



# Advanced Data Science & **Generative AI** for working professionals

Certification Program

In collaboration with



Curriculum inclusive of  
**GenAI and Agentic AI**

[www.learnbay.co](http://www.learnbay.co)



# Table Of Content

1	How to make an Impact
2	Program Summary
3	About Course
4	Who is this program for?
5	Why choose Learnbay?
6	Others Vs Learnbay
7	Alumni Spotlight
8	Certification
9	Fee & Batch Details
10	Program Curriculum

How to make an  
impact with



*This **Advanced Data science and Generative AI** program is a valuable opportunity for **working professionals** to elevate their skills and **excel in one of the fastest-growing industries.***



### **Project Experience Certificate**

Earn project certification from renowned industry partner



### **Program Certification**

Earn a completion certificate from IBM & Microsoft



### **Dedicated Career Assistance**

Personalized 1:1 support to accelerate your career growth.



### **GenAI and Agentic AI**

Learn LangChain, AutoGPT, BabyAGI, CrewAI with hands-on projects.



# Program **Summary**

1

## Training Mode

**100% Live Online** & Hybrid  
(Online + Classroom)

2

## Program Faculty

Renowned industry experts  
from top global MNCs

3

## Program Duration

**7-9 Months** Program Weekday  
and Weekend Batch

4

## Certification

**IBM** & **Microsoft**

## Practical Project Experience

Work on domain-specific projects and earn **project certification**.



### Why is project-based learning effective?

It gives you hands-on experience, allowing you to apply concepts to real-world problems, sharpening your skills for practical use.



### Will the projects be guided?

Yes, you will be assigned a **dedicated project mentor** to provide guidance and support throughout each project.



### How does project certification help in career transition?

A project certificate is more valuable than a course completion certificate as it showcases your expertise and practical abilities.

# About Course

This program is designed for working professionals who want to gain deep knowledge of full-stack Data Science and Generative AI, including advanced concepts. It uses a **project-based learning approach**, where you'll collaborate with industry experts and have support from a dedicated project mentor.

The curriculum covers **Generative AI (GenAI)** and offers domain specialization, allowing you to work on capstone projects in areas like **sales, retail, supply chain, finance, and HR**.

## Our Commitment

"We are dedicated to delivering accessible and industry-relevant education that empowers India's workforce to grow and succeed."

We offer flexible learning options, allowing you to choose between **100% online or hybrid modes, which combine online and in-person sessions**.

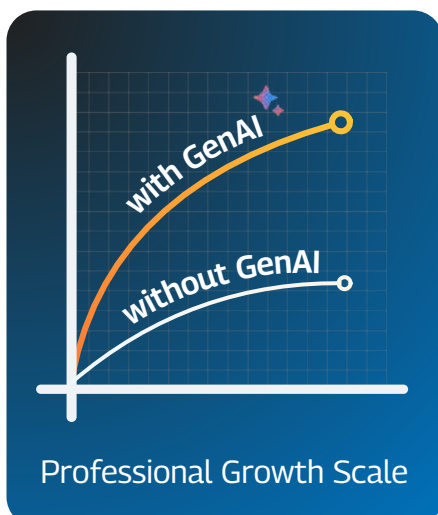
Furthermore, our comprehensive career support services include **interview preparation, resume building, and job placement assistance**, all designed to help you smoothly transition into leadership roles in data science and AI.

 **100%**  
Assured Interview

 **350+**  
Hiring Partners

 **7+**  
Centers Across India

 **40k+**  
Professionals Upskilled



## 70%

**of companies are likely to adopt GenAI in next 5 years, to**

- enhance efficiency,
- automating tasks,
- improving decision-making for better project outcomes.

**\*By integrating GenAI into our program**, we ensure that our learners are well-prepared to lead and innovate in their respective fields.

# Program Eligibility

**Early to Mid  
level  
professionals  
with min  
1+Years of  
Experience**

Professionals with a minimum of **1 year** of experience in any domain. Prior knowledge of programming is **not mandatory** as we provide **special bootcamp for non programmers** with this course.



Executives (IT/Non-IT)

**Important Note:** This program is **not for freshers and students**. If you are a fresher, please refer our Data Science and AI program for freshers.

## Program Outcome: What's in it for you?



### Hands-On Experience With **Project Certification**

Work in an industry like environment and gain practical hands-on experience. Get project certificate from industry to validate your expertise.



### Domain-Specific Mastery

With a domain-specialized data science course, your previous work experience becomes relevant, making it easier to switch careers. You can work on projects from various fields like **BFSI, Retail, Healthcare, HR, Marketing**.




### Learn Full Stack Data Science & GenAI in Depth


Learn Data science and Generative AI in depth with specialization in Advance Deep Learning, NLP, Computer Vision and GenAI. This program will help you to become **GenAI engineer in top product based MNCs**.



# Why choose Learnbay?

A unique program for  
Working Professionals!

 [www.learnbay.co](http://www.learnbay.co)

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# 1. Project Based Learning

Project based learning gives you **hands-on experience** to apply concepts to real-world problems, sharpening your skills for practical use. Unlike traditional methods, our Project based learning approach prepares you for practical, real-life challenges.



**Live Projects from  
industry**



**Dedicated Project  
Mentor**

**Important Note:** Our program includes capstone, mini, guided, and domain projects. You'll have a dedicated mentor to guide and evaluate your project work. You can book **unlimited 1-on-1 sessions** with your project mentor for personalized support. Please refer syllabus section for more details.

# 2. Domain Specialization

## Make your previous experience count

Select your domain electives and engage in live projects across various industries to gain hands-on experience. This practical approach will deepen your understanding of real-world challenges and enhance your expertise.



**Retail**



**Technology**



**Consulting**



**Manufacturing**



**BFSI**



**Healthcare**



## 3. Capstone **Project Certification**

Earn certificates directly from companies for the capstone projects you work on across different domains. These project certificates are **more valuable** than course completion certificates because they show your real skills and practical experience.

Get **Project Certification**  
from a renowned industry.

**Important Note:** You can choose projects from any two domains, including BFSI, Retail, Supply Chain, HR, Sales, Marketing, or Manufacturing. You'll also receive **one-on-one mentorship** for your projects.

## 4. **1:1 Doubt & Mentorship**

You can book **personalized doubt classes** for modules or projects with experts.

These tailored sessions will help you understand concepts better and **address any questions or challenges** you might have.

**Important Note:** Schedule your sessions from 10 AM - 6 PM (Mon-Sat) to secure your preferred time slot.

## 5. Training Mode

You can choose from two flexible training modes according to suit your needs and preferences:

**New**



**100% Live  
online classes**



**Hybrid  
classes**

**Live Online Mode:** In this mode, you attend all sessions and work on projects live online. The classes are instructor-led, allowing you to ask questions in real-time. You'll also have access to online project mentors and career mentors for 1-1 sessions.

**Hybrid Mode:** You can attend sessions/classes online, but for live project work, you have the option to participate in [physical classrooms at our Project Innovation Labs](#) in cities like *Bangalore, Pune, Delhi, Hyderabad, Chennai, and Kolkata*.

## 6. Dedicated Placement assistance



### **Resume Optimization**

Expert assistance to enhance your professional resume



### **Interview Preparation**

Mock interviews to improve your performance



### **Interview Opportunities**

Scheduled interviews with potential employers



### **Career Counseling**

Professional guidance for your career advancement

# 7. Inclusive of GenAI and Agentic AI

**40% job growth in GenAI & Agentic AI roles by 2027**

Secure future-ready career opportunities.

**\$1.3 trillion GenAI market by 2030**

Tap into high-paying roles in AI-powered domains.

**90% of businesses to adopt GenAI by 2026**

Gain a competitive edge in AI-driven industries.

**Agentic AI improves decision accuracy by 85%**

Enhance project execution and business strategies.

**Automate 60% of repetitive tasks**

Use GenAI for emails, reports, and content, and Agentic AI for workflow automation.

**80% of professionals use GenAI daily**














Leverage AI tools to boost efficiency and productivity at work.

## Popular Tools:

**GenAI:**  ChatGPT  DALL-E  Gemini  Midjourney  Claude

**Agentic AI:**  LangChain  crewai  AUTOgpt

# Others Vs Learnbay

		OTHERS
Training Mode	 100% Online & Hybrid (Online + Classroom)	 Only recorded class & few live online
Support	 24/7 Student Support	 Limited Support Hours
Placement	 100% Placement Assistance	 Limited Placement Support
Curriculum	 Included in Latest Curriculum	 Often Not Included
Faculty	 Experienced Industry Professionals	 Academics and Trainers
Real-Time Projects	 Practice with Live Projects and Team Management	 Simulated Projects



# Alumni Spotlight



Shravanthi A  
Data Scientist

Learnbay has helped me a lot to learn data science applications in the e-commerce industry. The live class concept was really helpful in receiving proper DS training. Thanks to all my mentors and the placement team.

**Mechanical  
Domain**



**Data Scientist @**



 **230%**  
Salary Hike



Preksha Mishra  
Lead Data Scientist

The course structure is excellent with emphasis on concept building and tools & software at the same time. The support team is excellent and supportive and quite agile to respond to doubts.

**Telecom  
Domain**



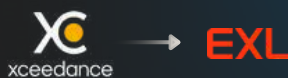
**Data Scientist @**



 **140%**  
Salary Hike



Karan Chawala



Data Scientist



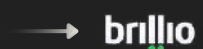
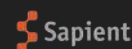
Jaya Sinha



Senior Analyst



Shubham Dev



Lead Data Analyst

# Alumni Spotlight



Mohd. Israr  
**Data Scientist**

Thanks to the Learnbay data science course & excellent guidance, I was able to ace the TCS interview and secure a job with a 210% pay raise. The real-world time projects helped me develop my concepts as a data scientist.

**Mechanical  
Domain**



**Data Scientist @**



 **230%**  
Salary Hike



Saurabh Kumar  
**Data Scientist**

When I joined Learnbay I did not have any knowledge apart from the very basics. I gradually build my concept via various trainers and get trained in data science with strong knowledge/concepts.

**Mathematics  
Professor**




**Data Scientist @**  **Teleperformance**

 **135%**  
Salary Hike



**Aravind**

 **TheMathCompany** → **CATERPILLAR**

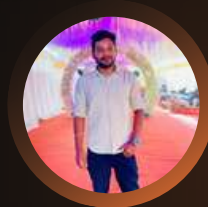
**Data Scientist**



**Ritesh Kumar**

 **unacademy** → **Capgemini**

**Senior Analyst**

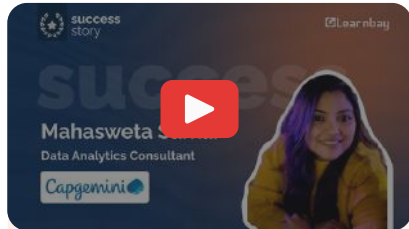


**Ramki**

 **cognizant** →  **ANBSYSTEMS**  
#DNY company

**Data Analyst**

# Success Story



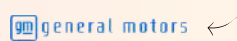
**Mahasweta Sarkar**

Data Analytics Consultant



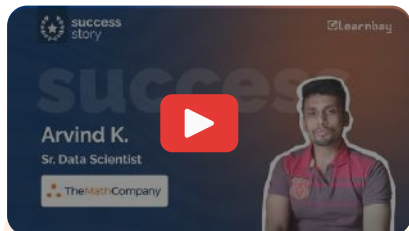
**Manoj Kuna**

Data Analysis Engineer



**Bhavin Shah**

Data Analyst



**Arvind K.**

Sr. Data Scientist



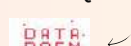
**Nandini Devi Muthu**

Data Analyst



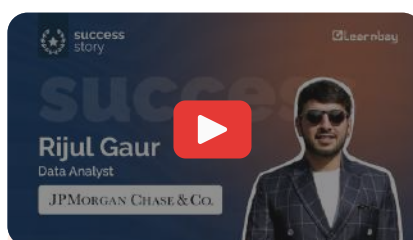
**Rajashree B**

Data Quality Analyst



**Pinky Bhansali**

Process Lead



**Rahul Gaur**

Data Analyst



**Jaya Sinha**

Data Scientist



# Get certified

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## and accelerate your career growth

### IBM Course Completion Certificate

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Achieve an **industry-recognized IBM certification**, showcasing your proficiency in **data science and AI**.

### Microsoft Certificate in Azure AI Fundamentals

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Gain an **internationally recognized Microsoft certification**, proving your expertise in **cloud technologies**.

Add On

### Capstone Project Certificate

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This certification boosts your credibility in the **IT sector** and enhances your **career prospects**.

**Note:** The certification is granted upon the successful completion of two capstone projects.



# Program Fee

## Live online classes

### Benefits:

- ✓ All classes are covered in live interactive mode
- ✓ Schedule doubt clearing session with industry expert
- ✓ Online capstone project session
- ✓ 1 on 1 Job assistance with online resume build up and mock interview sessions

### Program Fee

₹ 1,10,000 + 18% GST

## Hybrid Classes

### Benefits:

- ✓ All the benefits of Live OnLine Classes
- ✓ Offline 1:1 classroom doubt sessions on weekends
- ✓ Offline Mock Interviews with 3-5 members panel
- ✓ Offline Classroom Capstone projects in Pune, Delhi, Bangalore, Chennai, Hyderabad and Mumbai

### Program Fee

₹ 1,25,000 + 18% GST

Payment Plan:

**No Cost EMI Available**  
For 6, 9 and 12 Months

## Structured Admission Process

1

### Apply Online

Complete and submit your application with required details.

2

### Profile Review

Our team evaluates your application for eligibility.




### Enroll


Confirm your admission and start the program journey.



# Program Curriculum

A unique program for  
Working Professionals!

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# Journey to Upskilling

## Module 0 8 hrs

### Python Bootcamp for Non-Programmers

These sessions are recommended for non programmers to learn basics of programming.



PYTHON

## Term 1 40 hrs

### Python for Data Science

We will cover Python basics and data analytics using popular libraries like NumPy, Pandas, Matplotlib, and Seaborn.



PLOTLY



SCIKIT LEARN



NUMPY



PANDAS



MATPLOTLIB



SEABORN

## Term 2 70 hrs

### Statistics and Machine Learning

We will cover statistical methods and explore advanced topics like regression analysis, hypothesis testing, EDA and machine learning algorithms.



STATISTICS



MACHINE LEARNING

**Term 3**

50 hrs

## Generative AI and Agentic AI

Master GenAI for content generation, data analysis, and NLP, and Agentic AI for automation, decision-making, and workflow optimization.



ChatGPT



DALL-E



AutoGPT



LangChain

**Term 4**

60 hrs

## Data Visualization & Data Analysis

We will cover data visualization and data analysis including interactive dashboards, statistical analysis, data mining, and predictive modeling.



POWERBI



HADOOP



APACHE SPARK



TABLEAU



SQL

**Term 5**

70 hrs

## AI Tools + Deployment

We will cover AI tools fundamentals and advanced features including machine learning frameworks, natural language processing,



TENSORFLOW

DEEP  
LEARNING

NLP

**270+ hours**  
of Learning

**28+**  
Practical Projects

**Triple**  
Certification



## Module 0 Python Bootcamp for Non-Programmers

The Python Bootcamp is designed for **professionals who are new to programming**. It covers basics at a slow pace and you'll get **1-1 doubt sessions and special classes**. These sessions are recommended for non programmers. Programmers may skip this module

### Topics Covered

#### Installation & Setup

- Installing Python and setting up IDEs (Jupyter, VSCode).
- Overview of the Python environment and running basic scripts.
- Introduction to Jupyter Notebook for interactive coding.

#### Basic Syntax & I/O

- Understanding variables, data types (integers, floats, strings, booleans).
- Input and output operations using the `input()` and `print()` functions.
- Performing basic arithmetic operations.

#### Control Structures

- Conditional logic using `if`, `else`, and `elif` statements.
- Looping with `for` and `while` loops to iterate over data.

#### Basic Data Structures

- Introduction to lists, tuples, and dictionaries.
- Accessing, modifying, and `iterating` through collections.
- Understanding how to use indexing and slicing with lists and tuples

MINI PROJECT

DURATION 1.5 HRS

FOR BEGINNERS

#### Simple Calculator Application

**Description:** Create a console-based calculator that takes user input for two numbers and performs mathematical operations (add, subtract, multiply, divide)

**Tools/Functions covered:** Python basics (Control structures, basic I/O)

## TERM 1 Python for Data Science

We will cover Python basics and data analytics using popular libraries like **NumPy, Pandas, Matplotlib, and Seaborn**. You'll work on several **guided projects** in python and gain hands-on experience throughout this module.

### Module Duration:

**40-50 hrs** of live Instructor-led classes.

**5 hrs** of **on demand 1-1 session** for topics where you need help.

### Number of Projects with dedicated mentor

**4** practice projects

**2** python projects on real data

## Section 1 - Core Python Basics

### • Python Environment Setup

- Setting up Python environments using Anaconda and **Jupyter**.
- Installing and managing virtual environments using conda/pip.

### • Python Syntax and Code Structure

- Writing and running Python scripts.
- Best practices for writing clean and readable code (PEP 8).
- Understanding Python functions and scopes.

### • Data Types and Control Flow

- Primitive data types: integers, floats, strings, and booleans.
- Control flow statements (if, else, elif) for decision making.
- Loops: **for, while, do while, break, continue, pass**

### • Data Structures

- Introduction to basic data structures (lists, tuples, dictionaries).
- Manipulating collections: Adding, removing, and modifying elements.
- List comprehension and dictionary comprehension for concise code.

### • Functions And Modules

- Introduction To Functions Defining & Calling Functions
- **Functions With Multiple Arguments**
- Anonymous Functions - **Lambda** Using Built-In Modules,
- User-Defined Modules, Module Namespaces, Iterators And Generators

**GROUP PROJECT**

**DURATION 2 HRS**

**BFSI DOMAIN**

### Banking System Simulation

**Description:** Simulate a simple banking system where users can create accounts, deposit, withdraw, and check balances.

**Tools/Functions covered:** Python (Data structures, functions)

**MINI PROJECT**

**DURATION 1.5 HRS**

**FINANCE DOMAIN**

### Expense Tracker

**Description:** Build a simple expense tracker where users can record and manage their daily expenses.

**Functions used:** Python data structures, Functions.

## Section 2 - Data analytics Using Python

- **File I/O And Exceptional Handling and Regular Expression**

- open Function, file Object Attributes
- `close()` Method, `Read`, `write`, `seek`.
- Exception Handling, try-finally Clause
- **Regular Expression**- Search and Replace
- Regular Expression Modifiers
- Regular Expression Pattern

- **Basic Web Scraping for Data Analytics**

- Definition and use cases in data analytics
- Tools for scraping: requests and `BeautifulSoup`
- Parsing HTML content using BeautifulSoup
- Finding elements by `tag`, `class`, or `attributes`
- Extracting text, links, and attributes from elements

- **Data Analysis using Numpy**
  - 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
- **Data Analysis using Pandas**
  - Pandas : Introduction to **Pandas**
  - Importing data into Python
  - Pandas Data Frames, Indexing Data Frames ,Basic Operations With Data frame, Renaming Columns, Subsetting and filtering a data frame.
- **Data Visualization using Matplotlib**
  - Introduction, **plot()**, Controlling Line Properties, Subplot with Functional Method, Multiple Plot, Working with Multiple Figures, Histograms
- **Data Visualization using Seaborn**
  - Introduction to **Seaborn** and Visualizing statistical relationships , Import and Prepare data. Plotting with categorical data and Visualizing linear relationships.

**PORTFOLIO PROJECT**

**DURATION 2 HRS**

**HR DOMAIN**

### **Employee Attrition Analysis**

**Description:** Analyze employee attrition (churn) to identify patterns related to factors like salary, job satisfaction, department, and years of service.

**Tools/Functions Covered:** Pandas, Numpy and Matplotlib

**DOMAIN PROJECT**

**DURATION 2 HRS**

**SALES DOMAIN**

### **Sales Performance Dashboard**

**Description:** Create a sales performance dashboard to track sales revenue, number of units sold, and performance by region, product, or salesperson.

**Tools/Functions Covered:** Pandas, Numpy and Matplotlib



DOMAIN-SPECIFIC PROJECT

DURATION 2 HRS

FINANCE DOMAIN

## Stock Price Analysis with Web Scraping

**Description:** Use web scraping to collect real-time stock price data from a financial website. Analyze stock prices over time to identify trends, calculate returns, and visualize stock volatility.



Seaborn



pandas



Web Scraper

DOMAIN-SPECIFIC PROJECT

DURATION 2 HRS

BFSI DOMAIN

## Customer Transaction Analysis

**Description:** In this project, you'll analyze customer transaction data from a bank to gain insights into customer behavior. You will use only Pandas for data manipulation and Seaborn for data visualization.



Seaborn



pandas

TERM 2

## Statistics and Machine Learning

We will cover statistical methods and explore advanced topics like **regression analysis, hypothesis testing, EDA** and **machine learning algorithms**. Practice all the topics with real time projects and case studies.

**Module Duration:**

**70-75 hrs** of live Instructor-led classes.

**5 hrs** of **on demand** 1-1 session for topics where you need help.

## Number of Projects with dedicated mentor

6 practice projects

2 python projects on real data

## Section 1 - Statistics

### • Fundamentals of Math and Probability

- Probability distributed function & cumulative distribution function. Conditional Probability, Baye's Theorem
- Problem solving for probability assignments
- Random Experiments, **Mutually Exclusive Events**, Joint Events, Dependent & Independent Events

### • All about Population & Sample

- Population vs Sample, Sample Size
- Simple Random Sampling, Systematic Sampling, Cluster Sampling, **Stratified Sampling**, Convenience Sampling, Quota Sampling, Snowball Sampling and Judgement Sampling

### • Introduction to Statistics, Statistical Thinking

- Variable and its types
- Quantitative, Categorical, Discrete, Continuous,
- \*all with examples
- **Five Point Summary and Box Plot**
- Outliers, Causes of Outliers, How to treat Outliers, I-QR Method and Z-Score Method

### • Descriptive Statistics

- Measures of Central Tendency – **Mean, Median and Mode**
- Measures of Dispersion – Standard Deviation, Variance, Range, IQR (Inter-Quartile Range)
- Measure of Symmetricity/ Shape – Skewness and Kurtosis

### • Inferential Statistics

- **Central Limit Theorem**
- Point estimate and Interval estimate
- Creating confidence interval for population parameter
- Characteristics of Z-distribution and T-Distribution.
- Type of test and rejection region.
- Type of errors in **Hypothesis Testing**

GROUP PROJECT

DURATION 1.5 HRS

Exam Score Statistical Analysis

**Description:** Perform descriptive and inferential statistics on a sample of student exam scores to understand performance trends.

**Tools covered:** Sampling methods, variable types, measures of central tendency and dispersion, five-point summary, box plots, outlier detection using IQR and Z-score methods, confidence intervals, hypothesis testing errors.

MINI PROJECT

DURATION 2 HRS

MANUFACTURING DOMAIN

## Probability Analysis in Quality Control

**Description:** Analyze the probability of defects in a manufacturing process using probability theories and Bayes' Theorem.

**Tools covered:** Probability distribution and cumulative distribution functions, conditional probability, Bayes' Theorem, mutually exclusive and joint events, dependent and independent events.

## Section 2 - Advance Statistics

### • 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
- Null and Alternative Hypothesis One-tailed and Two-tailed Tests, Critical Value, Rejection region, Inference based on Critical Value
- **Binomial Distribution:** Assumptions of Binomial Distribution, Normal Distribution, Properties of Normal Distribution, **Z table**, Empirical Rule of Normal Distribution & Central Limit Theorem and its Applications

### Linear Algebra

- Dot Product, Projecting Point on Axis.
- **Matrices in Python**, Element Indexing, Square Matrix, Triangular Matrix, Diagonal Matrix, Identity Matrix, Addition of Matrices, Scalar Multiplication, Matrix Multiplication, Matrix Transpose, Determinant, Trace

- **T-Test**, Analysis of variance (ANOVA), and Analysis of Covariance (ANCOVA) Regression analysis in **ANOVA**
- **Data Processing & Exploratory Data Analysis**
  - What is **Data Wrangling**
  - **Data Pre-processing** and cleaning?
  - How to Restructure the data?
  - What is Data Integration and Transformation
- **EDA**
  - Understand EDA's role in data science workflow.
  - Load and inspect data using Pandas.
  - Using **Z-scores** to Find Outliers.
  - Clean data by handling missing values and outliers.
  - Perform **feature engineering for better modeling**
  - Finding and Dealing with Missing Values.
  - Bivariate Analysis, **Scatter Plots** and Heatmaps.
  - Summarize data with descriptive statistics.
  - Visualize patterns using Matplotlib and Seaborn.
  - Introduction to **Multivariate Analysis**

**MINI PROJECT**

**DURATION 2 HRS**

**ECOMMERCE DOMAIN**

### **Hypothesis Testing on Website Conversion Rates**

**Description:** Test if a new website design leads to a significantly higher conversion rate compared to the old design.

**Tools covered:** Binomial distribution assumptions, Z-test, P-value method, Type I and II errors, one-tailed test using SciPy and Pandas.

**RESEARCH PROJECT**

**DURATION 2 HRS**

### **Linear Algebra in Image Transformation**

**Description:** Apply matrix operations to perform transformations on images, such as rotations and scaling.

**Tools/Libraries:** NumPy matrices, matrix multiplication, matrix transpose, identity matrix, determinant, dot product.

MINI PROJECT

DURATION 2 HRS

## EDA and Data Cleaning on Titanic Dataset

**Description:** Perform exploratory data analysis and data cleaning on the Titanic dataset to prepare it for modeling.

**Tools covered:** Data wrangling with Pandas, handling missing values, outlier detection using Z-scores, feature engineering, bivariate and multivariate analysis, data visualization using Matplotlib and Seaborn.

## Section 3 - Machine Learning

- **Machine Learning Introduction**
  - Definition of ML Elements: Algorithm, Model, **Predictor Variable**, Response Variable, Training - Test Split, Steps in Machine Learning
  - ML Models Type: Supervised Learning, Unsupervised Learning and Reinforcement Learning
- **Data Preprocessing**
  - Encoding the data: Definition, Methods: OneHot Encoding, Mean Encoding, Label Encoding, Target Guided Ordinal Encoding
  - **Types of Missing values** (MCAR, MAR, MNAR) , Methods to handle missing values
  - Outliers, Methods to handle outliers: **IQR Method**, Z Method
  - Feature Scaling: Definition , Methods: Absolute Maximum Scaling, Min-Max Scaler , **Normalization**, Standardization, Robust Scaling
- **Logistic Regression Model**
  - Definition. Why is it called the "Regression model"?
  - Sigmoid Function, Transformation & Graph of Sigmoid Function
- **Evaluation Metrics for Classification model**
  - Confusion Matrix, Accuracy, **Misclassification**, TPR, FPR, TNR, Precision, Recall, F1 Score, ROC Curve, and AUC. Using Python library Sklearn to create the Logistic Regression Model and evaluate the model created
- **K Nearest Neighbours Model**
  - Definition, Steps in **KNN** Model, Types of Distance: Manhattan Distance, Euclidean Distance, '**Lazy Learner Model**'.
  - Confusion Matrix of Multi Class Classification
  - Using Python library Sklearn to create the K Nearest Neighbours Model and evaluate the model



**HANDS-ON LAB PROJECT**

**DURATION 1.5 HRS**

### **Customer Churn Prediction with Logistic Regression**

**Description:** Predict whether customers will leave a service using logistic regression.

**Tools covered:** Data encoding (OneHot, Label Encoding), handling missing values (MCAR, MAR, MNAR), outlier treatment (IQR, Z-score methods), feature scaling, logistic regression with scikit-learn, evaluation metrics

**RESEARCH PROJECT**

**DURATION 2 HRS**

### **Handwritten Digit Classification using K-Nearest Neighbors**

**Description:** Classify handwritten digits into categories using the KNN algorithm.

**Tools covered:** Data preprocessing, KNN implementation with scikit-learn, distance metrics (Euclidean, Manhattan), feature scaling, evaluation with multi-class confusion matrix.

## **Section 4 - Advance Machine Learning Concepts**

- **Decision Tree Model**

- Definition, Basic Terminologies, Tree Splitting Constraints, Splitting Algorithms:
- CART, C4.5, ID3, CHAID
- Splitting Methods:
- GINI, Entropy, Chi-Square, and Reduction in Variance
- Using Python library Sklearn to create the Decision Tree Model and evaluate the model created

- **Random Forest Model**

- Ensemble Techniques: Bagging/bootstrapping & Boosting.
- Definition of Random Forest, OOB Score
- K-Fold Cross-Validation

- **Hyperparameter Tuning**

- GridSearchCV, Variable Importance.
- Using Python library Sklearn to create the Random Forest Model and

evaluate the model created.

- **Naive Baye's Model**

- Definition, Advantages, Baye's Theorem Applicability, Disadvantages of **Naive Baye's Model**, **Laplace's Correction**, Types of Classifiers: Gaussian, Multinomial and Bernoulli
- Using Python library Sklearn to create the Naive Baye's Model and evaluate the model created

- **K Means and Hierarchical Clustering**

- Definition of Clustering, Use cases of Clustering
- **K Means Clustering Algorithm**, Assumptions of K Means Clustering
- Sum of Squares Curve or Elbow Curve

- **Hierarchical Clustering**

- **Dendrogram**, Agglomerative Clustering, **Divisive Clustering**, Comparison of K Means Clustering and Hierarchical Clustering
- Using Python library Sklearn to create and evaluate the clustering model

- **Principal Component Analysis(PCA)**

- Definition, **Curse of Dimensionality**, Dimensionality Reduction Technique, When to use PCA,
- Use Cases
- Steps in PCA, EigenValues and **EigenVectors**, Scree Plot.
- Using Python library Sklearn to create Principal Components

- **Support Vector Machine(SVM)**

- Model: Definition, Use Cases, **Kernel Function**, Aim of Support Vectors, Hyperplane, Gamma Value, Regularization Parameter
- Using Python library Sklearn to create and evaluate the SVM Model

- **XGBoost Model**

- Definition and advantages; enhances gradient boosting with regularization, handling missing values, and parallel processing.
- Implementing XGBoost in Python for model creation and evaluation; hyperparameter tuning using GridSearchCV.

**HANDS-ON LAB PROJECT**

**DURATION 1.5 HRS**

## **Credit Risk Prediction with Decision Trees and Random Forests**

**Description:** Predict credit default risk using Decision Tree and Random Forest models, enhancing performance through hyperparameter tuning.

**Tools covered:** Scikit-learn Decision Trees, Random Forests, GridSearchCV for hyperparameter tuning, K-Fold Cross-Validation.

RESEARCH PROJECT

DURATION 2 HRS

## Customer Segmentation using K-Means Clustering and PCA

**Description:** Cluster customers based on purchasing behavior using K-Means and Hierarchical Clustering, incorporating dimensionality reduction with PCA.

**Tools covered:** Scikit-learn K-Means Clustering, model evaluation.

GROUP PROJECT

DURATION 3 HRS

## Predictive Maintenance for Industrial Machinery

**Description:** Develop a predictive maintenance model using machine learning and statistical analysis to predict equipment failures. Combine EDA, statistical methods, and supervised learning models for failure prediction.

XGBoost

Matplotlib



Numpy



pandas



DOMAIN-SPECIFIC PROJECT

DURATION 2 HRS

## Customer Segmentation and Churn Prediction

**Description:** Perform customer segmentation using clustering techniques and predict customer churn with logistic regression. Use statistics for EDA and apply machine learning for churn classification.



Matplotlib



Seaborn



pandas



scikit-learn



statsmodels

Master advance GenAI tools like **TensorFlow, PyTorch, OpenAI APIs, and LangChain**, frameworks, and **real-world applications** to lead AI-driven projects confidently.

**50 Hours instructor-led  
6-10 real time GenAI &  
Agentic AI Projects**

## Section 1: Generative AI

### Fundamentals of Generative AI

- Overview of **generative models** and their real-world applications, highlighting differences from traditional AI.

### Use Cases of GenAI in Various Industries and Domains

- **Finance:** Fraud detection, automated report generation, and investment insights.
- **Healthcare:** Drug discovery, medical image analysis, and personalized treatment,
- **Retail and E-commerce:** Personalized recommendations, inventory management, and customer service automation.
- **Manufacturing:** Quality control, predictive maintenance, and process optimization.

### Deep Learning Foundations for GenAI

- **Neural networks and deep learning basics**, Backpropagation and optimization techniques
- Overview of popular deep learning frameworks (**TensorFlow, PyTorch**).
- Hands-on Project: Build a basic image classifier using CNNs with TensorFlow or PyTorch, applying optimization techniques learned.

### Prompt Engineering and optimisation

- Strategies for crafting effective **prompts** to optimize AI responses and improve user interaction
- **Techniques for prompt optimization** and prompt chaining.

## Transformers and Attention Mechanisms

- Introduction to transformers and self-attention, **BERT**, **GPT**, and other transformer-based architectures, **Hands-on exercise:** Fine-tuning a transformer model for text generation.
- **Hands-on Project:** Fine-tune a transformer model on a custom text dataset for a text classification or summarization task.

## Large Language Models (LLMs)

- Overview of LLMs like **GPT-3**, **ChatGPT**, and **LLaMA**
- **Fine-tuning LLMs** for specific use cases, Applications in chatbots, summarization, and sentiment analysis.
- **Hands-on exercise:** Design and deploy a conversational AI model that simulates a customer service assistant for a chosen domain (e.g., retail or tech support).

## Integration of OpenAI APIs

- Techniques for effectively integrating **OpenAI APIs**, including authentication and best practices for data handling. Rate limits and error handling.
- **Hands-on Project:** Develop a web app that uses OpenAI's API for content generation based on user inputs, including authentication and error handling.

## Building Applications with LangChain

- Overview of **LangChain's** functionality for large language models.
- **Chain concepts:** sequential, memory, and conditional chains, Creating custom prompts and workflows.
- **Hands-on Project:** Personalized Financial Advice - Based on customer profiles (age, income, risk appetite), offer tailored financial advice or investment recommendations.



## Utilizing Hugging Face

- Accessing and deploying **Hugging Face** pre-trained models, Fine-tuning models on custom datasets, Using Hugging Face's pipelines for **rapid deployment**, Introduction to Hugging Face's Model Hub and Transformers library.
- **Hands-on Project:** Fine-tune a Hugging Face model for a sentiment analysis task and deploy it using the Hugging Face API.

## GANs (Generative Adversarial Networks)

- Fundamentals of **GANs** and their components (Generator and Discriminator).
- Variants of GANs (**DCGAN**, **StyleGAN**, **CycleGAN**).
- Applications of GANs in image synthesis, art creation, and more.
- **Hands-on exercise:** Building a simple GAN for image generation.
- **Hands-on Project:** Build and train a DCGAN to generate new images from a specific dataset, such as handwritten digits or facial images.

## Variational Autoencoders (VAEs)

- Introduction to **VAEs** and their architecture
- Comparison of VAEs with GANs, Applications in anomaly
- detection and data compression.
- **Hands-on exercise:** Building a VAE for image reconstruction.

## Retrieval-Augmented Generation (RAG)

- Introduction to **RAG**.
- How RAG combines generative and retrieval-based techniques, Implementing a basic RAG model for a knowledge-based task.
- **Hands-on Project:** Build a RAG-based FAQ Assistant to answer customer questions by retrieving information from a domain-specific FAQ dataset, merging retrieval and generation for clear, concise responses

## Section 2: Agentic AI

### Understanding Agentic AI and Autonomous Agents

- Core principles of agentic systems (Autonomy, Goal-oriented behavior, Decision-making)
- **Use cases in business and technology**

### Introduction to Agentic AI

- **Task Management** and Automation
- Planning, Execution, and Optimization
- Decision-making frameworks
- **Practical demonstration** using LangChain

### Key Components of Agentic AI

- **LangChain**: Introduction and hands-on exercises
- **AutoGPT**: Setup and practical application
- **BabyAGI**: Basic usage and task automation
- **CrewAI**: Introduction and practical demonstrations

### Essential Tools for Agentic AI

- Integrating agents with OpenAI APIs
- Building custom agents for specific tasks
- **Hands-on session** with OpenAI's GPT models

### Agentic AI Integration

- Integrating agents with **OpenAI APIs**
- Building custom agents for specific tasks
- **Hands-on session** with OpenAI's GPT models

**HANDS-ON LAB PROJECT**

**DURATION 1.5 HRS**

**Build an autonomous assistant to automate content generation and social media posting using AutoGPT and LangChain.**

PORTFOLIO PROJECT

DURATION 2 HRS

**Develop an intelligent customer support agent that autonomously handles FAQs and escalates complex queries using BabyAGI and GPT API.**

PORTFOLIO PROJECT

DURATION 1.5 HRS

**Create collaborative workflows and team-based tasks automation using CrewAI.**

### GenAI Copilot, Deployment and Ethical Considerations in GenAI

- Learn **Model Deployment for Generative AI**, covering deployment techniques, best practices, API setup, and scaling infrastructure.
- Explore **GenAI Copilot Tools** for Coding, including GitHub Copilot, Tabnine, Amazon CodeWhisperer, Replit Ghostwriter, and Codex.
- Gain insights into **Ethical Considerations in GenAI**, addressing bias, privacy, and responsible AI development.

## TERM 4 Data Visualization & Data Analysis

We will cover data visualization and data analysis including **interactive dashboards, statistical analysis, data mining, and predictive modeling** using tools like **Tableau, Power BI, Python (Matplotlib, Seaborn), and SQL.**

### Module Duration:

**80-85 hrs** of live Instructor-led classes.

**8 hrs** of **on demand 1-1 session** for topics where you need help.

### Number of Projects with dedicated mentor

**7** practice projects

**2** capstone projects on real data

## Section 1 - SQL and Databases

- **SQL and RDBMS**
  - RDBMS And SQL Operations.

- Single Table Queries - SELECT, WHERE,
- **ORDER BY**, Distinct, And, OR
- Multiple Table Queries: INNER, SELF,
- CROSS, and OUTER, Join, Left Join, Right
- Join, Full Join, Union
- **Advance SQL**
  - Advance SQL Operations
  - Data Aggregations and summarizing the data
  - Ranking Functions: **Top-N Analysis**
  - Advanced SQL Queries for Analytics
- **NoSQL, HBase & MongoDB**
  - NoSQL Databases
  - Introduction to HBase
  - HBase Architecture, HBase
  - Components, Storage Model of HBase
  - **HBase vs RDBMS**
  - Introduction to Mongo DB, CRUD
  - Advantages of MongoDB over RDBMS
- **JSON Data & CRUD**
  - Basics and CRUD Operation
  - Databases, Collection & Documents
  - Shell & MongoDB drivers
  - **What is JSON Data**
  - Create, Read, Update, Delete
  - Finding, Deleting, Updating, Inserting Elements
  - Working with Arrays
  - Understanding Schemas and Relations
- **Programming with SQL**
  - Mathematical Functions
  - Variables
  - Conditional Logic
  - Loops
  - **Custom Functions**
  - Grouping and Ordering
- **Programming with SQL**
  - Partitioning
  - Filtering Data
  - **Subqueries**

**HANDS-ON LAB PROJECT**

**DURATION 1.5 HRS**

### **Patient Medical Data Analysis with Advanced SQL**

**Description:** Utilize advanced SQL queries to analyze patient records and identify trends in healthcare outcomes.

**Tools covered:** SQL (SELECT, WHERE, ORDER BY, GROUP BY, HAVING, INNER and OUTER JOINS, Aggregate Functions, Ranking Functions, Subqueries, Conditional Logic).

**RESEARCH PROJECT**

**DURATION 2 HRS**

### **Student Academic Performance Tracking using SQL and MongoDB**

**Description:** Manage and analyze student data to monitor academic progress and attendance using SQL and NoSQL databases.

**Tools covered:** SQL (CRUD operations, JOINS, Subqueries, Variables, Conditional Logic), MongoDB (CRUD operations, Collections, Documents, JSON data handling).

## **Section 2 - MongoDB**

### **• Introduction to MongoDB**

- What is MongoDB
- **Characteristics** and Features
- MongoDB **Ecosystem**
- Installation process
- Connecting to MongoDB database
- Introduction to NoSQL
- Introduction of MongoDB module
- What are **Object Ids** in MongoDB

### **• MongoDB (Advance)**

- MongoDB Use cases
- MongoDB Structures
- MongoDB Shell vs MongoDB Server
- **Data Formats in MongoDB**
- MongoDB Aggregation Framework



- Aggregating Documents
- Working with MongoDB Compass & exploring data visually
- Understanding Create, Read, Update, Delete
- Schemas & Relations
- Document Structure
- Working with **Numeric Data**
- Working on **Scheme Designing**

#### HANDS-ON LAB PROJECT

**DURATION** 1.5 HRS

### Marketing Campaign Analytics with MongoDB

**Description:** Use MongoDB to store and analyze customer interactions and engagement data from marketing campaigns.

**Tools covered:** MongoDB (CRUD operations, aggregation framework), handling unstructured data, MapReduce functions, querying nested documents.

#### RESEARCH PROJECT

**DURATION** 2 HRS

### E-commerce Product Catalog Management

**Description:** Design and implement a MongoDB database to manage and query a dynamic product catalog for an e-commerce platform.

**Tools covered:** MongoDB (CRUD operations, collections, documents, indexing), handling JSON data, aggregation pipeline.

## Section 3 - Power BI

### • Getting Started With Power BI

- Installing Power **BI Desktop** and Connecting to Data
- Overview of the Workflow in Power BI Desktop
- Introducing the Different Views of the Data Mode
- **Query Editor Interface**
- Working on Data Model

### • Programming with Power BI

- Working with Time Series

- Understanding aggregation and **granularity**
- Filters and Slicers in Power BI Maps
- **Scatterplots** and BI Reports
- Connecting Dataset with Power BI Creating a Customer Segmentation Dashboard Analyzing the Customer Segmentation Dashboard

- **Assignments**

- Create Bar charts
- Create Pie charts
- Create Tree maps
- Create **Donut** Charts
- Create **Waterfall Diagrams**
- Creating Table Calculations for Gender

**HANDS-ON LAB PROJECT**

**DURATION** 1.5 HRS

### **Music Streaming Trends Dashboard**

**Description:** Create a dashboard to track and display music streaming statistics across different artists and genres.

**Tools covered:** Power BI Desktop, Data Modeling, DAX functions, Visualizations (area charts, pie charts, filters).

**RESEARCH PROJECT**

**DURATION** 2 HRS

### **University Enrollment Trends Dashboard**

**Description:** Create a dashboard to track and display student enrollment trends across different faculties over time.

**Tools covered:** Power BI Desktop, Data Modeling, DAX functions, Visualizations (line charts, pie charts, time slicers).

## Section 4 - BigData and Spark Analytics

- **Introduction To Hadoop & Big Data**

- Distributed Architecture - A Brief Overview. Understanding Big Data
- Introduction To **Hadoop**, Hadoop Architecture
- HDFS, Overview of MapReduce Framework
- Hadoop Master: Slave Architecture
- **MapReduce** Architecture
- Use cases of MapReduce

- **What is Spark**

- Introduction to Spark RDD
- Introduction to Spark SQL and **Data frames**
- Using R-Spark for machine learning

- **Hands-on:**

- Installation and configuration of Spark
- Using **R-Spark** for machine learning programming

## Section 5 - Time Series

- **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

- **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**

**HANDS-ON LAB PROJECT**

**DURATION 1.5 HRS**

### **Time Series Forecasting of Retail Sales using Apache Spark**

**Description:** Analyze historical retail sales data to predict future sales trends using Spark's time series capabilities.

**Tools covered:** Apache Spark (PySpark), Spark MLlib, Time Series

DOMAIN-SPECIFIC PROJECT

DURATION 2 HRS

### Employee Performance and Feedback Management System

**Description:** Design a system that stores employee performance data in SQL and feedback records in MongoDB. Use SQL queries for performance analysis and MongoDB for sentiment analysis of feedback. Present insights using a Power BI dashboard with advanced DAX calculations.

**Tools covered:** MySQL, MongoDB, Power BI, DAX



PostgreSQL



mongoDB



Power BI



DAX

DOMAIN-SPECIFIC PROJECT

DURATION 2 HRS

DATA ANALYSIS

### E-Commerce Data Warehouse and Reporting System

**Description:** Create an end-to-end data warehouse for an e-commerce company using SQL databases to store transactional data and MongoDB for customer feedback data. Develop a Power BI dashboard to visualize sales, customer trends, and feedback analysis.

**Tools covered:** PostgreSQL, MongoDB, Power BI, DAX



PostgreSQL



mongoDB



Power BI



DAX

We will cover AI tools fundamentals and advanced features including **machine learning frameworks**, **natural language processing**, and **computer vision applications**.

**Module Duration:**

**70-75 hrs** of live Instructor-led classes.

**10 hrs** of **on demand 1-1 session** for topics where you need help.

**Number of Projects with dedicated mentor**

**7** practice projects

**2** capstone project to work on real data

## Section 1 - Deep Learning using TensorFlow

- **Introduction to Deep Learning and TensorFlow**

- Neural Network
- Understanding Neural Network Model
- Installing TensorFlow
- Simple Computation, Constants, and Variables
- Types of file formats in TensorFlow
- Creating A Graph - Graph Visualization
- Creating a Model - Logistic Regression
- Model Building using tensor flow

- **TensorFlow Classification Examples**

- Introduction to TensorFlow
- Installing TensorFlow
- Simple Computation, Contents
- and Variables
- Types of file formats in TensorFlow
- Creating A Graph - Graph Visualization
- Creating a Model - Logistic Regression Model Building
- TensorFlow Classification Examples

- **Understanding Neural Networks With TensorFlow**

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



**HACKATHON PROJECT**

**DURATION** 1.5 HRS

### **Iris Species Classification with TensorFlow**

**Description:** Develop a logistic regression model using TensorFlow to classify Iris flower species.

**Tools covered:** TensorFlow installation, creating computation graphs, logistic regression model building, TensorBoard for visualization.

**GROUP PROJECT**

**DURATION** 2.5 HRS

### **Handwritten Digit Recognition with Neural Networks**

**Description:** Build and train a multi-layer neural network in TensorFlow to recognize handwritten digits from the MNIST dataset.

**Tools covered:** TensorFlow neural network models, multiple hidden layers, backpropagation, TensorBoard, graph visualization.

Get **personalized 1:1 mentorship** on **real-time practical projects** for deeper understanding and skill enhancement.

## **Section 2 - Natural Language Processing (NLP)**

- **Natural Language Processing**

- Text Analytics
- Introduction to NLP
- Use cases of NLP algorithms
- NLP Libraries
- Need for **Textual Analytics**
- Applications of NLP
- Word Frequency Algorithms for NLP Sentiment Analysis

- **Text Analysis**

- Distance Algorithms used in Text Analytics
- String Similarity
- **Cosine Similarity** Mechanism -
- The similarity between two text documents

- **Levenshtein** distance - measuring the difference between two sequences
- **KNN**
  - Information Retrieval Systems
  - Information Retrieval - **Precision, Recall, F-score** TF-IDF
  - KNN for document retrieval
  - K-Means for document retrieval
  - Clustering for document retrieval
- **Text Pre Processing Techniques**
  - Need for Pre-Processing
  - Various methods to Process the Text data
  - **Tokenization**, Challenges in Tokenization
  - Stopping, Stop Word Removal
- **Stemming**
  - **Stemming** - Errors in Stemming
  - Types of Stemming Algorithms - Table
  - **Lookup** Approach
  - N-Gram Stemmers

**GROUP PROJECT**

**DURATION 2.5 HRS**

### **Sentiment Analysis on Social Media Data**

**Description:** Perform sentiment analysis on Twitter data using RNN or BERT to classify sentiments.

**Tools covered: TensorFlow, Hugging Face, NLTK**

**CAPSTONE PROJECT**

**DURATION 2.5 HRS**

### **GPT-3 Based Text Generation**

**Description:** Fine-tune GPT-3 to generate domain-specific text, such as legal documents or technical reports.

**Tools covered: OpenAI GPT-3, Hugging Face Transformers**

- **Introduction to AWS and Azure Machine Learning Services**
  - Overview of AWS SageMaker and Azure Machine Learning
  - Key features and benefits of using these platforms
  - Understanding different types of machine learning algorithms and use cases
- **Setting up the Environment**
  - Creating AWS and Azure accounts
  - Configuring the required tools and SDKs (e.g. AWS CLI, Azure CLI, Azure PowerShell)
  - Understanding the infrastructure requirements for training and deploying models (e.g. EC2 instances, GPU instances, Azure ML Compute)
- **Data Preparation and Feature Engineering**
  - Understanding the data requirements for machine learning models (e.g. structured vs unstructured data, data size, data quality)
  - Data cleaning and preprocessing techniques (e.g. missing value imputation, feature scaling, encoding categorical variables)
  - Feature selection and engineering techniques (e.g. PCA, feature importance)
- **Model Training and Evaluation**
  - Choosing the right machine learning algorithm and model (e.g. regression, classification, clustering)
  - Training models using AWS SageMaker and Azure Machine Learning (e.g. using built-in algorithms, custom code)
  - Evaluating model performance and tuning hyperparameters (e.g. cross-validation, hyperparameter optimization)

**GROUP PROJECT**

**DURATION 2.5 HRS**

### Game Environment Solver with Q-Learning

**Description:** Implement a Q-Learning algorithm to train an agent to solve a grid-world or maze environment using OpenAI Gym.

**Tools covered:** Python, OpenAI Gym, TensorFlow/PyTorch

DOMAIN-SPECIFIC PROJECT

DURATION 2 HRS

## AI-Powered Customer Support Chatbot

**Description:** Build a chatbot using GPT-3 for query handling and RNN-based sentiment analysis. Deploy the model on AWS SageMaker with a Flask API for real-time interactions.

**Tools covered:** OpenAI GPT-3, TensorFlow, Flask, SageMaker, Docker



DOMAIN-SPECIFIC PROJECT

DURATION 2 HRS

## E-Commerce Image Classification and Sales Forecasting

**Description:** Create a system that classifies product images using CNN (ResNet) and forecasts sales trends using LSTM. Deploy on AWS with CI/CD pipelines.

**Tools covered:** TensorFlow, Flask, AWS SageMaker, Docker, Jenkins



Completing the **capstone project** helps you understand AI tools better and showcase your skills. It also strengthens your **portfolio** and supports your **career growth**.

**Note:** You can attain the project session in **2 modes**

1. **Live Online** with industry-led session
2. **Offline session** in 7+ cities (Instructor-Led)

# Real-time Industrial Projects

## #1



### Predictive Maintenance for Electric Vehicles

Implement a predictive maintenance system to forecast and prevent potential failures in electric vehicle components.

**Tools:**  

**Outcome:** Reduced maintenance costs and downtime, improved vehicle reliability and customer satisfaction.

## #2



### Supply Chain Optimization

Analyze and optimize supply chain operations to reduce costs and improve efficiency using historical sales and logistics data.

**Tools:**  +  


**Outcome:** Streamlined supply chain processes, reduced operational costs, and improved product availability.

## #3



### Customer Purchase Prediction

Develop a machine learning model to predict customer purchase behavior based on historical data and browsing patterns

**Tools:**  TensorFlow  Amazon SageMaker

**Outcome:** Enhanced marketing strategies and personalized recommendations, leading to increased sales and customer satisfaction

## #4



### Drug Discovery Acceleration

Utilize AI and machine learning to accelerate the drug discovery process by predicting the efficacy of potential compounds

**Tools:**   IBM Watson

**Outcome:** Faster time-to-market for new drugs and significant cost savings in research and development.

# Real-time Industrial Projects

## #5



### Employee Productivity Analysis

Analyze employee performance data to identify factors that impact productivity and develop strategies to enhance efficiency

**Tools:**  Power BI  python

**Outcome:** Improved employee performance and productivity, leading to higher overall organizational effectiveness.

## #6

NETFLIX

### Content Recommendation Engine Enhancement

Enhance the recommendation engine to provide more accurate and personalized content suggestions to users

**Tools:**  python  kafka  spark

**Outcome:** Increased user engagement and retention, leading to higher subscription rates.

## #7

JPMORGAN  
CHASE & CO.

### Fraud Detection System

Implement an advanced fraud detection system to identify and prevent fraudulent transactions in real-time

**Tools:**  TensorFlow  python

**Outcome:** Reduced financial losses due to fraud and increased customer trust and security.

## #8

Uber

### Dynamic Pricing Optimization

Develop a dynamic pricing model that adjusts fares based on demand, supply, and other external factors

**Tools:**  MATLAB  HIVE

**Outcome:** Maximized revenue and improved service availability during peak times.



# Real-time Industrial Projects

## #9

Google

### Ad Spend Optimization

Develop a data-driven strategy to optimize ad spend across different channels by analyzing performance metrics and customer behavior

**Tools:**  Google Big Query   python

**Outcome:** Increased ROI on advertising campaigns and more effective allocation of marketing budgets.

## #10

facebook

### User Sentiment Analysis

Analyze user posts and comments to gauge public sentiment and identify trends and patterns

**Tools:**  python  NLTK  STORM

**Outcome:** Better understanding of user preferences and improved content and advertising strategies.

## #11

CapitalOne

### AI-based Financial Portfolio Optimization

Develop a system that uses AI to optimize financial portfolios by analyzing market trends, risk factors, and investor preferences

**Tools:**  TensorFlow  python

**Outcome:** A web app suggesting tailored financial portfolios for CapitalOne clients based on risk tolerance and goals.

## #12

headspace

### AI tool for monitoring mental health

Develop an AI tool to monitor user engagement with meditation and mental health content to offer personalized well-being suggestions

**Tools:**  Flutter  React Native  NLP

**Outcome:** Tracks user interactions, sentiment, and usage patterns to offer personalized mental health advice, detect distress signs, and suggest interventions.

# Thank you!

For more queries and information  
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Visit us at

**[www.learnbay.co](http://www.learnbay.co)**

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