National College of Ireland

Ethical Considerations in Explainable Artificial Intelligence: Transparency and Accountability in AI Decision-Making

MSc Research Project
MSc AI for Business

Tahir Jamil
Student ID: x23127732

School of Computing
National College of Ireland

Supervisor: Brian

National College of Ireland

MSc Project Submission Sheet

School of Computing

Student Name:	**Tahir Jamil**
Student ID:	**x23127732**
Programme:	**MSc AI for Business** **Year:** **2023**
Module:	**Final Research**
Supervisor:	**Brian**
Submission Due Date:	**12 Aug. 24**
Project Title:	**Ethical Considerations in Explainable Artificial Intelligence: Transparency and Accountability in AI Decision-Making**
Word Count:	**228 Page Count 1**

I hereby certify that the information contained in this (my submission) is information pertaining to research I conducted for this project. All information other than my own contribution will be fully referenced and listed in the relevant bibliography section at the rear of the project.
ALL internet material must be referenced in the bibliography section. Students are required to use the Referencing Standard specified in the report template. To use other author's written or electronic work is illegal (plagiarism) and may result in disciplinary action.

Signature: **Tahir Jamil**

Date: **12 Aug. 24**

PLEASE READ THE FOLLOWING INSTRUCTIONS AND CHECKLIST

Attach a completed copy of this sheet to each project (including multiple copies)	□
Attach a Moodle submission receipt of the online project submission, to each project (including multiple copies).	□
You must ensure that you retain a HARD COPY of the project, both for your own reference and in case a project is lost or mislaid. It is not sufficient to keep a copy on computer.	□

Assignments that are submitted to the Programme Coordinator Office must be placed into the assignment box located outside the office.

Office Use Only	
Signature:	
Date:	
Penalty Applied (if applicable):	

Python Environment Configuration for XAI Thesis

This configuration guide will help you set up a Python environment for implementing the methodology in the thesis titled "Ethical Considerations in Explainable Artificial Intelligence: Transparency and Accountability in AI Decision-Making." Follow these steps to ensure all necessary packages and tools are installed correctly.

1. Install Python

Ensure that Python 3.8 or higher is installed on your system.

- **Windows/Mac/Linux:**
  - Visit the [official Python website](https://www.python.org/downloads/).
  - Download the latest version (3.8 or higher).
  - Follow the installation instructions for your operating system.

2. Install Anaconda (Optional but Recommended)

Anaconda simplifies package management and deployment.

- **Download Anaconda:**
  - Visit the [Anaconda Distribution page](https://www.anaconda.com/products/individual).
  - Download the installer for your operating system.

3. Install Required Python Packages

To proceed with the research, install the necessary Python libraries.

- **Using `pip` (General Python Package Installer):**
  ```bash
  pip install pandas numpy scikit-learn matplotlib seaborn shap lime tqdm tensorflow keras

## Import the installed libraries
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.linear_model import LogisticRegression
from sklearn.tree import DecisionTreeClassifier
from sklearn.ensemble import RandomForestClassifier
from sklearn.svm import SVC
from sklearn.metrics import accuracy_score, classification_report, confusion_matrix, roc_auc_score, roc_curve
from sklearn.feature_selection import SelectKBest, f_classif
import joblib
from IPython.display import HTML, display

import shap
import lime
import tqdm
  ```