Course: Introduction to Artificial Intelligence
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Institute of Business Administration, Karachi
Course Project
Artificial Intelligence Course Group Project

Introduction:

This is a group project for the Artificial Intelligence course for undergraduate students. The project is a programming assignment, where students propose their own project ideas related to the topics covered in the course. The main objective of the project is to apply the concepts and techniques learned in the course to solve real-world problems using Artificial Intelligence.

Requirements:

- The project must be a group effort, consisting of **2-3 students**.
- The project must use Artificial Intelligence techniques learned in the course.
- The project must address a real-world problem and provide a solution using AI.
- The project must be challenging and innovative enough to demonstrate the understanding of the concepts learned in the course.
- The project must have a clear problem statement, goals, and objectives.
- The project must have a well-defined methodology and implementation plan.
- The project must have a comprehensive evaluation plan.
- The project must be submitted as a final report, which includes the problem statement, methodology, implementation details, results, and evaluation.

Deliverables:

Project proposal: A written proposal that includes the problem statement, goals, objectives, methodology, and implementation plan (**deadline: 31st March**).

Final report: A comprehensive final report that includes the problem statement, methodology, implementation details (including any challenges faced during the project), results, and evaluation.

Final presentation: A final presentation that includes the results, evaluation, and any future work. It will also include a live code demo (if possible), otherwise a record demo.

Evaluation:

The project will be evaluated based on the problem statement, methodology, implementation details, demo, results, evaluation, and presentation.

Total Marks: 20 points

Suggested Project Ideas:

The suggested project ideas provide a starting point, but students are encouraged to propose their own project ideas.

- Self-Driving Car: Develop an AI model that can control a self-driving car and navigate through the city using various AI techniques such as Reinforcement Learning, Probabilistic Reasoning, and Artificial Neural Networks.
- Medical Diagnosis: Develop an AI model that can diagnose various medical conditions based on patient symptoms and medical history using Machine Learning Classification and Probabilistic Reasoning.
- Smart Home: Develop an AI model that can control various smart devices in a home such as lighting, temperature, and security using Swarm Intelligence and Knowledge Representation.
- Stock Prediction: Develop an AI model that can predict the stock market trends and provide investment recommendations using Evolutionary Algorithms, Artificial Neural Networks, and Probabilistic Reasoning.
- Game Playing AI: Develop an AI model that can play a game such as Chess or Go using Adversarial Search and Reinforcement Learning techniques.
- Route Optimization: Develop an AI model that can optimize the shortest route for a delivery truck or taxi using Uninformed and Informed Search algorithms.
- Sentiment Analysis: Develop an AI model that can analyze the sentiment of social media posts or product reviews using Natural Language Processing and Machine Learning Classification.
- Clustering: Develop an AI model that can cluster similar data points together using Cluster Analysis techniques.
- Fraud Detection: Develop an AI model that can detect fraudulent transactions in a financial system using Machine Learning Classification and Probabilistic Reasoning.
- Recommendation System: Develop an AI model that can recommend products or services based on user behavior and preferences using Artificial Neural Networks and Reinforcement Learning.
- Music Generation: Develop an AI model that can generate new music tracks using Evolutionary Algorithms and Artificial Neural Networks.
- Robotics: Develop an AI model that can control a robot to perform a task such as cleaning or sorting using Reinforcement Learning and Probabilistic Reasoning.
- Speech Recognition: Develop an AI model that can recognize speech and convert it into text using Artificial Neural Networks.
- Image Classification: Develop an AI model that can classify images into various categories such as animals or landscapes using Machine Learning Classification and Artificial Neural Networks.