JDNET

TECHNOLOGIES

(ISO 9001:2015 CERTIFIED INSTITUTION)

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MACHINE LEARNING AND DEEP LEARNING

TRAINING COURSES FOR ALL DEPARTMENTS

MACHINE LEARNING AND DEEP LEARNING

COURSE SYLLABUS

1. Introduction & Python for ML/DL

- What is Machine Learning vs Deep Learning vs AI
- Applications of ML & DL
- Python environment setup: Anaconda / Jupyter Notebook / VS Code
- Python essentials for ML: NumPy, Pandas, Matplotlib, Seaborn
- Data loading, inspection, and preprocessing

2. Supervised Learning

- Regression: Linear Regression, Polynomial Regression
- Classification: Logistic Regression, K-Nearest Neighbors
- Train/Test split, cross-validation
- Model evaluation metrics: accuracy, precision, recall, F1-score, RMSE

3. Unsupervised Learning

- Clustering: K-Means, Hierarchical Clustering
- Dimensionality Reduction: PCA (Principal Component Analysis)
- Anomaly detection basics
- Applications of unsupervised learning

4. Feature Engineering & Model Optimization

- Handling missing data, encoding categorical variables
- Feature scaling (StandardScaler, MinMaxScaler)
- Hyperparameter tuning: Grid Search, Random Search
- Overfitting & underfitting, bias-variance tradeoff
- Introduction to ensemble methods: Random Forest, Gradient Boosting

5. Introduction to Deep Learning

- Artificial Neural Networks (ANN) basics
- Perceptron, layers, neurons, weights, biases
- Activation functions: Sigmoid, ReLU, Softmax
- Forward & backward propagation (conceptual)
- Introduction to Keras / TensorFlow

6. Advanced Deep Learning

- Convolutional Neural Networks (CNN) basics for image data
- Recurrent Neural Networks (RNN) basics for sequence data
- Dropout, regularization, optimizers (SGD, Adam)
- Training, validation, and testing of neural networks
- Transfer learning overview

Connect With Us

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