Coincent 3-Year Program in Machine Learning with Python
Partnered by Worisgo

Year 1: Live Industrial Training – Build Your Foundation

Gain hands-on industry exposure from day one with 2.5 months of live training in a professional environment. Learn the latest tools and technologies through skill-focused sessions, guided by expert mentors from the industry

Machine Learning Curriculum

1. Introduction to Python (For ML Foundations)

1.1 Python Crash Course Introduction

- What is Python?
- Use cases in AI/ML/Data Science

1.2 Python Demo & Installation

- Installing Python (Anaconda/Miniconda)
- Jupyter Notebook setup

1.3 Python Introduction and Installation

- Python IDEs, interpreters
- Running .py scripts

1.4 Basic Python and Datatypes

- int, float, bool, str
- Type conversion

1.5 Numbers & Strings

- String slicing, formatting
- Arithmetic & logical operations

1.6 Data Types

- Lists, Tuples, Sets, Dictionaries

2. Control Flow

2.1 If-Else Conditions

- Conditional expressions
- Nested if, elif

2.2 While & For Loops

- Loop control: break, continue
- Iterating through collections

3. Exception Handling

3.1 Exception Handling

- Try-Except-Else-Finally
- Common exceptions in ML workflows (e.g., ZeroDivisionError, ValueError)

4. Functions

- Defining functions
- Parameters, default values
- Lambda functions
- Scope and return values

5. Object-Oriented Programming (OOP)

5.1 Classes

- Objects, attributes, methods

5.2 OOP

- Inheritance, Polymorphism
- Encapsulation and abstraction
- Relevance to ML (e.g., custom model classes)

6. Deep Learning Basics

6.1 Logistic Regression vs Deep Learning

- When to use Logistic Regression vs Neural Networks
- Linear boundaries vs non-linear decision making

6.2 TensorFlow and Keras

- Building a neural network in Keras
- Layers, activation functions, compiling, training, evaluating

7. Python Libraries for ML

7.1 Introduction to Libraries

- Why libraries matter in ML
- Popular libraries overview

7.2 Library Introduction

- Setting up with pip or conda

7.3 Matplotlib

- Plotting graphs
- Visualizing data & model performance (loss curves, confusion matrices)

7.4 NumPy

- Arrays, matrix operations
- Random number generation

7.5 Pandas

- DataFrames, filtering, grouping
- Handling missing values

8. Math for Machine Learning

8.1 Data

- Types: categorical, numerical, ordinal
- Data collection and integrity

8.2 Linear Algebra

- Vectors, matrices, dot product
- Applications in ML: weights, embeddings

8.3 Statistics

- Mean, median, mode
- Variance, standard deviation

8.4 Probability & Stats

- Distributions: binomial, normal, Poisson
- Bayes theorem

9. Probability & Data Visualization

9.1 Introduction to Probability, Statistics & SQL

- Probability in ML models
- Basic SQL for data querying

9.2 Data Visualization with Tableau

- Dashboards, plots, charts
- Connecting Tableau to data sources

9.3 LSTM (Intro)

- Long Short-Term Memory networks
- Use in time series and NLP
- Basic model using Keras

10. Machine Learning Models

10.1 Clustering

- K-Means Clustering
- Hierarchical clustering
- Applications: customer segmentation

10.2 Evaluation Metrics

- Accuracy, Precision, Recall, F1-score
- Confusion matrix, ROC-AUC
- Cross-validation

10.3 Logistic Regression – Feature Regression

- Feature selection: correlation, chi-squared test
- Feature importance, regularization

10.4 Logistic Regression

- Binary classification
- Sigmoid function
- Decision boundary

10.5 Simple Linear Regression

- Linear relationship
- Least squares method
- Evaluation: R^2, MAE, MSE

10.6 Multiple Linear Regression

- Handling multiple predictors
- Multicollinearity

Year 2: Real-Time Projects – Apply What You've Learned

Transform your knowledge into real-world experience by working on 8 industry-level projects that build your technical and professional skills. Each project enhances your portfolio, strengthening your resume and showcasing your practical abilities. You'll also collaborate in teams, gaining valuable experience in communication, teamwork, and project management—just like in a real work environment.

PROJECTS

Restaurant Review using NLP

This project uses Natural Language Processing (NLP) to analyze and classify restaurant reviews as positive or negative. It involves text preprocessing, tokenization, and feature extraction using TF-IDF or Word2Vec. Machine learning models like Logistic Regression or Random Forest are trained on labeled data. The goal is to automate sentiment analysis and enhance customer feedback interpretation. It helps restaurants track customer satisfaction and improve service. The project includes evaluation using accuracy and confusion matrix. Tools used: **Python**, **NLTK**, **Scikit-learn**, **Pandas**.

Self Driving Car

This project simulates a self-driving car using machine learning and computer vision techniques. It detects road lanes, signs, and objects using OpenCV and deep learning models like CNNs. Real-time decisions are made based on sensor input or video feed. Reinforcement learning can be applied for path optimization. It is often trained in simulators before real-world deployment. The project demonstrates automation in the transportation sector. Tools: **TensorFlow/Keras**, **OpenCV**, **Python**, **Carla/DonkeyCar**.

Vehicle Price Prediction

This regression-based project predicts the selling price of vehicles based on features like model, mileage, fuel type, and age. It uses data preprocessing, encoding, and model building with algorithms like Linear Regression, Decision Trees, or XGBoost. The project aims to help users and dealerships estimate fair vehicle pricing. Feature importance analysis enhances model interpretability. Performance is measured using RMSE or R^2 score. Tools: **Pandas**, **Scikit-learn**, **Matplotlib**, **Seaborn**.

Dogs vs Cats using CNN

This classification project uses Convolutional Neural Networks (CNNs) to distinguish between images of dogs and cats. The model learns visual features like ears, fur, and shapes from labeled images. The dataset is augmented and normalized for improved training. Accuracy improves with deeper CNN architectures and dropout layers. It's a foundational project in computer vision and image classification. Tools: **Keras**, **TensorFlow**, **OpenCV**, **Matplotlib**.

Lead Scoring Case Study

This project builds a classification model to score and prioritize sales leads based on conversion likelihood. It uses historical lead data with features like source, activity level, and demographics. Logistic Regression or Decision Trees are commonly applied. It helps sales teams focus on high-potential leads. The model is evaluated using precision, recall, and ROC curve. Tools: **Python**, **Scikit-learn**, **Pandas**, **Seaborn**.

Diabetes Prediction using ML

This binary classification task predicts whether a patient is likely to develop diabetes based on medical parameters like BMI, glucose level, and age. The Pima Indians Diabetes dataset is commonly used. Models like Logistic Regression, Random Forest, or SVM are trained and evaluated. Feature scaling and handling class imbalance are key steps. The goal is to assist early diagnosis and preventive care. Tools: **Scikit-learn**, **Pandas**, **Matplotlib**, **NumPy**.

Number of Orders Prediction

This time series or regression project predicts the future number of orders in a business or delivery service. It uses historical order data, seasonality patterns, and external factors (e.g., holidays). Models like Linear Regression, ARIMA, or LSTM are used depending on the data type. Accurate predictions help in inventory and logistics planning. The model is validated using RMSE or MAE. Tools: **Python**, **Scikit-learn**, **Statsmodels**, **Keras**.

Bike Sharing Demand Prediction

This project predicts the demand for bike rentals based on features like weather, time, and day. It uses regression models such as Random Forest, Gradient Boosting, or Neural Networks. EDA is performed to analyze trends and correlations in user behavior. Feature engineering improves accuracy by incorporating time-based variables. The model supports operational planning in urban mobility. Tools: **Python**, **Pandas**, **Scikit-learn**, **Matplotlib**.

Year 3 – Placement & Internship Phase:

In the 3rd year of Coincent's program, students are guaranteed an internship with partner companies, complete with a formal Internship Offer Letter and a Completion Certificate upon successful completion. This internship is a complimentary part of the 3-Year "Industrial Training + Internship" model, which also includes live classes, expert mentorship, and hands-on project work. This phase bridges academic learning with real-world application, providing students with valuable professional exposure before graduation.

Coincent also offers structured placement preparation to ensure students are job-ready. This includes portfolio building through 8 real-time projects, certifications aligned with Microsoft standards, and dedicated training for interviews. From mock interviews to resume reviews and HR/technical round prep, every element is designed to transition students from classroom learning to career success. By the 4th year, students are equipped not just with knowledge, but with experience, credentials, and confidence to enter the workforce.