Full Stack Data Science Bootcamp

Instructors:

Sunny Bhaveen Chandra:

Sr. Data Scientist and lecturer at iNeuron.ai with working experience in computer vision, natural language processing and embedded systems. Hands-on experience leveraging machine learning, deep learning, transfer learning models to solve challenging business problems. Also, he has a vast interest in Robotics.

krish naik:

Having 10+ years of experience in Data Science and Analytics with product architecture design and delivery. Worked in various product and service based Company. Having an experience of 5+ years in educating people and helping them to make a career transition.

Sudhanshu Kumar:

Having 8+ years of experience in Big data, Data Science and Analytics with product architecture design and delivery. Worked in various product and service based Company. Having an experience of 5+ years in educating people and helping them to make a career transition.

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 1x

• 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 Tensorflow1x

• 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 2x

• 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 TFOD1x

• 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