



# ARTIFICIAL INTELLIGENCE & MACHINE LEARNING CERTIFICATION PROGRAM

Designed  
For Working Professionals

**IBM**  
**Certified**

250+ hrs of live  
classroom by  
industry expert

1 year of  
unlimited flexible  
classroom  
subscription

12+ real-time  
Projects &  
Capstone

Guaranteed job  
referrals in top  
companies

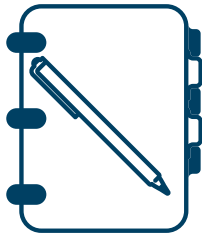
Classroom Training in Bangalore | Live Online Training | 8 Months Certification Program

@learnvista pvt. ltd.

# Course Highlights

**Learnbay** offers Industry Accredited Artificial Intelligence & ML Certification Program which is designed for working professionals. Course features **12+ real world industry projects** and 2 capstone project under the mentor-ship and guidance of Data Science and AI expert.

Course is especially designed for **working professionals** having **1+ years of experience** in any domain. Our course is best suited for professionals looking to change their current domain and start career in Artificial Intelligence.



## Live Sessions By Expert

- Classroom training in Bangalore
- Live Faculty led Online Training
- 250+ hrs of Interactive Classes



## Project Based Learning

- 12+ Real World Industry Project
- 2 Capstone Project
- Mentorship & Guidance By Expert



## One Year Flexible Subscription

- Flexibility to attend multiple batches from different trainers.
- Life time access to Recordings



## Special Support to Non Programmers

- Learn Python from scratch
- Special classes for Non programming background
- Real time use cases from multiple domain



## Global Certification in AI and ML

- Certified Data science and AI program.
- Industry Accredited Global Certification Course.
- In Collaboration with IBM.



## Job Assistance Program For Professionals

- Resume support from expert
- Interview prep session and Mock interview
- **Guaranteed job referrals** for professionals



**Top Rated Training Institute in India For Data Science And AI Certification**



**Become IBM Certified Data Science & AI Expert**



4.8 ★★★★★  
300+ user Review

**Quora**

Top Rated



4.9 ★★★★★

[Click to read reviews](#)

# Program Details

## Program Eligibility

### Work Experience :

- Working Professionals with 1+ year of experience in technical domain

### Academics :

- BE/B.Tech (*from any branch*) , BBA/MBA, MCA/M.Tech, B.Com, Graduation in Mathematics, Statistics, IT

## Who Should Apply

- Software developers/Programmers, Project Managers, Manual And Automation Test Engineer, Java and .net Developer, Informatica, Business Analyst.
- Database Admin, System Admin, Professionals from Sales, Marketing, Operations.
- SAP domain expert, Python , Embedded developer , Android/ios developer.
- Professionals from BFSI, Supply chain, Retail, healthcare, Pharma.
- Manufacturing, Mechanical, Electrical, Automobiles, Telecom domain. We have domain specific project from these sectors.
- Professionals planning for *Masters or higher education* in Artificial Intelligence

## About Instructors

Our instructors are **working professionals** graduated from premier institutes like BITS Pilani, IIT Roorkee and working in companies as **Artificial Intelligence, Data Scientist, Machine Learning expert**. **Instructors work in:**

## Course Prerequisite

There is **No Prerequisite** for this course as we cover programming and statistics from basics. We provide special classes & support for professionals from **non-programming/non-technical domain**.

[Click here to apply for profile review](#)

# Modules & Tools



PYTHON



STATISTICS



MACHINE  
LEARNING



GOOGLE CLOUD  
PLATFORM



GITHUB



Computer  
Vision



NATURAL  
LANGUAGE  
PROCESSING



DEEP LEARNING  
USING  
TENSORFLOW



TIME SERIES  
ANALYSIS &  
FORECASTING



## Projects will be from following domains

Banking



E- Commerce



Manufacturing



Healthcare



Aerospace



Finance



Insurance



Supplychain



Telecom



Retail

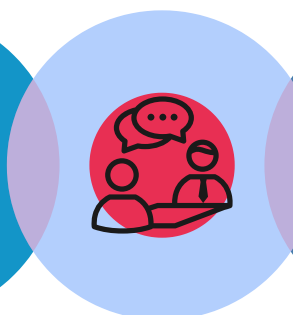


## Job Assistance Program

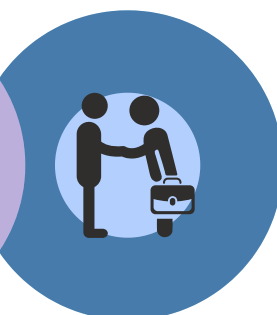
1. Resume Build-Up



2. Mock Interviews



3. Job Referrals





# Global Certification in AI & ML

Become an industry expert With **Artificial Intelligence Master's Program** in collaboration with IBM. Upon completion of this Program, you will **receive the certificates from IBM** which will help you to become industry ready.

Get **Industry-renowned global certification** in Artificial Intelligence. Our certification is **recognized globally** and industry wide in companies like JP Morgan, Morgan Stanley, Wells Fargo, Antuit , Genpact, Cognizant, Deloitte, E&Y, Tredence Analytics, Mu-sigma and other **top MNC's and Banking & Finance companies**.



This is to certify that

**Your Name**

has completed all courses in the learning path

**Artificial Intelligence Certification**

a learning path on [learnvista.skillsnetwork.site](https://learnvista.skillsnetwork.site)

Powered by **IBM Developer Skills Network**

Issued by

**Learnbay Data Science And AI**

**Artificial Intelligence Certification** consists of the following courses:

- Machine Learning with Python
- Deep Learning Fundamentals

Rav Ahuja  
Program Director  
Skills Network, IBM

Issued on:

**December 11, 2019**

Authenticity of this certificate can be validated by going to:

<https://learnvista.skillsnetwork.site/learn/artificial-intelligence-certification-program>

Krishna Kumar  
Founder and CEO  
Learnvista Pvt. Ltd.

**Download Certificate**

# Why enroll for this program

**BEST**

**Learnbay** is specialized in providing personalized courses in Data Science and Artificial Intelligence. We are headquartered in **Bengaluru**, the IT hub of India, and are partnered with IBM since 2019. Our courses have so far helped several talented aspirants from different parts of the world to launch their career in Data Science and AI successfully.

Since the beginning from 2015, we have strongly believed in **quality**, we would never take a chance in compromising with anything lesser than the best quality. Thus, our trainers are without exception, highly experienced field experts.

Learnbay offers instructor-led interactive program with live doubt solving session as learning from recorded videos can be boring.



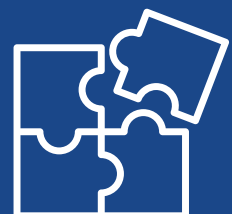
Get hands-on experience with 16+ real time projects and 3 capstone projects, as learning data science would be incomplete without knowing it's practical approach.

As per the industrial requirement 2 or 3 modules is not sufficient, hence we offer a Full Stack program specially crafted for working professionals.



Get 1:1 doubt clearing session with expert after your live class. Flexibility to batches, get back up classes and attain session from multiple instructors.

As per the industrial requirement 2 or 3 modules is not sufficient, hence we offer a Full Stack program specially crafted for working professionals.



# Demo Recordings



**Python Recording**



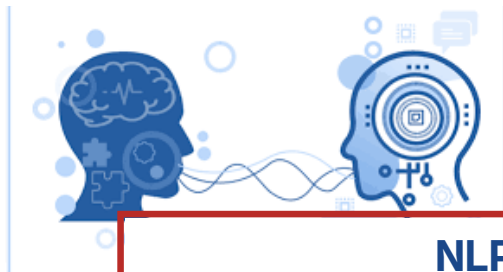
**Statistics**



**Machine Learning**



**Deep Learning**



**NLP**



**R Programming**



**Real Time Projects**



**SUBSCRIBE**



SUBSCRIBE US TO WATCH MORE  
DATA SCIENCE AND AI VIDEOS

# Transition Process



**Become IBM Certified AI Expert and target Job profiles like AI Expert, ML Expert, Data Scientist, Data Analyst, Machine Learning Engineer, and many more...**

***To know more about Guaranteed Interview call,  
Job Referral & Industrial Projects***



**Download Project & Job Referral Brochure**



**Whatsapp Now**



# Placements and Success Stories

## Keerti Bafna

### Working at Antuit

I joined the Data Science batch of September 2018. The trainer was Amritansh. And since then i have evolved in Machine Learning drastically . The trainer is very educated and teaches passionately The staff is supporting and you can re-attend and switch classes anytime



 [Click here to view LinkedIn profile](#)

## Rahul Anand

### Working at Affine Analytics

Learnbay is one of the best institutes in Bangalore. The faculty members are experienced working professionals and they help you to build the concepts in order to achieve your goals. The whole course and practical sessions are very helpful specially in the field of data science.



 [Click here to view LinkedIn profile](#)

## Pawan Yadav

### Working at Oracle

I have done Data Science certification and i placed in Oracle. Journey was really tough for me because i was from core electronics domain. Mentors are really helpful and they have good knowledge. Personally i liked teaching style of Trainer Nishant. Facility of recording classes is very useful.



 [Click here to view LinkedIn profile](#)

## Afrin Sultana

### Working at Fossil

It's a very good place to start with..LB does what it says.They have good faculties for machine learning, statistics, python and some good project sessions as well. Krishna and Abhisekh helped till I got placed. I have got multiple offers after doing the course from here and some extra effort from my end as well.So nothing is bad about it.In one word I would say it's excellent.

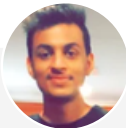


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## Neelesh Dugar

### Working at Act21 Softwares

Very well designed and structured. I really appreciate him and would want to put some light on Utkarsh Kulshrestha. Cheers to you guys! I had an amazing experience at Learnbay, which got me where I am today. Thank you to each one of you and also Abhishek who is handling very well. All the best guys!!



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## Deevraj

### Working at Mindtree

Quality of content is very nice mainly instructor concentrating of theory part, live project sessions make you feel confident to attend interviews. Multiple batch options, access for any instructor class videos or materials. Totally positive environment around. One can join here with no second thought.



 [Click here to view LinkedIn profile](#)

# Placements and Success Stories

## Srikanth Saurav

**Working at Mediamarksaturn**

Machine Learning concepts & Statistics are very well explained by Utkarsh. Best thing was completing the syllabus on-time as they have promised. Trainers are clearing the doubts . Got multiple joining offers from different MNCs for Data Science and AI developer

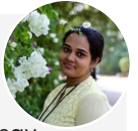


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## Amrita Das

**Working at Cognizant**

The offering here is best in the industry I would say both cost and curriculum wise. One advantage joining here is you can access their resources for lifetime unlike others where you have accessibility only for a year or so. Most importantly, there is continuous assistance for recruitment. Well,one enrolls for any course and ends up getting a handsomely paying job.



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## Suman Karmakar

**Working at IBM**

It was a good and effective course with dedicated faculties for modules.You get flexibility to attend classes from multiple instructors.Very Supportive environment for learning.



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## Rajeev

**Working at TCS**

Good Trainer and nice supportive environment.One of the best classroom institute in Bangalore for working professionals looking to change their domain to data science.



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## Shakti Suwan

**Working at American Express**

I Joined Learnbay as Fresher and Attended training in data science And Artificial Intelligence.Course is job oriented, Practical and in-depth .To the point, well versed trainers, well engineered course. Superb!!



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Read more google reviews

# 16 months of Flexible Pass

## About 16 Months of Subscription to the Live Interactive Session :

One year Flexible Subscription program is designed for working professional so that you can learn at your pace without missing any classes. With this program, you get access to attend multiple classroom/Faculty led online batches for a period of 1 year.

- Learn at your own pace with **unlimited flexible** access of multiple batches.
- Option to attend multiple batches from **different instructors** in classroom/live online mode
- Backup classes from other batches.
- You can attend **weekdays batch or weekend** or both based on your availability
- **Repeat or revise modules multiple times.**



## Program Fee

**Rs. 95,000** +18% GST

**Weekday Batches : 6 Months**

**Monday - Friday**  
**2 hours everyday**

**Weekend Batches : 8 Months**

**Saturday & Sunday**  
**4 hours everyday**

## Payment modes

**INTEREST FREE INSTANT LOAN**  
**WITHOUT CREDIT CARD**

**Aadhaar Card, Pan Card & 3**  
**months salary slip required**

**NO COST EMI UPTO 9 MONTHS ON**  
**MAJOR CREDIT CARDS**

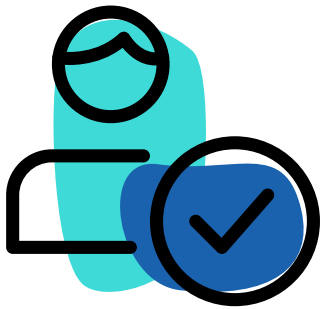
**ICICI, HDFC, RBL, Standard Chartered,**  
**Axis bank, Kotak credit cards**

UPI, Net Banking, Bank Transfer, No Cost EMI (Credit Cards), Interest Free Loan

**GENERATE DISCOUNT COUPON**

# How to apply

## Talk to Our Admission Executive



Qualification: BE, B. Tech, ME, M.Tech.  
BCA, MCA (Any Branch), MBA, Etc.  
All technical or managerial degree.  
Professionals having 8 to 15 years of  
experience in any domain. To know more  
about Eligibility Whatsapp Us

**Whatsapp Now**

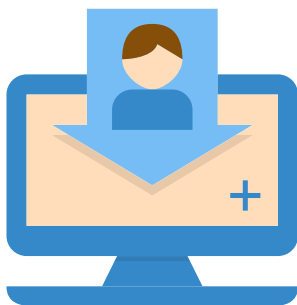
Attend Personalised Career Counselling  
and profile review session with expert.  
This session will help you to understand  
whether your profile is suitable for Data  
Science and AI certification course.

**Apply For Profile Review**

## Talk to our admission executive & get your profile reviewed



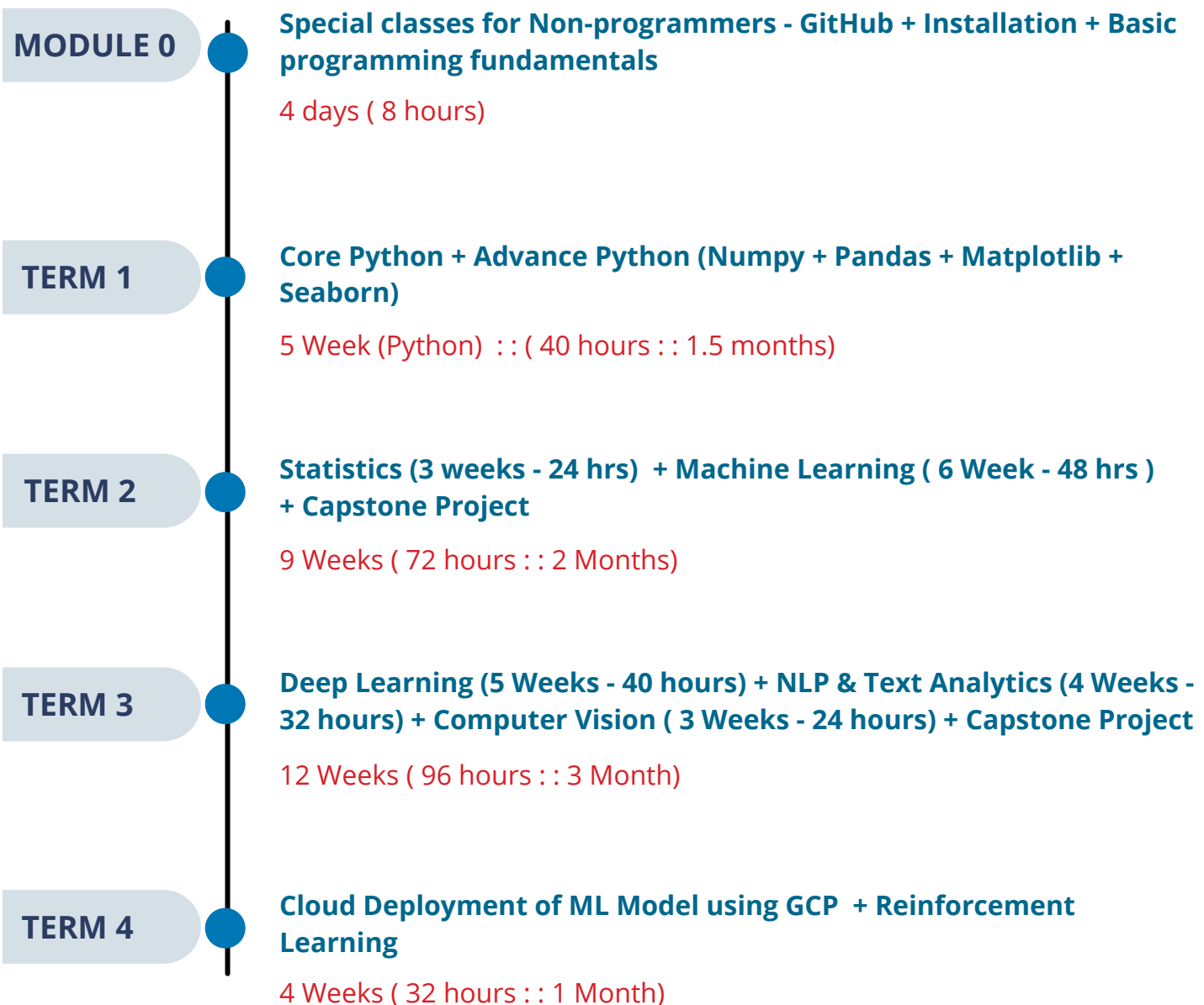
## Pay and Enrol For this Program



Contact our Admission Officer for  
discount coupon. Apply the discount  
coupon and enrol for IBM certified  
Program.

**Payment Mode:** Debit Card, Credit  
Card, UPI, Bank Transfer, Interest Free  
Loan, No Cost EMI (Credit Card)

**Pay and Enroll for the program**



## Final Exam Certification After Term 3

### Important Note :

After Successful completion of term 1, term 2 and term 3, Candidates become eligible for Job Assistance Program (2- 3 weeks) which includes :

- Resume Session and Assistance
- Interview Prep Session & Mock Interview
- Participating in Live Kaggle Competitions
- Guaranteed Job Referrals for AI/ML engineer roles
- You can start attending interviews after Term 3 and keep learning other modules from Term 4 simultaneously.
- Attend guided session for real time projects from multiple domain and get project Support/Mentorship from expert instructors.



**Chapter 1: Introduction to Programming ( 3 hrs )**

What is a programming language ?  
Source code Vs bytecode Vs machine code  
Compiler Vs Interpreter  
C/C++, Java Vs Python

**Chapter 2: Jupyter notebook basics (1 hrs)**

Different type of code editors in python  
Introduction to Anaconda and jupyter notebook  
Flavours of python.

**Chapter 3: Python Programming Basics (2 hrs )**

Variable Vs identifiers Vs strings  
Operators Vs operand  
Procedure oriented Vs modular programming

**Chapter 4: Statistics basics (2 hrs)**

Introduction to statistics  
Mean, median, mode, Standard deviation, Average  
Introduction to probability, permutations and combinations  
Introduction to linear Algebra

**Chapter 5: Git and GitHub (2 hrs)**

Learn the key concepts of the Git source control system  
Step through the entire basic Git workflow  
Configure SSH for authentication  
Create and use a remote repository on GitHub  
Git Overview  
Set up & configuration  
Working with git locally

**[NOTE]**

This module 0 is for those who are from non-technical background like Mechanical, BBA, MBA, B.Com, M.Com, etc.  
Or for those who work in Non-IT sectors to get in-depth knowledge of programming and how to use it in Data Science.

### 1. Programming Basics & Environment Setup

Installing Anaconda ,Anaconda Basics and Introduction

*Get familiar with version control, Git and GitHub.*

Basic Github Commands.

Intro to Jupyter Notebook environment. Basics Jupyter notebook Commands.

Programming language basics.

### 2. Python Programming Overview

Python Overview

Python 2.7 vs Python 3

Writing your First Python Program

Lines and Indentation,Python

Identifiers

Various Operators and Operators

Precedence

Getting input from

User,Comments,Multi line

Comments.

### 3. Strings, Decisions And Loop Control

Working With Numbers, Booleans and Strings,String types and formatting, String operations

Simple if Statement, if-else Statement if-elif Statement.

Introduction to while Loops.

Introduction to for Loops,Using continue and break.

**Class hands-on :**

*6 programs/coding exercise on string, loop and conditions in classroom*

### 4. Python Data Types

List,Tuples,Dictionaries

Python Lists,Tuples,Dictionaries

Accessing Values,Basic Operations

Indexing, Slicing, and Matrixes

Built-in Functions & Methods

Exercises on List,Tuples And Dictionary

**Class hands-on :**

- *Program to convert tuple to dictionary*
- *Remove Duplicate from Lists*
- *Python program to reverse a tuple*
- *Program to add all elements in list.*
- *+ 3 more programs to be covered in class*

### 5. Functions And Modules

Introduction To Functions – Why

Defining Functions

Calling Functions

Functions With Multiple Arguments.

Anonymous Functions - Lambda

Using Built-In Modules,User-Defined

Modules,Module Namespaces,

Iterators And Generators

**Class hands-on :**

*8+ Programs to be covered in class from functions, Lambda, modules, Generators and Packages.*

### 6. File I/O And Exceptional Handling and Regular Expression

Opening and Closing Files

open Function,file Object Attributes

close() Method ,Read,write,seek.

Exception Handling, try-finally Clause

Raising an Exceptions,User-Defined

Exceptions

Regular Expression- Search and Replace

Regular Expression Modifiers

Regular Expression Patterns,re module

**Class hands-on :**

*10+ Programs to be covered in class from File IO,Reg-ex and exception handling.*

**7. Data Analysis Using Numpy And Pandas****Introduction to Numpy.** Array

Creation, Printing Arrays, Basic Operation - Indexing, Slicing and Iterating, Shape Manipulation - Changing shape, stacking and splitting of array  
Vector stacking, Broadcasting with Numpy, *Numpy for Statistical Operation.*

**Pandas :** Introduction to Pandas

Importing data into Python  
Pandas Data Frames, Indexing Data Frames , Basic Operations With Data frame, Renaming Columns, Subletting and filtering a data frame.

**8. Data Visualisation using Python: Matplotlib and Seaborn**

**Matplotlib:** Introduction, plot(), Controlling Line Properties, Subplot with Functional Method, Multiple Plot, Working with Multiple Figures, Histograms

**Seaborn :**

Intro to Seaborn And Visualizing statistical relationships , Import and Prepare data .Plotting with categorical data and Visualizing linear relationships  
Seaborn Exercise

**REAL TIME USE CASES IN PYTHON TO BE COVERED IN CLASS**

- 3 Case Study on Numpy, Pandas , Matplotlib
- 1 Case Study on Pandas And Seaborn

**PYTHON ASSIGNMENTS****Assignment 1 (Week 1):**

10 Coding exercises on Python Basics - Variables, Operators, Strings, Loops

**Assignment 2 (Week 2):**

10 Python Programs and practice set on List, Tuples , Dictionaries & matrices operations

**Assignment 3 (Week 3):**

10 Coding exercises on Functions, File And Regular Expression

**Assignment 4 (Week 4):**

15 Programs and Practice set Questions on Numpy and Pandas

**Assignment 5 (Week 5):**

2 Case Studies using Numpy Pandas and Matplotlib.

### 1. Fundamentals of Math and Probability

Basic understanding of linear algebra,  
Matrices, vectors  
Addition and Multiplication of matrices  
Fundamentals of Probability  
Probability distributed function and  
cumulative distributed function.

#### Class Hand-on

Problem solving using R for vector  
manipulation  
Problem solving for probability  
assignments

### 2. Descriptive Statistics

Describe or summarise a set of data  
Measure of central tendency and  
measure of dispersion.  
The mean, median, mode, kurtosis and  
skewness  
Computing Standard deviation and  
Variance.  
Types of distribution.

#### Class Handson:

5 Point summary BoxPlot  
Histogram and Bar Chart  
Exploratory analytics R Methods

### 3. Inferential Statistics

What is inferential statistics  
Different types of Sampling techniques  
Central Limit Theorem  
Point estimate and Interval estimate  
Creating confidence interval for  
population parameter  
Characteristics of Z-distribution and T-  
Distribution  
Basics of Hypothesis Testing  
Type of test and rejection region  
Type of errors in Hypothesis testing,

Type-I error and Type-II errors  
P-Value and Z-Score Method  
T-Test, Analysis of variance(ANOVA)  
and Analysis of Co variance(ANCOVA)  
Regression analysis in ANOVA

#### Class Hands-on:

Problem solving for C.L.T  
Problem solving Hypothesis Testing  
Problem solving for T-test, Z-score  
test  
Case study and model run for ANOVA,  
ANCOVA

### 4. Hypothesis Testing

Hypothesis Testing  
Basics of Hypothesis Testing  
Type of test and Rejection Region  
Type o errors-Type 1 Errors, Type 2  
Errors  
P value method, Z score Method  
The *Chi-Square* Test of Independence  
Regression  
Factorial Analysis of Variance  
Pearson Correlation Coefficients in  
Depth  
Statistical Significance, Effect Size

### 5. Data Processing & Exploratory Data Analysis

Introduction to Data Cleaning  
Data Pre-processing  
What is Data Wrangling?  
How to Restructure the data?  
What is Data Integration?  
Data Transformation  
**EDA** : Finding and Dealing with Missing  
Values. What are Outliers? Using Z-scores  
to Find *Outliers*. Introduction to Bivariate  
Analysis, Scatter Plots and Heatmaps.  
Introduction to Multivariate Analysis

**Introduction To Machine Learning**

What is Machine Learning?  
What is the Challenge?  
Introduction to Supervised Learning,  
Introduction to Unsupervised Learning  
What is Reinforcement Learning?  
Machine Learning applications  
Difference between Machine Learning and Deep Learning

**1. Supervised Learning**

Support Vector Machines  
Linear regression  
Logistic regression  
Naive Bayes  
Linear discriminant analysis  
Decision tree  
k-nearest neighbor algorithm  
Neural Networks (Multilayer perceptron)  
Similarity learning

**2. Linear Regression**

Introduction to Linear Regression  
Linear Regression with Multiple Variables  
Disadvantage of Linear Models  
Interpretation of Model Outputs  
Understanding Covariance and Colinearity  
Understanding Heteroscedasticity

**Case Study** – Application of Linear Regression for Housing Price Prediction

**3. Logistic Regression**

Introduction to Logistic Regression.–  
Why Logistic Regression .  
Introduce the notion of classification  
Cost function for logistic regression  
Application of logistic regression to multi-class classification.  
Confusion Matrix, Odd's Ratio And ROC Curve  
Advantages And Disadvantages of Logistic Regression.

**Case Study:** To classify an email as spam or not spam using logistic Regression.

**4. Decision Trees**

Decision Tree – data set  
How to build decision tree?  
Understanding Kart Model  
Classification Rules- Overfitting Problem  
Stopping Criteria And Pruning  
How to Find final size of Trees?  
Model A decision Tree.  
Naive Bayes  
Random Forests and Support Vector Machines  
Interpretation of Model Outputs

**Case Study:**

1 Business Case Study for Kart Model  
2 Business Case Study for Random Forest  
3 Business Case Study for SVM



**5. Unsupervised Learning**

Hierarchical Clustering  
k-Means algorithm for clustering – groupings of unlabeled data points.  
Principal Component Analysis(PCA)- Data  
Independent components analysis(ICA)  
Anomaly Detection  
Recommender System-collaborative filtering algorithm

**Case Study**– Recommendation Engine for e-commerce/retail chain

**6. Natural language Processing**

Introduction to natural Language Processing(NLP).  
Word Frequency Algorithms for NLP  
Sentiment Analysis

**Case Study :**

Twitter data analysis using NLP

**7. Introduction to Time Series Forecasting**

Basics of Time Series Analysis and Forecasting ,Method Selection in Forecasting  
Moving Average (MA) Forecast  
Example,Different Components of Time Series Data ,Log Based Differencing, Linear Regression For Detrending

**8. ARIMA and Multivariate Time Series Analysis**

Introduction to ARIMA Models,ARIMA Model Calculations,Manual ARIMA Parameter Selection,ARIMA with Explanatory Variables  
Understanding Multivariate Time Series and Their Structure,Checking for Stationarity and Differencing the MTS

**Case Study :** Performing Time Series Analysis on Stock Prices

**IMPORTANT NOTE :**

All Machine Learning Algorithms are covered in depth with Real time case studies for each Algorithm

Once 60% of ML is completed ,**Capstone Project will be released for the batch.**

Deep Learning Libraries includes :



### 1. Introduction to Deep Learning And Tensor Flow

- Neural Network
- Understaing Neural Network Model
- Installing TensorFlow
- Simple Computation ,Contants And Variables
- Types of file formats in TensorFlow
- Creatting A Graph – Graph
- Visualization
- Creating a Model – Logistic Regression
- Model Building using tensor flow
- TensorFlow Classification Examples

### 2. Introduction to Tensor Flow

- Installing TensorFlow
- Simple Computation ,Contants And Variables
- Types of file formats in TensorFlow
- Creatting A Graph - Graph
- Visualization
- Creating a Model - Logistic Regression
- Model Building
- TensorFlow Classification Examples

### 3.. Understanding Neural Networks With Tensor Flow

- Basic Neural Network
- Single Hidden Layer Model
- Multiple Hidden Layer Model
- Backpropagation – Learning Algorithm
- and visual representation
- Understand Backpropagation – Using Neural
- Network Example
- TensorBoard
- Project on backpropagation

### 4. Convolutional Neural Network(CNN)

- Convolutional Layer Motivation
- Convolutional Layer Application
- Architecture of a CNN
- Pooling Layer Application
- Deep CNN
- Understanding and Visualizing a CNN
- Project : Building a CNN for Image Classification

**5. Recurrent Neural Networks (RNN)**

Introducing Recurrent Neural Networks  
 skflow - RNNs in skflow  
 Application use cases of RNN  
 Manual Creation of RNN  
 Long Short-Term memory (LSTM) And GRU theory  
 Restricted Boltzmann Machine(RBM) And Autoencoders  
 Collaborative Filtering with RBM  
 Dimensionality Reduction with Linear Autoencoder  
**Project : SPAM Prediction Using RNN**

**6. Understanding Of TFLearn APIs**

Getting Started With TFLearn  
 High-Level API usage -Layers, Built-in Operations, Training and Evaluation- Customizing the Training Process, Visualization APIs  
 Sequential And Functional Composition  
 Fine tuning,  
**Using TensorBoard with TFLearn**

**K Keras****8. Understanding Of Keras APIs**

Understanding Keras API for implementing Neural Networks.  
 Getting Started With Keras APIs  
 Keras Model ,Sequential And Functional Model,shared layers,Composing a Model with  
**Keras API**  
 Batch Normalization  
 Tensor Board With Keras

**PYTORCH****9. PyTorch Fundamentals**

What is PyTorch ?  
 Installing Pytorch  
 Matrices , Torch to NumPy Bridge  
 Numpy To Torch bridge ,Variables , Gradients  
 PyTorch Autograd Module  
**Linear Regression With PyTorch**  
**Logistic Regression With Pytorch**  
**Case Study : Image Classifier using PyTorch**

**PYTORCH****10. CNN and RNN With PyTorch**

CNN in PyTorch  
 Use PyTorch to build CNN  
 Build RNN with PyTorch  
 LSTM in PyTorch  
 LSTM from CPU to GPU in PyTorch  
**Case Study : Train a CNN model for classification**

**DEEP LEARNING PROJECTS****CAPSTONE PROJECT USING COMPUTER VISION AND DEEP LEARNING**

### 1. Introduction to NLP & Text Analytics

- Introduction to Text Analytics
- Introduction to NLP
- What is Natural Language Processing?
- What Can Developers Use NLP Algorithms For?
- NLP Libraries
- Need of Textual Analytics
- Applications of Natural Language Procession
- Word Frequency Algorithms for NLP
- Sentiment Analysis

### 2. Text Pre Processing Techniques

- Need of Pre-Processing
- Various methods to Process the Text data
- Tokenization ,Challenges in Tokenization
- Stopping ,Stop Word Removal
- Stemming - Errors in Stemming
- Types of Stemming Algorithms - Table
- lookup Approach ,N-Gram Stemmers

### 3. Distance Algorithms used in Text Analytics

- string Similarity
- Cosine Similarity Mechanism - Similarity
- between Two text documents
- Levenshtein distance - measuring the difference between two sequences
- Applications of Levenshtein distance
- LCS(Longest Common Sequence )
- Problems and solutions ,LCS Algorithms

### 4. Information Retrieval Systems

- Information Retrieval - Precision,Recall,F- score
- TF-IDF
- KNN for document retrieval
- K-Means for document retrieval
- Clustering for document retrieval

### 5. Topic Modelling & Dirichlett Distributions

- Introduction to Topic Modelling
- Latent Dirichlett Allocation
- Adavanced Text Analytics & NLP
- Introduction to Natural Language Toolkit
- POS Tagging
- NER

### 6. Projects And Case Studies

- a. Sentiment analysis for twitter, web articles
- b. Movie Review Prediction
- c. Summarization of Restaurant Reviews

### 1. Introduction to Computer Vision

Introduction to computer Vision  
Computer Vision overview  
Historical Perspective  
Introduction to the four Rs of Computer Vision

### 2. Image Processing

Histogram equalization  
Thresholding and Convolution  
Sharpening and edge detection  
Morphological tranformations  
Image pyramid

### 3. Image Classification and segmentation

Data Driven approach  
K-nearest Neighbor  
Linear Classification  
Contours and segmentation  
Contour properties  
Circle detection  
Line detection  
Watershed segmentation

### 4. OpenCv Library

Opencv Installation And Python API  
Drawing shapes ,Image Processing  
Image Rotation and Thresholding  
Image Filtering - Gaussian  
Blur,Median Blur  
Feature Detection - Canny Edge Detector  
Use of Neural Network in CV  
Multi-Layer Perceptron

### 5. Object Detection(SSD)

Single Shot MultiBox Detector,  
Object Localization  
How would you find an object in an image?  
The Problem of Scale and Shape  
SSD in Tensorflow  
Haarcascade - face and eye detection

### PROJECT ON COMPUTER VISION AND OPENCV

AI BASED LIVE FACE IDENTIFICATION SYSTEM FOR CROWD



### 1. Introduction To GCP Cloud ML Engine

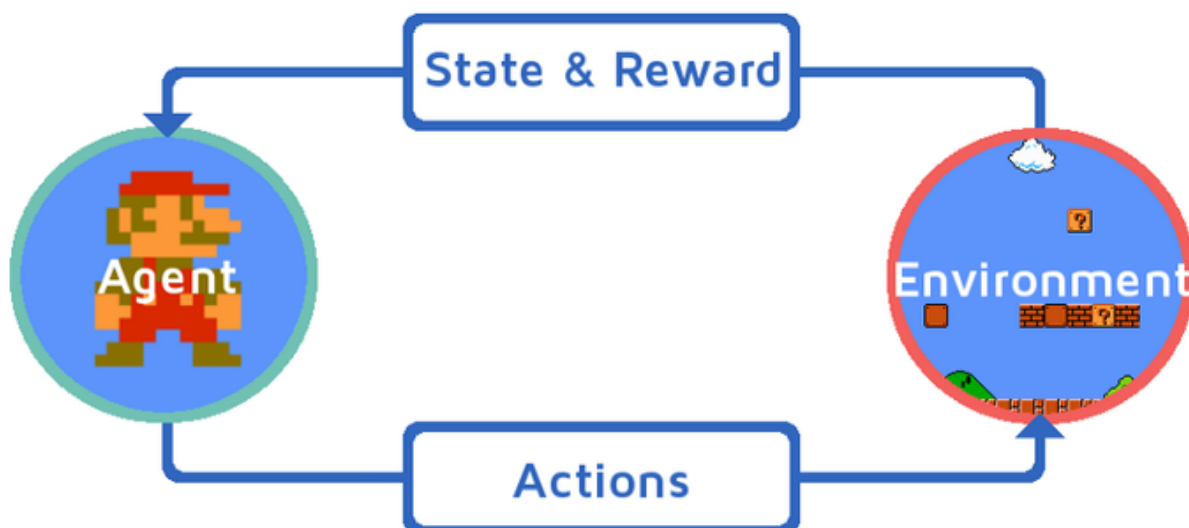
Introduction to Google CloudML Engine  
CloudML Engine in Machine Learning WorkFlow  
Components of Cloud ML Engine - [Google Cloud Platform Console](#).  
gcloud command-line tool and Rest API

### 2. Training Machine Learning Model

Developing a training application  
Packaging a training application  
Running and monitoring a training job  
Using hyperparameter tuning  
Using GPUs for training models in the cloud

### 3. Deploying Machine Learning Model

Deploying Models ,Understanding training graphs and serving graphs,  
Check and adjust model size  
Build an optimal prediction graph  
Creating input function  
creating a model version  
Getting Online Prediction



### 1. Introduction Reinforcement Learning :

What is Reinforcement Learning - Basics  
 Setting up Environment & Installing OpenAI Gym  
 OpenAI Gym Basics . Terminology & Environment  
 Dynamic Programming - Prediction, Control, and Value Approximation

### 2. OpenAI Gym and Basic RL Techniques: :

Building Blocks of Reinforcement Learning,  
 OpenAI Gym Tutorial  
 Random Search,  
 Markov Decision Processes  
 Monte Carlo Methods

### 3. Approximation Methods for Reinforcement Learning :

RBF Networks with CartPole  
 TD Lambda and Policy Gradient Algorithms  
*Temporal difference learning*  
 N-Step Methods, TD lambda ,Policy Gradient Methods  
 Policy Gradient in TensorFlow for CartPole  
 Mountain Car Continuous using Tensorflow

### 4. Deep Q-Learning Intro :

Deep Q-Learning Techniques  
 Deep Q-Learning in Tensorflow for CartPole

#### Projects and Case Studies :

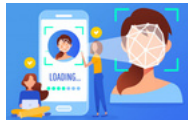
Solving Taxi Environment  
 Solving Frozen Lake Environment  
 Reward Discounting

1

## Domain - Face Detection

### Project - AI Based Live Face Identification System for Crowd

Artificial intelligence-based facial recognition systems for security purpose . Track down criminals in crowded place like malls ,airport and other crowded public places



3

## Domain - Human Resource

### Project - IBM HR Analytics

Applying analytic processes to the human resource department of an organization in the hope of improving employee performance  
This is especially concerning if your business is customer facing, as customers often prefer to interact with familiar people.



5

## Domain - Automotive

### Project- Self-Driving Car

Simulate a Self-Driving Car with Convolution Neural Networks and Computer Vision. Here you will learn to use essential Computer Vision techniques to identify lane lines on a road



2

## Domain - Healthcare

### DataSet : Samsung

### Project - Analyzing Health Data and tracking human activity

The goal is to breakdown all the data that the Samsung Health app has collected and see what useful insights we can gain by analyzing it.

**SAMSUNG**

4

## Domain - E-Commerce

### Project - Consumer Reviews of Amazon Products

The goal is to analyze Amazon's most successful consumer electronics product launches, discover insights into consumer reviews. What are the most reviewed Amazon products?  
How do the reviews in the first 90 days after a product launch?



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## Domain - Machine Learning

### Project - Emotions Sensor

Emotions Sensor Data Set Contain Top 23 730 English Words Classified Statistically Using Naive Bayes Algorithm Into 7 Basic Emotion Disgust, Surprise ,Neutral ,Anger ,Sad ,Happy and Fear.  
To Detect Emotions In Text or Voice Speech to build a Sentiment Analysis Bot



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## Domain - Information Extraction

### Project :

#### Natural Language Proccession

Training a machine learning model that classifies a given line of text as belonging to one of the books/Articles.

developing a machine learning model (deep learning preferred) for the same.



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## Domain - Travel & Hospitality

### Project - Airbnb New User Bookings

The goal is to predict which country a new user's first booking destination will be.

By accurately predicting where a new user will book their first travel experience, Airbnb can share more personalized content with their community, decrease the average time to first booking, and better forecast demand.



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## Domain - Voice Recognition

### Project -

#### Speech Emotion Detection Model

Analyse audio samples .Building a CNN Model for Emotion Detection.Training and Testing the Model and Use **Trained CNN Model** on New Audio Samples



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## Domain - Retail

### Project - Walmart Sales Forecasting

This dataset contains the sales for each department from the Walmart dataset containing data of 45 Walmart stores, selected holiday markdown events are also included These markdowns are known to affect sales, but it is challenging to predict which departments are affected and the extent of the impact.



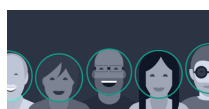
11

## Domain - Sentiment Analysis

### Project -

#### Detecting Smiles in your Camera App using CNN

This Project will detect whether an Image contains a Smile with High Accuracy. The goal is to extract high-level features by a well-designed deep convolutional networks (CNN)



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## Domain - Manufacturing

### Project - Bosch Production Line Performance

To predict internal failures using thousands of measurements and tests made for each component along the assembly line. This would enable Bosch to bring quality products at lower costs to the end user.

The goal is to predict which parts will fail quality control



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## Domain - Demand/Supply

### Project - Forecasting Uber Demand

The goal is to create an interactive dashboard using Tableau  
This Tableau Dashboard can be used to get historical insights into a neighborhood,  
For example,  
see its upcoming forecasted demand,  
increase the accuracy,  
decrease surge pricing events.



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## Domain - Predictive Analytics

### Project - Predicting Stock Prices Using LSTM

Trying to determine the future value of a company stock or other financial instrument traded on an exchange. Predict the Closing Stock Price of a given Company. Build and train **LSTM** model for Stock Price Prediction



15

## Domain - Supply Chain

### Project - Smart Supply Chain for Big Data Analysis

A DataSet of Supply Chains used by the company DataCo Global is used for the analysis. Dataset of Supply Chain, which allows the use of Machine Learning Algorithms and R Software.

It also allows the correlation of Structured Data with Unstructured Data for knowledge generation.



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## Domain - Machine Learning

### Project - Generating Chatbot

In this project we will build a simple retrieval based chatbot based on NLTK library in python, to perform tasks such as automatic summarization, translation, named entity recognition, relationship extraction, sentiment analysis, speech recognition, and topic segmentation.



Watch the videos to  
know more about  
Projects :



HUMAN ACTIVITY



FRAUD DETECTION



CREDIT RISK ANALYSIS



RAPIDO PROJECT



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