Design Project

Introduction to Machine Learning

Instructor: Prof. Tassadaq Hussain

Course Code: EE-475

Semester: 04

Credit Hours: 3 (Theory: 3, Lab: 0)

Project Statement:

Developing an Artificial Intelligence (AI) application to classify data inputs into multiple classes based on an AI algorithm involves several steps, including feature engineering, data exploration, and data visualization. The application will target real-world local problems (e.g. Data from Namal Soil Analysis Lab), specifically utilizing data. Below is an outline of the process, including details about the AI algorithm's internal layers and parameters for classification:

1. **Problem Definition**
2. **Data Collection Mechanism**
3. **Data Pre-Processing and Structuring**
4. **Data Exploration**
5. **Data Visualization**
6. **AI Model Selection**
7. **Model Training**
8. **Model Evaluation**
9. **Hyper-parameter Tuning**
10. **AI Model Deployment**
11. **Model Performance Analysis: Training Time and Testing Time with Accuracy**

Deliverables:

Following are the deliverable of the project,

1. **Functionality Analysis of the Problem Data**

2. AI Model Architecture in Python

3. Design and Development Methodology

By working on this project, students will be able to apply the real-time data structures and AI algorithms they learn in the lab sessions to a real-life scenario. They will also develop skills in designing and implementing a complete program using Python programming language.

Marking Scheme:

Total Marks: 100

1. **Dataset** : 35

2. **AI Algorithm**: 35

3. **Data Visualization Interface**: 15

4. **Project Report**: 5

5. **Presentation** : 10

Characteristics of CEP:

Course Name	**WK**	**PLO (WA)**	**WP**	**Blooms Taxonomy Level**
Introduction to Machine Learning	WK2	PLO2, PLO3, PLO4, PLO7	WP3: Depth of knowledge required,	P1, C2, C1