ARTIFICAL INTELLIGENCE

EDXcellence

1ST YEAR – TRAINING

Topics from basic to advance in Artificial Intelligence (AI):

<u>Basic Topics:-</u>

1...Introduction to AI:-

- Definition and History of AI
- AI vs. Machine Learning vs. Deep Learning
- Applications of AI in various fields

2...Fundamentals of Machine Learning

- Types of Machine Learning (Supervised, Unsupervised, Reinforcement Lear ni ng)
- Basic Terminologies (Feature, Label, Model, Training, Testing)
- Introduction to Datasets and Data Preprocessing

3...Supervised Learning

- Linear Regression
- Logistic Regression
- Decision Trees

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- k-Nearest Neighbors (k-NN)
- Model Evaluation Metrics (Accuracy, Precision, Recall, F1 Score)

4...Unsupervised Learning

- Clustering (K-means, Hierarchical)
- Dimensionality Reduction (PCA, t-SNE)
- Association Rule Learning (Apriori Algorithm)

5...Introduction to Neural Networks

- Perceptron Model
- Activation Functions
- Feedforward Neural Networks
- Backpropagation Algorithm

Intermediate Topics:-

1...Deep Learning

- Introduction to Deep Learning
- Convolutional Neural Networks (CNNs) for Image Processing
- Recurrent Neural Networks (RNNs) for Sequential Data
- Long Short-Term Memory (LSTM) Networks
- Autoencoders and Generative Adversarial Networks (GANs)

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2...Natural Language Processing (NLP)

- Text Preprocessing (Tokenization, Lemmatization, Stopwords)
- Bag of Words and TF-IDF
- Word Embeddings (Word2Vec, GloVe)
- Sentiment Analysis
- Named Entity Recognition (NER)
- Transformer Models (BERT, GPT)

3...Advanced Machine Learning Techniques

- Ensemble Methods (Random Forest, Gradient Boosting, XGBoost)
- Support Vector Machines (SVM)
- Bayesian Networks
- Hyperparameter Tuning and Cross-Validation
- Model Deployment and Scaling

4...AI in Practice

- AI Ethics and Bias
- Explainable AI (XAI)
- AI in Healthcare, Finance, and Robotics
- Case Studies of AI Implementations

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Advanced Topics:-

1...Reinforcement Learning

- Markov Decision Processes (MDPs)
- Q-Learning and SARSA
- Deep Q-Networks (DQN)
- Policy Gradient Methods
- Advanced Techniques (A3C, PPO)

2...Advanced Deep Learning Architectures

- Attention Mechanisms and Transformer Architectures
- Capsule Networks
- Neural Architecture Search (NAS)
- Deep Reinforcement Learning

3...AI for Big Data

- Handling Large Datasets
- Distributed Computing in AI (Hadoop, Spark)
- Real-time Data Processing with AI (Kafka, Storm)
- AI in Cloud Platforms (AWS, Google Cloud AI)

1ST YEAR – TRAINING

4...AI and IoT

- Integration of AI with IoT Devices
- Edge Computing for AI
- AI-Driven Smart Systems (Smart Homes, Cities)
- Autonomous Vehicles and AI

5...Ethical and Philosophical Issues in AI

- The Future of AI and Society
- AI Safety and Alignment
- The Debate on AI Consciousness
- Legal Implications of AI

2ND YEAR – PROJECT

- News Classification using Natural Language Processing
- Text Classification with Tensor flow
- Landmark Detection
- Handwritten Digit Classification
- Recognition Of Objects

3RD YEAR - INTERNSHIP

- Guaranteed internship opportunity to gain practical exposure.
- Task: - Working on the internship Project.

- Vision Transformers for Image Classification

- This project aims to explore and implement Vision Transformers (ViTs) for image classification tasks. ViTs have recently emerged as a powerful alternative to traditional convolutional neural networks (CNNs) in computer vision. By leveraging the self-attention mechanism, ViTs have achieved state-of-the-art performance in various image recognition challenges.

4TH YEAR - PLACEMENT

- Automated resume
- aptitude training
- mock exams
- Mock interviews
- career counselling
- continuous support

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