- Population vs Sample Preview

- Mean, Median and Mode

- Variance, Standard Deviation

- Sample Variance why n-1
- Standard Deviation
- Variables
- Random Variables
- Percentiles & quartiles
- 5 number summary
- Histograms
- Gaussian - Normal distribution
- Standard Normal distribution
- Application Of Zscore
- Basics Of Probability
- Addition Rule In Probability
- Multiplication rule in probability
- Permutation
- Combination
- Log Normal Distribution
- Central Limit theorem
- Statistics - Left Skewed And Right Skewed Distribution And Relation With Mean, Median And Mode
- Covariance
- Pearson And Spearman Rank Correlation
- What is P Value
- What is Confidence Intervals
- How To Perform Hypothesis Testing - Confidence IntervalZ Test Statistics Derive Conclusion
- Hypothesis testing part 2
- Hypothesis testing part 3
- Finalizing statistics

Machine Learning

- Introduction to Machine learning Preview
- Linear Regression Preview
- Linear Regression live coding demonstration part-1
- Linear Regression live coding demonstration part-2
- Project Admission Prediction, Lasso, Ridge & Elastic Net
- Project deployment in Heroku, Azure & AWS
- Logistic Regression
- Logistic Regression implementation
- Decision Tree
- Decision Tree Part 2 , Ensemble Tech, Random Forest & Boosting
- KNN and SVM
- Decision Tree Practical Implementation
- Decision Tree Live Coding & Grid Search
- Grid Search, Bagging Classifier & Random Forest
- KNN, SVC, SVR & Stacking
- Clustering
- Clustering and PCA
- PCA practical, DBSCAN and Naive Bayes
- XG Boost, NLTK & TF-IDF

ML Projects

- Detailed Project Report explanation Preview
- Project :- Wafer Fault Detection Part 1 Preview
- Project :- Wafer Fault Detection Part 2
- Deployment in Heroku using docker and circleci

ML Project 1 :- Fault detection in wafers based on sensor data

- Introduction Preview
- The problem statement and Data Description
- The Application Flow
- Ingestion and Validation Part1
- Validation Part2
- DB Operations
- Data Preprocessing
- Clustering
- Model Selection and Tuning
- Prediction
- Deployment

ML Project 2 :- Cement Strength Prediction

- Introduction Preview
- The Problem Statement and Data Description
- The Application Flow
- Code Intro and Logging
- Validation and Transformation
- DB Operations
- Data Preprocessing
- Clustering
- Model Selection and Tuning
- Prediction
- Deployment

ML Project 3 :- Credit Card Defaulters

- Introduction Preview
- The Problem Statement and Data Description

- The Application Flow
- Code intro and Logging
- Validation and Transformation
- DB Operations
- Data Preprocessing
- Deployment

ML Project 4 :- Forest Cover

- Introduction Preview
- The Problem Statement and Data Description
- Application Flow
- Code intro and Logging
- Validation and Transformation
- DB Operations
- Data Preprocessing
- Clustering
- Model Selection and Tuning
- Prediction
- Deployment

ML Project 5 :- Income Prediction

- Introduction Preview
- The Problem Statement and Data Description
- The Application Flow
- Code intro and Logging
- Validation and Transformation
- DB Operations
- Data Preprocessing

- Clustering
- Model Selection and Tuning
- Prediction
- Deployment

ML Project 6 :- Insurance Fraud Detection

- Introduction Preview
- The Problem Statement and Data Description
- The Application Flow
- Code Intro and Logging
- Validation and Transformation
- DB Operations
- Data Preprocessing
- Clustering
- Model Selection and Tunning
- Prediction
- Deployment
- The Problem Statement and Data Description

ML Project 7 :- Mushroom Classification

- Introduction Preview
- The Application Flow
- Code Intro and Logging
- Validation and Transformation
- DB Operations
- Data Preprocessing
- Clustering
- Model Selection and Tuning

- Predictions

- Deployment

ML Project 8 :- Phishing Classifier

- Introduction Preview

- The Application Flow

- Code intro and Logging

- Validation and Transformation

- DB Operations

- Data Preprocessing

- Clustering

- Model Selection and Tuning

- Prediction

- Deployment

ML Project 9 :- Thyroid Detection

- Introduction Preview

- The Problem Statement and Data Description

- The Application Flow

- Code intro and Logging

- Vallidation and Transformation

- DB Operation

- Data Preprocessing

- Clustering

- Model Selection and Tuning

- Prediction

- Deployment

ML Project 10 :- Visibility Climate

- Introduction Preview

- The Problem Statement and Data Description

- The Application Flow

- Code intro and Logging

- Validations and Transformation

- DB Operations

- Data Preprocessing

- Clustering

- Model Selection and Tuning

- Prediction

- Deployment

Time Series

- Arima, Sarima, Auto Arima Preview

- Time series using RNN LSTM, Prediction of NIFTY stock price

- Time series using RNN LSTM, Prediction of NIFTY stock price

DL ANN - Introduction

- Introduction to Deep Learning Preview

- Importance of Deep learning Preview

- Why you should study Deep Learning? (Motivation)

- ANN vs BNN

- The first Artificial Neuron

DL ANN - Perceptron

- Overview of Perceptron Preview

- More about Perceptron

- Perceptron implementation using python - 1

- Perceptron implementation using python - 2

- Perceptron implementation using python - 3

- Perceptron implementation using python - 4

- Perceptron implementation using python - 5

- Perceptron implementation using python - 6

- Perceptron implementation using python - 7

- Python scripting & modular coding for Perceptron

- Python logging basics and docstrings

DL ANN -1

- Multilayer Perceptron Preview

- Forward propagation Preview

- Why we need Activation function?

- ANN implementation using tf.keras - 1

- ANN implementation using tf.keras - 2

- ANN implementation using tf.keras - 3

- ANN implementation using tf.keras - 4

- ANN with Callbacks | Tensorboard | Early Stopping | Model Checkpointing

DL ANN - 2

- Vector Preview

- Differentiation Preview

- Partial differentiation

- Maxima and minima concept

- Gradient descent basics

- In-depth understanding of Gradient descent with mathematical proof

DL ANN - 3

- Chain rule Preview

- Back propagation

DL ANN - 4

- General problems in training Neural Networks Preview
- Vanishing and Exploding gradients
- Activation Function Basics
- Weight initialization
- Activation Functions - 1
- Activation functions - 2
- Activation functions - 3
- Transfer learning
- Batch normalization -1
- Batch normalization -2
- Batch normalization -3

DL ANN - 5

- Introduction to fast optimizers Preview
- Momentum optimization
- NAG
- Loss functions
- Regularization
- Dropout

Computer Vision - Introduction

- Introduction to Course
- Course Overview
- Installing Anaconda, Pycharm & Postman Preview
- Working with Conda Envs Preview
- Pycharm Introduction
- Pycharm with Conda

- Pycharm with venv

- Pycharm with Pipenv

Computer Vision - CNN Foundations

- Why CNN? Building an Intution for CNN Preview

- CNN, Kernels, Channels, Feature Maps, Stride, Padding

- Receptive Fields, Image Output Dimensationality Calculations, MNIST Dataset Explorations with CNN

- MNIST CNN Intutiton, Tensorspace.js, CNN Explained, CIFAR 10 Dataset Explorations with CNN

- Dropout & Custom Image Classification Dog Cat Dataset

- Deployment in Heroku, AWS, Azure

Computer Vision - CNN Architectures

- LeNet-5 Preview

- LeNet-5 Practical

- AlexNet

- AlexNet Practical

- VGGNet

- VGG16 Practical

- Inception

- Inception Practical

- ResNet

- Resnet Practical

Computer Vision - Data Augmentation

- What is Data Augmentation? Preview

- Benefits of Data Augmentation

- Exploring Papers like RICAP, Random Erasing, Cutout

- Exploring Augmentor

- Exploring Roboflow

Computer Vision - Object Detection Basics

- What is Object Detection? Preview

- Competitions for Object Detection Preview

- Bounding Boxes

- Bounding Box Regression

- Intersection over Union (IoU)

- Precision & Recall

- What is Average Precision?

Computer Vision - Object Detection Architectures

- Object Detection Family Preview

- RCNN Preview

- RCNN Network Architecture

- Cons of RCNN

- FAST RCNN

- FAST RCNN Network Architecture

- Cons of FAST RCNN

- FASTER RCNN

- FASTER RCNN Network Architecture

- YOLO

- YOLO Architecture

- YOLO Limitations

Computer Vision - Practicals Object Detection using Tensorflow 1.x

- Introduction to TFOD1.x Preview

- Using Google Colab with Google Drive Preview

- Installation of Libraries in Colab

- TFOD1.x Setup in Colab

- Visiting the Model Zoo

- Inferencing in Colab

- Inferencing in Local

- Important Configurations Files

- Webcam Testing

Computer Vision - Practicals Training a Custom Cards Detector using Tensorflow1.x

- Custom Model Training in TFOD1.x Preview

- Our Custom Dataset

- Doing Annotations or labeling data

- Selection of Pretrained Model from Model Zoo

- Files Setup for Training

- Let's start Training in Colab

- Export Frozen Inference Graph

- Inferencing with our trained model in Colab

- Training in Local

- Inferencing with our trained model in Local

Computer Vision - Practicals Creating an Cards Detector Web App with TFOD1

- Code Understanding Preview

- WebApp Workflow

- Code Understanding

- Prediction with Postman

- Debugging our Application

Computer Vision - Practicals Object Detection using Tensorflow 2.x

- Introduction to TFOD2.x Preview

- Using the Default Colab Notebook Preview

- Google Colab & Drive Setup

- Visting TFOD2.x Model Garden

- Inference using Pretrained Model

- Inferencing in Local with a pretrained model

Computer Vision - Practicals Training a Custom Chess Piece Detector using Tensorflow2

- Custom Model training in TFOD2.x Preview

- Our Custom Dataset TF2 Preview

- File Setup for Training

- Let's start Training

- Let's start Training

- Stop Training or resume Training

- Evaluating the trained model

- Convert CKPT to Saved Model

- Inferencing using the Custom Trained Model in Colab

- Inferencing using the Custom Trained Model in Local PC

Computer Vision - Practicals Creating an Chess Piece Detector Web App with TFOD2

- Creating a Pycharm project & Environment Setup TF2 Preview

- Application Workflow

- Code understanding

- Testing our App with Postman

- Debugging our Application

Computer Vision - Practicals Object Detection using Detectron2

- Introduction to Detectron2 Preview

- Detectron2 Colab Setup

Computer Vision - Practicals Training a Custom Detector using Detectron2

- Detectron2 Custom Training Preview

- Exploring the Dataset

- Registering Dataset for Training

- Let's start Training

- Inferencing using the Custom Trained Model in Colab

- Evaluating the Model

Computer Vision - Practicals Creating an Custom Detector Web App with Detectron2

- Creating a Pycharm project & Environment Setup Detectron2 Preview

- Application Workflow

- Code understanding

- Testing our App with Postman

- Debugging our Application

Computer Vision - Practicals Object Detection using YoloV5

- Introduction to YoloV5 Preview

- YoloV5 Colab Setup

- Inferencing using Pre Trained Model

Computer Vision - Practicals Training a Custom Warehouse Apparel Detector using YoloV5

- Custom Training with YoloV5 Preview

- Exploring the Dataset

- Doing Annotations or labeling data

- Setting up Google Colab & Drive

- Let's start Training

- Inferencing using the Custom Trained Model in Colab

Computer Vision - Practicals Creating an Warehouse Apparel Detector Web App with YOLOV5

- Creating a Pycharm project & Environment Setup Yolo Preview

- Application Workflow

- Code understanding

- Testing our App with Postman

- Debugging our Application

Computer Vision - Image Segmentation

- Segmentation Introduction Preview

- From Bounding Box to Polygon Masks Preview

- What is Image Segmentation?

- Types of Segmentation

- MASKRCNN

- MASK RCNN Architecture

Computer Vision - MASK RCNN Practicals with TFOD

- Segmentation with TFOD1.x Preview

- Local Setup MASKRCNN

- Exploring the Dataset

- Data Annotation

- Model Selection

- Files Setup for Training

- Model Training

- Export Frozen Inference Graph

- Model Prediction

Computer Vision - MASKRCNN practical with Detectron2

- Introduction to Detectron2 Preview

- Data Preparation

- Setup for Training

- Let's start Training

- Inferencing using the Custom Trained Model in Colab

- Evaluating the Model

Computer Vision - Face Recognition Project

- Introduction to Project Preview

- Requirement Gathering

- Techstack Selection

- Project Installation

- Project Demo Preview

- Project Workflow

- Core Components of the Application

- Data Collection Module

- Generate Face Embeddings

- Training Face Recognition Module

- Prediction Pipeline

- Entry point of the Application

- Application Workflow

- Debugging our Application

Computer Vision - Object Tracking Project

- Object Tracking project

- Project Installation Tracking

- Project Demo Preview

- Code Understanding

Computer Vision - GANS

- Introduction to GANS Preview

- GAN Architecture

- GAN PRACTICALS Implementation

Computer Vision Project - Fashion Apparel Detection

- Introduction to Fashion Apparel Detection project Preview

- Requirement Gathering

- Techstack Selection

- Detailed Project Workflow

- Data Collection

- Data Preparation

- Data Augmentation

- Data Annotations

Computer Vision Project - Image TO Text OCR

- Introduction to Project Preview

- Project Installation OCR

- Project Demo

Computer Vision Project - Shredder System

- Introduction to Shredder Systems Preview

- Requirement Gathering

- Techstack Selection

- Data Collection

- Data Augmentation

- Data Preparation

- Data Annotation

- Model Selection from Zoo

- Model Training

Computer Vision Project - Automatic Number plate Recognition with TFOD1.x

- Introduction to ANPR Project Preview

- Requirement Gathering

- Tech Stack Selection

- Data Collection

- Data Augmentation

- Data Preparation

- Data Annotation

NLP Overview

- NLP Overview Preview

- NLP very basic

NLP Word Embeddings

- TFIDF Preview

- Word Embeddings Part-1

- Word Embeddings Part-2

NLP RNN

- RNN basic Preview

- RNN Implementation

NLP Project:- Text to Speech

- Introduction Preview

- Project Setup Text to Speech

- Project Demo

NLP Project:- Speech To Text

- Introduction Preview

- Project Setup Speech To Text

- Project Demo

NLP Project:- Spell Corrector

- Introduction Preview

- Project Setup Spell Corrector

- Project Demo

BigData - Introduction to Distributed Systems - Hadoop and MapReduce

- Big Data Engineering Introduction

BigData - Hive

- Apache hive Preview

BigData - NoSQL and Hbase

- Big Data HBase

- Hbase hands On

BigData - Spark

- Spark - Introduction Preview

- Big Data Engineering using PySpark- RDDs

- Spark hands on - RDD

- Big Data Engineering using PySpark- Shared Vars , Coalesce Repartition

- Spark hands on - Dataframe

BigData - Spark ML

- Big Data Engineering using PySpark- MLLib

- Spark hands On - Spark ML Lib

BigData - Spark Streaming

- Big Data Engineering using PySpark- Streaming Part 1 Preview

- Big Data Engineering using PySpark- Streaming Part 2

- Spark hands On - Spark Streaming

BigData - Kafka

- Big Data Kafka Preview

- Big Data Kafka Hands on

Basic Charts in Power BI

- 2.0 Basic Charts in Power BI Desktop Preview

- 2.1 Column Chart in Power BI Preview

- 2.2 Stacked Column Chart in Power BI

- 2.3 Pie Chart in Power BI

Working with Maps

- 3.1 Creating a Map in Power BI Preview

- 3.2 Filled Map

- 3.3 Map with Pie Chart

- 3.4 Formatting in Map

Tables and Matrix in Power BI

- 4.0 Table and Matrix in Power BI Preview

- 4.1 Creating a Table in Power BI

- 4.2 Formatting a Table

Introduction to tableau

- Tableau Introduction Preview

- Download and Install Tableau

- Tableau Vs Excel

SQL

- Database Architecture Preview

- Introduction to SQL Preview

- Constraints

- Joins

- Import Export

- Aggregate Functions

- Order by, Having & Limit Clause

- String Functions

- Datetime functions

- Nested Queries

- Views

Excel

- Introduction to Excel Preview

- Pre-defined functions Preview

- Datetime Funtions

- String functions

- Mathematical functions

- Lookup

Chatbot - Google Dialog Flow

- What is Chatbot? Preview

- Why Chatbot? Preview

- Types of Chatbot

- Use of Chatbot

- Examples of chatbot

- Dialogflow - Inline editor

- Create Intent and Entities

- Food order Intent

Interview Preparation - Interview Questions Discussion

- Interview Question Discussion Preview

- Resume Discussion

Interview Preparation - Project Discussion

- Vision-Based Attendance System Preview

Interview Preparation - Interview Questions Discussions

- Interview Question Discussion - 1 Preview

Interview Preparation - General Discussion

- Discussion Session - 1 Preview

- Discussion Session - 2