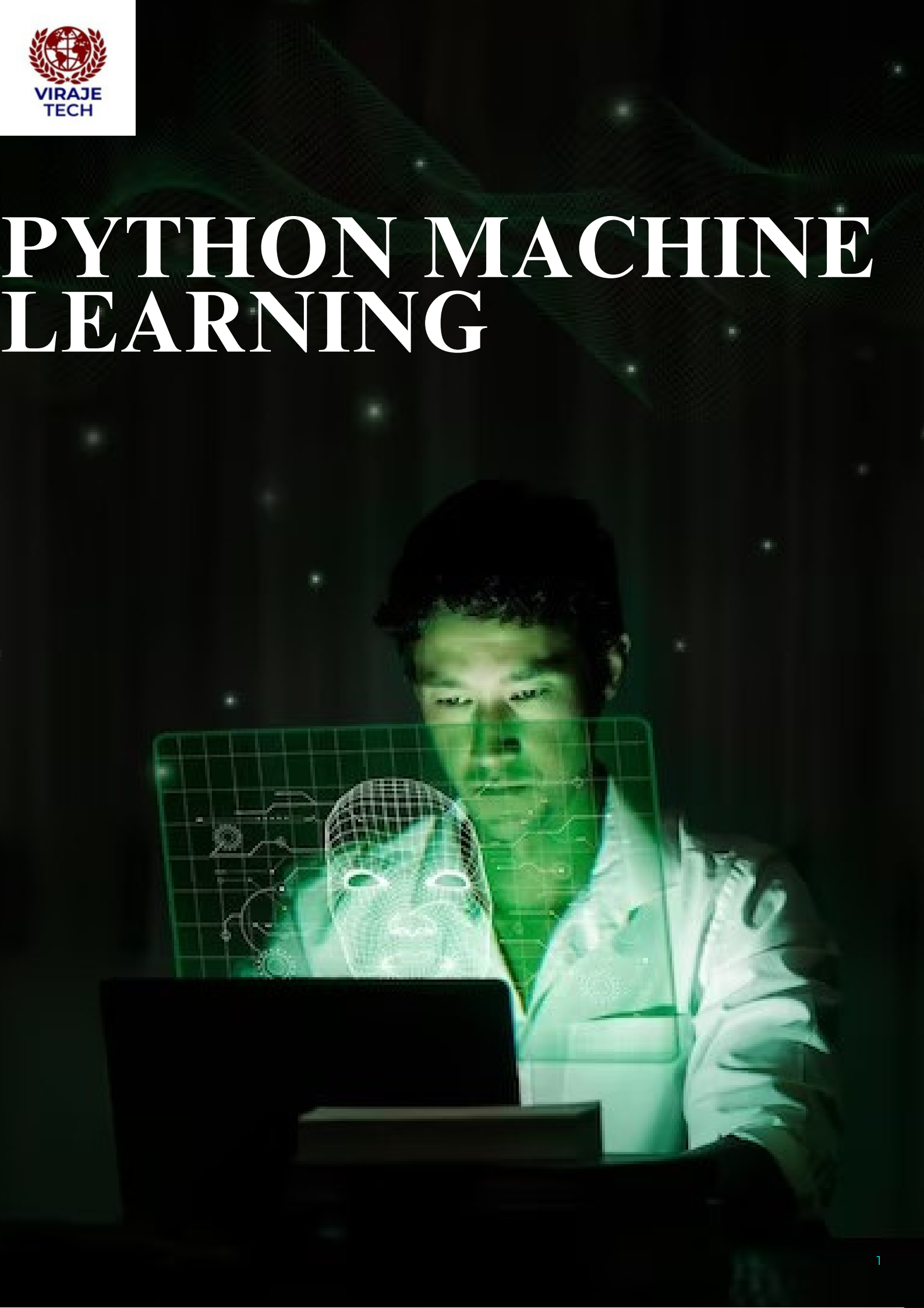
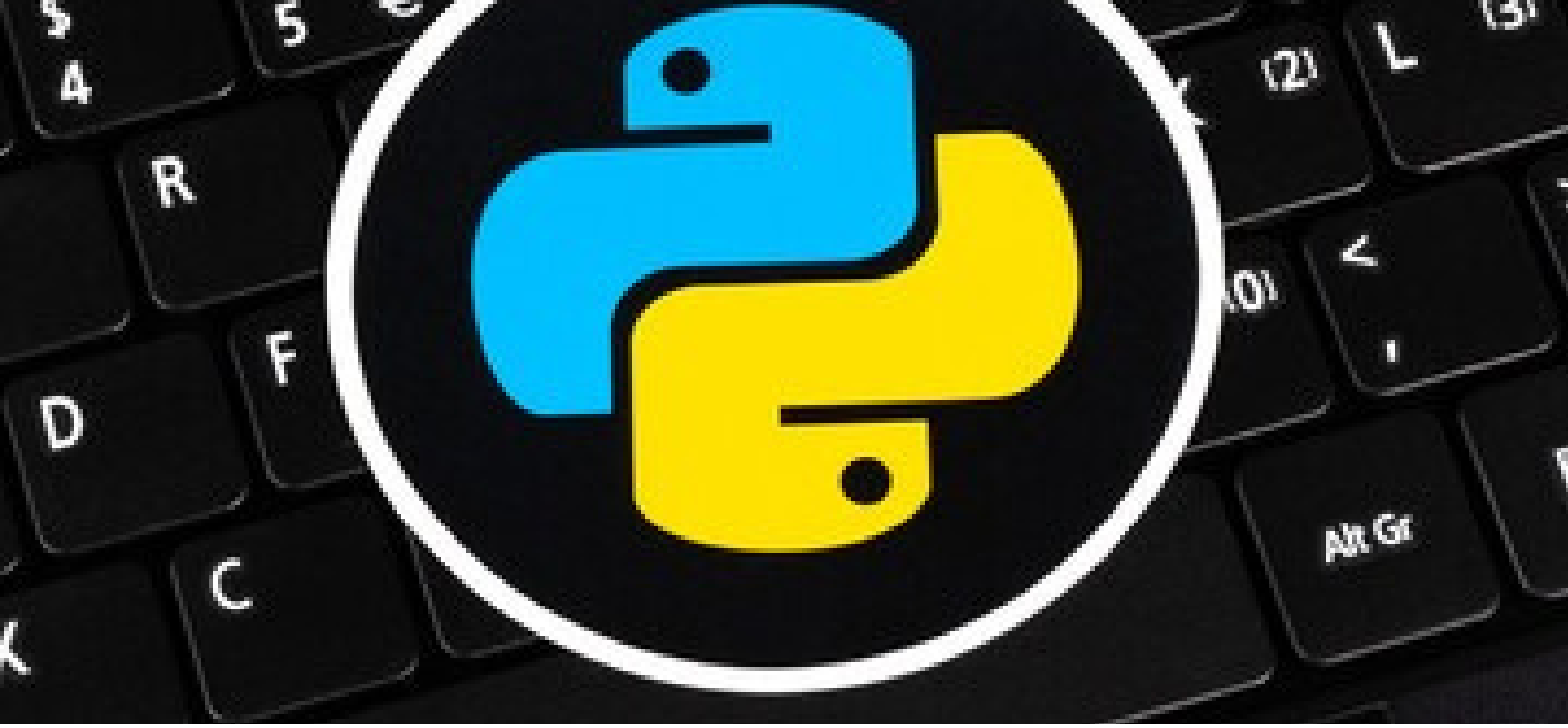
VIRAJE TECH

PYTHON MACHINE LEARNING



- Access to Interview Opportunities with Top Companies
- Industry-Relevant Curriculum Designed and Taught by Industry Experts
- Hands on Project and Industry Specific Tools
- Dedicated CareerSupport and Interview Preparation
- Post Graduate Certificatefrom Great Lakes Executive Learning



Python has become a cornerstone in the IT industry due to its versatility, readability, and extensive ecosystem of libraries and frameworks. Widely adopted for web development, data science, machine learning, and automation, Python offers a simple syntax that makes it accessible for beginners yet powerful enough for complex applications. Its popularity stems from its role as a general-purpose language, fostering rapid development and efficient code maintenance. Python's extensive community support and a rich set of libraries such as NumPy, Pandas, and TensorFlow contribute to its dominance in data-centric applications and emerging technologies. In the IT industry, mastering Python equips professionals with a valuable skill set applicable across a spectrum of domains, making it a go-to language for building scalable, innovative, and robust solutions.

The Program helps you do grow and bloom in Industry and developed by best-in-class industry experts.It offers a blend of online learning with live and recorded lectures along with access to dedicated career support and rewarding job opportunities.

LEARN ONLINE ANYTIME, ANYWHERE

Learn from live masterclasses by top industryleaders and online lab sessions every week, along with 100+ hours of learning content.

WEEKLY ONLINE MENTORSHIPFROM EXPERTS

Get assistance on projects and reinforce the concepts you learn through weekly mentorship sessions.

NETWORK WITH LIKE-MINDED PEERS

Interact with peers from diverse backgroundsand grow your professional network.

DEDICATED PROGRAM SUPPORT

Access dedicated support on your learning journey and resolve for all your queries withhelp from a dedicated Program Manager.

A fresh graduate or a working professional looking to up-skill andbuild a career.

LEARNING PLAN

PYTHON MACHINE LEARNING COURSE CONTENT

1: Introduction to Machine Learning

1.1 What is Machine Learning?

1.2 Types of Machine Learning (Supervised, Unsupervised, Reinforcement Learning)

1.3 Python and Machine Learning Libraries (NumPy, Pandas, Scikit-Learn)

1.4 Jupyter Notebooks for Machine Learning

2: Data Preprocessing

2.1 Data Cleaning and Handling Missing Data

2.2 Feature Scaling and Normalization

2.3 Data Encoding (One-Hot Encoding, Label Encoding)

2.4 Feature Engineering

3: Supervised Learning

3.1 Linear Regression

3.2 Logistic Regression

3.3 Decision Trees and Random Forests

3.4 Support Vector Machines (SVM)

3.5 k-Nearest Neighbors (k-NN)

3.6 Naive Bayes

3.7 Evaluation Metrics (Accuracy, Precision, Recall, F1-Score, ROC, AUC)

4: Unsupervised Learning

4.1 Clustering (K-Means, Hierarchical Clustering, DBSCAN)

4.2 Dimensionality Reduction (Principal Component Analysis - PCA)

4.3 Anomaly Detection

4.4 Association Rule Learning (Apriori)

5: Neural Networks and Deep Learning

5.1 Introduction to Artificial Neural Networks (ANNs)

5.2 Feedforward Neural Networks

5.3 Activation Functions (Sigmoid, ReLU, etc.)

5.4 Backpropagation and Gradient Descent

5.5 Convolutional Neural Networks (CNNs)

5.6 Recurrent Neural Networks (RNNs)

5.7 Transfer Learning

5.8 Introduction to TensorFlow and Keras

6: Model Evaluation and Hyperparameter Tuning

6.1 Cross-Validation

6.2 Grid Search and Random Search for Hyperparameter Tuning

6.3 Model Selection and Comparison

6.4 Bias-Variance Tradeoff

6.5 Overfitting and Underfitting

7: Natural Language Processing (NLP)

7.1 Text Preprocessing

7.2 Bag of Words and TF-IDF

7.3 Word Embeddings (Word2Vec, GloVe)

7.4 Sentiment Analysis

7.5 Text Classification

7.6 Named Entity Recognition (NER)

8: Reinforcement Learning

8.1 Introduction to Reinforcement Learning

8.2 Markov Decision Processes (MDPs)

8.3 Q-Learning

8.4 Deep Q-Networks (DQNs)

8.5 Policy Gradient Methods

9: Deployment and Scaling

9.1 Model Deployment (Flask, Django, Docker)

9.2 Cloud-Based Deployment (AWS, Google Cloud, Azure)

9.3 Model Monitoring and Maintenance

10: Case Studies and Projects

10.1Real-world Machine Learning projects and case studies

10.2Hands-on implementation and problem-solving

12: Future Trends and Advanced Topics

12.1Generative Adversarial Networks (GANs)

12.2Autoencoders

12.3Reinforcement Learning in Robotics

12.4Explainable AI (XAI)

12.5Quantum Machine Learning

READY TO ADVANCE YOUR CAREER?

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