SPYPRO SECURITY SOLUTIONS Pvt. Ltd.,
CYBERSECURITY

3-Days Workshop on Machine Learning with Python

Workshop Overview:

The Machine Learning with Python workshop is a comprehensive learning program designed to provide participants with the knowledge and practical skills necessary to develop and deploy machine learning models using Python. The workshop typically spans multiple days and covers essential topics, hands-on exercises, and real-world applications of machine learning.

Day 1:

Session 1: Introduction to Machine Learning

Overview of machine learning concepts and applications

Types of machine learning: supervised, unsupervised, and reinforcement learning

Introduction to Python and its role in machine learning

Session 2: Python Fundamentals for Machine Learning

Python basics: data types, variables, loops, and conditionals

Essential Python libraries for machine learning: NumPy, Pandas, and Matplotlib

Hands-on exercises: loading and manipulating datasets, data preprocessing, and visualization

Session 3: Supervised Learning Algorithms

Linear regression: theory, implementation, and evaluation

Logistic regression: theory, implementation, and evaluation

Decision trees: theory, implementation, and evaluation

Day 2:

Session 1: Unsupervised Learning Algorithms

Clustering techniques: K-means clustering and hierarchical clustering

Dimensionality reduction: principal component analysis (PCA)

Hands-on exercises: clustering and dimensionality reduction on real-world datasets

Session 2: Model Evaluation and Validation

Metrics for model evaluation: accuracy, precision, recall, and F1 score

Cross-validation: k-fold cross-validation technique

Overfitting and underfitting: techniques to address these issues

Session 3: Deep Learning and Neural Networks

Introduction to artificial neural networks (ANNs)

Convolutional neural networks (CNNs) for image classification

Recurrent neural networks (RNNs) for sequence data analysis

Day 3:

Session 1: Deep Learning Libraries: TensorFlow and Keras

Overview of TensorFlow and Keras libraries

Building deep learning models using Keras

Training and evaluating deep learning models

Session 2: Model Deployment and Integration

Saving and loading machine learning models

Deploying models as web services using Flask

Integrating machine learning models with other applications

Session 3: Practical Project and Discussion

Participants will work on a practical project using machine learning techniques

Project presentations and discussions

Q&A session and wrap-up

Workshop Benefits:

In-depth Understanding: Participants will gain a comprehensive understanding of machine learning concepts, algorithms, and their implementation in Python.

Hands-on Experience: The workshop includes practical exercises and a project, allowing participants to apply their knowledge and gain hands-on experience.

Expert Guidance: Experienced instructors will provide guidance and support throughout the workshop.

Networking Opportunities: Participants will have the chance to interact with other professionals interested in machine learning and build valuable connections.

Certificate of Completion: Attendees will receive a certificate of completion, recognizing their successful participation in the 3-day workshop.

Conclusion:

The 3-day workshop on machine learning with Python provides a structured and immersive learning experience, covering fundamental concepts, hands-on exercises, and practical projects. Participants will leave with the knowledge, skills, and confidence to apply machine learning techniques using Python in real-world scenarios. This workshop is suitable for beginners or individuals with some programming experience looking to expand their knowledge in the field of machine learning with Python.