ALGOSTATS
INNOVATE WITH INTELLIGENT ANALYTICS

This accelerated 4-day workshop is designed to immerse participants in the world of AI and ML, providing them with the knowledge and hands-on experience needed to begin applying these technologies in their work or further studies. The syllabus is structured to maximize learning within the condensed timeframe, emphasizing practical application and real-world relevance.

Day 1: Introduction to AI and Fundamentals of Machine Learning

Morning Session: AI Fundamentals

- **Overview of AI:** Definitions, significance, and applications.
- **History and Types of AI:** From narrow to superintelligent AI.
- **Ethical Considerations:** Discussing the ethical implications of AI technologies.

Afternoon Session: Basics of Machine Learning

- **Machine Learning Overview:** Differentiating AI, ML, and deep learning.
- **ML Categories:** Introduction to supervised, unsupervised, and reinforcement learning.
- **The ML Workflow:** From data collection to model evaluation, introducing key concepts.

Day 2: Supervised Learning and Data Preprocessing

Morning Session: Data Handling Techniques

- **Data Collection and Cleaning:** Techniques for preparing data.
- **Feature Engineering:** Selecting and transforming features for better models.

Afternoon Session: Supervised Learning Models

- **Regression and Classification:** Focusing on linear regression, logistic regression, decision trees, and SVM.
- **Model Evaluation:** Understanding metrics to assess and improve model performance.

Day 3: Unsupervised Learning and Introduction to Deep Learning

Morning Session: Unsupervised Learning Techniques

- **Clustering and Dimensionality Reduction:** Practical applications of k-means, PCA, and association rules.

Afternoon Session: Deep Learning Basics

- **Neural Networks:** Fundamentals, including architecture, activation functions, and training.
- **Introduction to CNNs and RNNs:** Understanding their applications in image and sequence data processing.
- **Tools and Frameworks:** Quick overview of TensorFlow and PyTorch for deep learning.

Day 4: Applied Machine Learning and Project Workshop

Morning Session: Special Topics in AI and ML

- **Reinforcement Learning:** An introduction to the basics and applications.
- **Real-World Applications:** Highlighting AI and ML applications in various industries such as healthcare, finance, and autonomous vehicles.

Afternoon Session: Hands-on Project and Wrap-Up

- **Project Implementation:** Participants apply what they've learned to a project, using datasets provided or their own data.
- **Presentation and Feedback:** Sharing project outcomes, insights, and receiving feedback.
- **Closing Discussion:** Recap of key learnings, resources for further exploration, and strategies for implementing AI and ML solutions in real-world scenarios.