

Full Stack Data Science Bootcamp

Instructors:

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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.

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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 Interval Z 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 Tuning
- 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
- Validation 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 Intuition for CNN Preview
- CNN, Kernels, Channels, Feature Maps, Stride, Padding
- Receptive Fields, Image Output Dimensionality Calculations, MNIST Dataset Explorations with CNN
- MNIST CNN Intuition, 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 Functions
- 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