

Data Analytic, Machine Learning and Image Processing with Python and AWS Cloud

Data Science and Machine Learning that can change your life

We Work for Students like you: As per the survey the next generation jobs will be based on Machine Learning and Data Science

Become an expert in the exciting new world of AI & Machine Learning and AWS, get trained in cutting edge technologies and work on real-life industry projects with TechSim+.

Eligibility: This Online Training Program is for **all students and professionals** who want to learn new skills and want to achieve something big in their career.

Program Duration: 25 - 30 days

Per Day Session: 3 hours on daily basis (Mon-Sat)

Certification:

1. Internship Certificate from **E-Cell IIT Kharagpur**
2. Project Completion Certificate from **TechSim+**

Mode of Training: Online Live Instructor (**Miss. Nikita** and **Mr. Prateek Mishra**) based Training with Projects (It's NOT recorded session)

There is no pre-requisite for the program. **You will Learn from basic to Advanced.**

Python with Data Analysis

In this Part, You will get a brief idea of what Python and Why it's Important. You will learn Python basic and Advance for ML. After completing Python we will focus on Data Analysis and Data Visualisation with the help of different libraries like NumPy, Pandas, Matplotlib, Seaborn, and Plotly.

Introduction to Artificial Intelligence & Machine Learning

- What is ML?
- Applications of ML
- Why Machine Learning is the Future
- Difference between Machine Learning and Deep Learning
- Types of ML, AI, and Deep Learning
- Introduction and a brief history of AI
- Demo: AI Solution 1 and Solution 2
- Installing Python and Anaconda (MAC & Windows)

Python: Environment Setup and Basic

- Introduction to Anaconda
- Jupyter Notebook Introduction
- Installing Packages
- What is Python?
- Programming Language.
- Getting Started: Downloading and Installing.
- Variables types and properties.
- Strings types (raw, Unicode), properties, methods, indexing.
- sequencing, slicing, finding string in strings.
- Extracting Links from a webpage.

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
- Python program to convert a list to a tuple

Making Decisions – If Statements

- The Relational Operators
- The Logical Operators
- Simple if Statement, if-else Statement
- if-elif Statement
- More Advanced If, Elif & Else Processing

Loop Control - for, while

- Introduction To while Loops
- Count-Controlled while Loops
- Event-Controlled while Loops
- Using continue, Using break
- Introduction To for Loops
- For loops with files, list, tuples and dictionaries

Functions and Modules

- Introduction To Functions – Why
- Defining and Calling Functions
- Functions With Multiple Arguments
- Function Objects, Generators, Decorators
- Anonymous Functions, Higher-Order Functions
- Using Built-In Modules
- User-Defined Modules

File Handling

- Opening and Closing Files
- open Function, file Object Attributes
- close() Method ,Read, write, seek
- Rename, remove,
- Mkdir, chdir, rmdir and more

Classes & Error Handling

- Overview of OOP-Creating Classes
- Creating Instance Objects
- Class Inheritance, Overriding Methods
- Base Overloading Methods
- Overloading Operators, Data Hiding
- What is Exception, Handling an exception
- The except Clause with No Exceptions ,the try-finally Clause
- User-Defined Exceptions

Introduction to Data Science

- What is Data Science?
- What does Data Science involve?
- Era of Data Science
- Business Intelligence vs Data Science
- Business Intelligence vs Data Science
- Life cycle of Data Science
- Tools of Data Science

Introduction to NumPy & Pandas

- NumPy – arrays
- Operations on arrays
- Indexing slicing and iterating
- Reading and writing arrays on files
- Pandas - data structures & index operations
- Reading and Writing data from Excel/CSV formats into Pandas

Data Extraction, Wrangling (Data Analysis)

- Basic Functionalities of a data object
- Merging of Data objects
- Concatenation of data objects
- Types of Joins on data objects
- Exploring a Dataset
- Analyzing a dataset
- Raw and Processed Data
- Data Wrangling
- Exploratory Data Analysis

Data Visualisation and play with Python Libraries

- Introduction to Pandas, Matplotlib, Seaborn, Scipy
- Plot a Line, Legends and Labels
- Plot Different type of Charts and Histograms
- Loading data from files
- 3D Graphs
- Selection, Filtering, Combining and Merging Data Frames
- Plotting different plot with Seaborn

Project

- During this Section You will make some Projects:
 1. Visualization of PUBG Game Data.
 2. Movie Recommendation Project.
 3. Customer Data Analysis.

Machine Learning with Python

After Completing the Data Analytic you will learn Machine Learning. In this part, you will understand how ML works. How you can train your machine with your data. We will work on different machine learning algorithms and make different projects.

Closer Look at ML Working

- What Is Machine Learning?
- Types of Machine Learning Systems
- Working with Real Data
- Get the Data
- Discover and Visualize the Data to Gain Insights
- Prepare the Data for Machine Learning Algorithms
- Handling Text and Categorical Attributes
- Select and Train a Model
- Fine-Tune Your Model

Supervised Learning - I

- Machine Learning Categories
- Regression and Classification
- Gradient descent
- What is Classification and its use cases?
- What is Naïve Bayes?
- How Naïve Bayes works?
- Implementing Naïve Bayes Classifier
- What is Support Vector Machine?
- Illustrate how Support Vector Machine works?
- Implementation of Naïve Bayes, SVM

Supervised Learning - II

- K-Nearest Neighbors (K-NN)
- What is Decision Tree?
- Algorithm for Decision Tree Induction
- Creating a Perfect Decision Tree
- Confusion Matrix
- Random Forests and Extremely Random Forests?

Unsupervised Learning Clustering and Dimension Reduction

- What is Clustering & its Use Cases?
- What is K-means Clustering?
- How K-means algorithm works?
- How to do optimal clustering
- Implementing K-means Clustering
- What is Hierarchical Clustering?
- Implementing Hierarchical Clustering
- Why dimension reduction
- Advantages of PCA
- Calculation of PCA weights
- SVD – Decomposition of matrix data

Browser Automation and Data Scrapping

- Introduction to Web drive
- Guide to install Web driver
- Accessing Forms in Web driver
- Accessing Links and Table content in Web driver
- Automation of Facebook and Indeed
- Data Analysis of Indeed Data

Image Processing and Face Detection

- What is OpenCV?
- What is Image Processing.
- Loading Video Source
- Writing on Image
- Image Arithmetic's and Logic
- Detecting Face and Eye
- Training a Model with Your Face
- Matching your Face

Project

1. Real estate market housing predictions with Regression.
2. Loan Approval System.
3. MNIST Hand Written Digits Classification with KNN.
4. IRIS Flower Classification with Naïve Bayes.
5. Cupcake and Muffin classification with SVM
6. Traffic Prediction with Decision Tree and Random Forest Classifier.
7. Customer Segmentation with K-Mean.
8. Face Detection Unlock System
9. Automation of Facebook Account

AWS: Sagemaker, Machine Learning, Image Processing and Chat Bot

This is again a very important part of our Training. Here you will learn about the AWS Sagemaker service. In Sagemaker you can build your machine learning model very easily and deploy on AWS. Apart from it, we will learn about Image Processing with AWS Rekognition and Built ChatBot with AWS Lex

AWS: Sagemaker for Machine Learning

- Introduction of AWS Cloud
- AWS Account Setup, Free Tier Offers
- Setup Command Line Interface
- S3 Bucket Setup
- Setup Sagemaker Notebook Instance
- AWS Sagemaker autopilot
- Train Different Algorithm on AWS Cloud
- Deploy Your ML Model

AWS Rekognition - Advanced Image & Video Processing

- Introduction of aws rekognition
- Intro of AWS CLI
- Setup Command Line Interface for AWS Rekognition
- Use API to Classify our Images
- Use the API to Process our Videos
- Object Detection in Images and Videos

Make Chat Bot by Google and Amazon Lex

- What is Google dialogflow.
- How it works.
- How to Train Pre Built Agent with your Data
- Create New Agents to Interact with You.
- Get API and Write Python Script for your Agent
- Create ChatBot Completely
- Voice Chatting with your Chatbot
- Make a Complete Chat Bot with AWS Lex. and integrate on Web Sites

Hands on Projects

- Make Complete Chat Bot and integrate on Website
- Smile and Age Detection of Person
- Gender Detection
- Object Detection in Images
- And lot more...

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