Zetlan Technologies

Artificial Intelligence (AI)

e-Learning Course

Zetlan Technologies

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COURSE MODULES

Module 1: Introduction to Artificial Intelligence

- What is AI? History and Evolution
- Applications of AI in Various Industries
- AI vs. Machine Learning vs. Deep Learning
- AI Ethics and Responsible AI
- AI Tools and Platforms Overview

Module 2: Problem Solving and Search Algorithms

- State Space Representation
- Uninformed Search: BFS, DFS
- Informed Search: A*, Greedy Search
- Constraint Satisfaction Problems (CSPs)
- Adversarial Search (Minimax, Alpha-Beta Pruning)

Module 3: Machine Learning Basics

- Supervised, Unsupervised, and Reinforcement Learning
- Regression and Classification Algorithms
- Decision Trees, Naïve Bayes, KNN
- Model Evaluation Metrics
- Overfitting and Underfitting

Module 4: Neural Networks and Deep Learning

- Introduction to Neural Networks
- Activation Functions, Loss Functions
- Backpropagation and Gradient Descent
- Convolutional Neural Networks (CNNs)
- Recurrent Neural Networks (RNNs) & LSTMs
- Deep Learning Frameworks (TensorFlow, PyTorch)

Module 5: Natural Language Processing (NLP)

- Text Preprocessing (Tokenization, Stemming, Lemmatization)
- Word Embeddings (Word2Vec, GloVe, BERT)
- Named Entity Recognition (NER)
- Sentiment Analysis
- Chatbots and Language Models

Module 6: Computer Vision

- Image Processing Basics
- Feature Extraction and Object Detection
- Face Recognition & Emotion Detection
- Generative Adversarial Networks (GANs)

Module 7: Reinforcement Learning

- Markov Decision Processes (MDPs)
- Q-Learning & Deep Q Networks (DQN)
- Policy Gradient Methods
- Applications in Robotics and Game AI

Module 8: AI in Real-World Applications

- AI for Healthcare, Finance, and Autonomous Vehicles
- AI in Robotics
- AI for Cybersecurity

Module 9: AI Ethics and Future Trends

- Bias in AI and Fairness
- Explainable AI
- AI in the Future: AGI and ASI

Module 10: AI Project Development

- Data Collection and Preprocessing
- Model Selection and Training
- Model Deployment and Optimization