



AI Vision Your Future
Technical and Training Services

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Data Science Diploma

Advanced Level

Diploma Courses:

1. Machine Learning Course (60 hour)
2. Deep learning (40 hour)
3. Projects

■ Prerequisites:

- Data Science Diploma Intermediate Level

Course 1 “Machine Learning”: (60 hour)

Module 1:

- Introduction to Machine Learning
 - Definition of machine learning
 - Different types of machine learning
 - Applications of machine learning
 - Overview of the machine learning process

Module 2:

- Vectors and Matrices
- Matrix Operations (Addition, Scalar Multiplication, Transpose, Matrix Multiplication, Inverse)
- Eigenvalues and Eigenvectors
- Singular Value Decomposition
- Matrix Factorization (QR, LU, Cholesky)

Module 3:

- Probability Theory
 - Probability Spaces and Random Variables
 - Probability Distributions (Bernoulli, Binomial, Poisson, Normal, Exponential)
 - Joint and Conditional Probability
 - Central Limit Theorem

Module 4:

- Supervised learning
 - Regression
 - Linear regression
 - Polynomial regression
 - KNN
 - Decision tree
 - Random forest
 - Classification
 - Logistic Regression
 - KNN
 - Naïve bay's
 - Decision tree
 - Random forest
 - adaBoost
 - XGBoost
 - SVM
- Dimensionality Reduction
 - Feature selection
 - Feature extraction

Module 5:

- Unsupervised learning
 - Clustering
 - k-means
 - agglomerative, divisive
 - BDSCAN
 - Recommendation systems
 - Apriori

Module 6:

- Model Evaluation
 - Training, validation, and testing sets
 - Performance metrics (e.g., accuracy, precision, recall)
 - Cross-validation
 - Hyperparameter tuning.



Course 2 “Deep Learning” :(40 hour)

Module 1:

- Introduction to Deep Learning
 - Overview of Deep Learning and its applications
 - Neural Networks and their history
 - Perceptron
 - ANN
 - Types of Neural Networks (e.g., feedforward, convolutional, recurrent)

Module 2:

- Train neural network
 - Feedforward and backpropagation
 - Loss types
 - Activation functions
 - Gradient descent types

Module 3:

- TensorFlow
- Keras
- Overfitting and underfitting
- How solve overfitting problem.

Module 4:

- Optimization
 - Gradient descent
 - Stochastic gradient descent
 - Adagrade
 - Rmsprop
 - Adam
 - Learning decay

Module 5:

- Generative Models



Projects

- News Aggregator
- E-commerce Price Tracker
- Real Estate Listings Scraper
- Customer Segmentation and Analysis
- Healthcare Data Analysis Market Basket Analysis
- Customer Churn Analysis
- Healthcare Diagnostics
- House Pricing
- Customer Churn
- Predictive Maintenance
- Energy Consumption Forecasting
- Recommendation Systems for E-commerce.
- Real Estate Prediction
- Machine Maintenance
- Anomaly Detection

