

# Industry Ready Data Science Projects Tech Neuron

Ready to use end-to-end data science projects for real-world business use cases. We will be discussing projects from very scratch such as understanding problem statements, capturing requirements, and various aspects of project design using different documentation such as High-Level Design, Low-Level Design, and Architecture Design. Practical use of MLOPS practices using tools such as MLFLOW, Wandb. Pipeline implementation for training, retraining, and inferencing. Designing dashboard to present important KPIs to monitor system and model performance and generate alert to notify the appropriate parties to address serious problems if it is about to occur.

Duration :                                      Language : English                                      Price : 25000

## What you will learn?

- System Architecture
- High Level Design
- Component Selection
- Low Level Design
- Core utility design
- Deployment Architecture
- Multistage pipeline for CI/CD
- ML Pipeline Understanding
- Training Pipeline Implementation
- Inference Pipeline Implementation
- Retraining Pipeline Implementation
- Deployment of ML Pipeline on Cloud
- Monitoring of System and Model Performance

## Features

- Online Instructor-led learning
- Doubt Clearing
- Proper Roadmap for building AI projects
- Lifetime Dashboard access
- Recording of Live Class
- Material
- Interview Questions
- Resume Building
- Career Guidance
- Quiz in every module - Based on Real Time Questions

- Certificate
- Industry Level Projects and Case studies
- Capstone Projects

## **Requirements**

- System with Internet Connection
- Interest to learn
- Dedication
- Knowledge of Python
- Knowledge of Machine Learning

## **Course Curriculum**

### **Project - Sensor Fault Detection**

- Project Introduction
- Project Business Use case
- System Architecture
- High Level Design
- Component Selection
- Low Level Design
- Core utility design
- Deployment Architecture
- Multistage pipeline for CI/CD
- Technology Stack
- Python, Pandas, Sklearn, Mlflow, Cloud, Prometheus and Grafana, Docker, RDBMS, Cloud Storage, Flask, Git, GitHub
- ML Pipeline Understanding
- Type of ML Pipeline
- Training Pipeline
- Inferencing Pipeline
- Retraining Pipeline
- Training Pipeline Implementation
- Introduction to Training Pipeline
- Data Ingestion From Data Source
- Data Validation
- EDA, Data Preprocessing, Feature Engineering Model Selection

- Customize Model Training
- Model Training, Selection and Hyperparameter Tuning
- Model Analysis and Evaluation
- Model Push/ Export
- Inference Pipeline Implementation
- Introduction to Inference Pipeline
- Understanding of the use of Artifact Generated by Training Pipeline
- Data Validation
- Data Preprocessing and Feature Engineering
- Prediction using preprocessed data
- Retraining Pipeline Implementation
- Introduction to Retraining Pipeline
- Model Analysis and Performance Monitoring of Prediction Pipeline
- Creating Trigger to Initiate Model Retraining
- Deployment of ML Pipeline on Cloud
- Schedule and Orchestrate Training Pipeline
- Deployment of Inference Pipeline as an API
- Deployment of Retraining Pipeline
- Monitoring of System and Model Performance
- Importance of Monitoring
- Visualization of KPI and Other Indicator
- System and Model Performance Visualization
- Implementation of Alert and Notification to prevent Failure
- Project Conclusion

## **Project - Financial Product Complaint**

- Project Introduction
- Project Business Use case
- System Architecture
- High Level Design
- Component Selection
- Low Level Design
- Core utility design
- Deployment Architecture
- Multistage pipeline for CI/CD

- Technology Stack
- Python, Pytorch, Cloud, Prometheus and Grafana, Docker, RDBMS, Cloud Storage, Flask, Git, GitHub
- ML Pipeline Understanding
- Type of ML Pipeline
- Training Pipeline
- Inferencing Pipeline
- Retraining Pipeline
- Training Pipeline Implementation
- Introduction to Training Pipeline
- Data Ingestion From Data Source
- Data Validation
- EDA, Data Preprocessing, Feature Engineering Model Selection
- Model Training, Selection and Hyperparameter Tuning
- Model Analysis and Evaluation
- Model Push/ Export
- Inference Pipeline Implementation
- Introduction to Inference Pipeline
- Understanding of the use of Artifact Generated by Training Pipeline
- Data Validation
- Data Preprocessing and Feature Engineering
- Prediction using preprocessed data
- Retraining Pipeline Implementation
- Introduction to Retraining Pipeline
- Model Analysis and Performance Monitoring of Prediction Pipeline
- Creating Trigger to Initiate Model Retraining
- Deployment of ML Pipeline on Cloud
- Schedule and Orchestrate Training Pipeline
- Deployment of Inference Pipeline as an API on Elastic Container Serving
- Deployment of Retraining Pipeline
- Monitoring of System and Model Performance
- Importance of Monitoring
- Visualization of KPI and Other Indicator
- System and Model Performance Visualization
- Implementation of Alert and Notification to prevent Failure

- Project Conclusion

## **Project - Face Authenticator**

- Project Introduction
- Project Business Use case
- System Architecture
- High Level Design
- Component Selection
- Low Level Design
- Core utility design
- Deployment Architecture
- Multistage pipeline for CI/CD
- Technology Stack
- Python, MongoDB, Deepface, Flask, Docker, EC2 Instance, Git, Github, SQL
- Face Authenticator Pipeline
- Understanding Face Authenticator mechanism
- Face Registration Pipeline
- Face Identification Pipeline
- Face Registration Pipeline
- Capturing Images of a Person
- Generating Embedding of Facial Image
- Save Embedding in Database
- Face Identification Pipeline
- Detecting face of a Person at login portal
- Generate embedding of captured face
- Search Generated Embedding in DB using similarity metrics Triplet Loss
- Monitoring of System and Model Performance
- Importance of Monitoring
- Visualization of KPI and Other Indicator
- System and Model Performance Visualization
- Implementation of Alert and Notification to prevent Failure
- Project Conclusion

## **Project - Embedding based search engine**

- Project Introduction
- Project Business Use case

- System Architecture
- High Level Design
- Component Selection
- Low Level Design
- Core utility design
- Deployment Architecture
- Multistage pipeline for CI/CD
- Technology Stack
- Python, Pytorch, Hugging Face, Transformer, Prometheus and Grafana, Docker, RDBMS, Cloud Storage, Flask, Git, GitHub
- ML Pipeline Understanding
- Type of ML Pipeline
- Training Pipeline
- Inferencing Pipeline
- Retraining Pipeline
- Training Pipeline Implementation
- Introduction to Training Pipeline
- Data Ingestion From Data Source
- Data Validation
- EDA, Data Preprocessing, Feature Engineering Model Selection
- Model Training, Selection and Hyperparameter Tuning
- Model Analysis and Evaluation
- Model Push/ Export
- Inference Pipeline Implementation
- Introduction to Inference Pipeline
- Understanding of the use of Artifact Generated by Training Pipeline
- Data Validation
- Data Preprocessing and Feature Engineering
- Prediction using preprocessed data
- Retraining Pipeline Implementation
- Introduction to Retraining Pipeline
- Model Analysis and Performance Monitoring of Prediction Pipeline
- Creating Trigger to Initiate Model Retraining
- Deployment of ML Pipeline on Cloud
- Schedule and Orchestrate Training Pipeline

- Deployment of Inference Pipeline as an API
- Deployment of Retraining Pipeline
- Monitoring of System and Model Performance
- Importance of Monitoring
- Visualization of KPI and Other Indicator
- System and Model Performance Visualization
- Implementation of Alert and Notification to prevent Failure
- Project Conclusion