National College of Ireland

Configuration Manual

MSc Research Project
Cyber Security

Benetto George
Student ID: x21124485

School of Computing
National College of Ireland

Supervisor: Imran Khan

National College of Ireland

MSc Project Submission Sheet

School of Computing

Student Name:	Benetto George
Student ID:	X21124485
Programme:	MSc Cybersecurity **Year:** 2022 -2023
Module:	MSc Research Project
Lecturer:	Imran Khan
Submission Due Date:	15 December 2022
Project Title:	AdaBoost IDS to detect Zero Day attacks and reduce false positives
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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.

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Configuration Manual

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Student ID: x21124485

1 Introduction

This document discusses how the AdaBoost Intrusion Detection System code should be implemented and executed. The project has been coded in Python programming language.

2 System Requirements

Code Editor: Visual Studio Code
Python Version: version3
Operating System Windows 7 or later

Anaconda software has been downloaded and installed on the system. It can be downloaded from the official website given below (“Anaconda | Anaconda Distribution,” n.d.),

(https://www.anaconda.com/products/individual)

At the stage given in the image below check both checkboxes

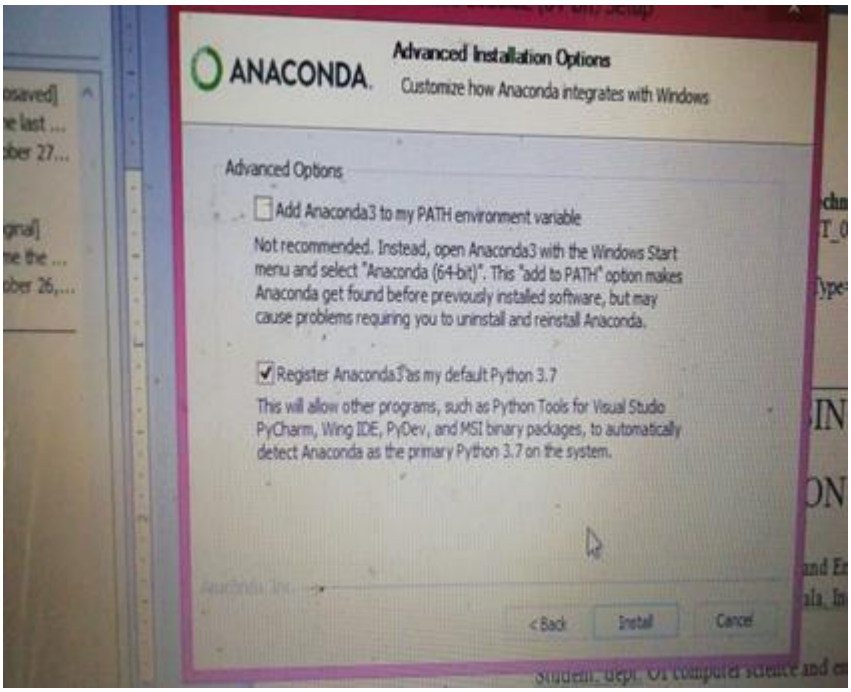

Figure 1: anaconda installation

2.1 Package details

Here in this project, Anaconda software is also used, which is a distribution for Python programming languages for data science. It simplifies package management and deployment. An environment, named "ml_env" is created. It consists of the necessary machine learning python libraries that are custom installed which in turn help to run the whole code. A small number of libraries that are present in the environment are:

- Numpy: Used for array operations
- Sklearn: Used for selection of features and for train-test splitting
- Pandas: Used to read the dataset
- Matplotlib: Is used for data visualization

3 Setting up the environment

- Extract IDS_FULLCODE.zip folder given at the end of the Thesis report. If you are downloading the artefact from moodle, make sure to download the dataset from Kaggle and paste it in the **Project_Dataset** folder of IDS_FULLCODE > Machine Learning.
- Extract the ml_env.zip folder from the OneDrive link and paste it into OS(C:) > users > user (it may vary depending on your system) > anaconda3 > envs
- Open anaconda prompt or Windows Command Prompt (cmd) in the project folder
- In the prompt, type command "activate ml_env" (in windows command prompt), or,
- In the anaconda prompt, type "conda activate ml_env"

4 Dataset Source

Dataset used in this research project is taken from an online platform named Kaggle which allows users to access and download various dataset samples. The dataset used has been downloaded and added in the IDS_FULLCODE folder named Project_Dataset.

5 Code Execution

Anaconda prompt or cmd has been opened. Now, run the following commands,

- Run command: python train.py || To train the model

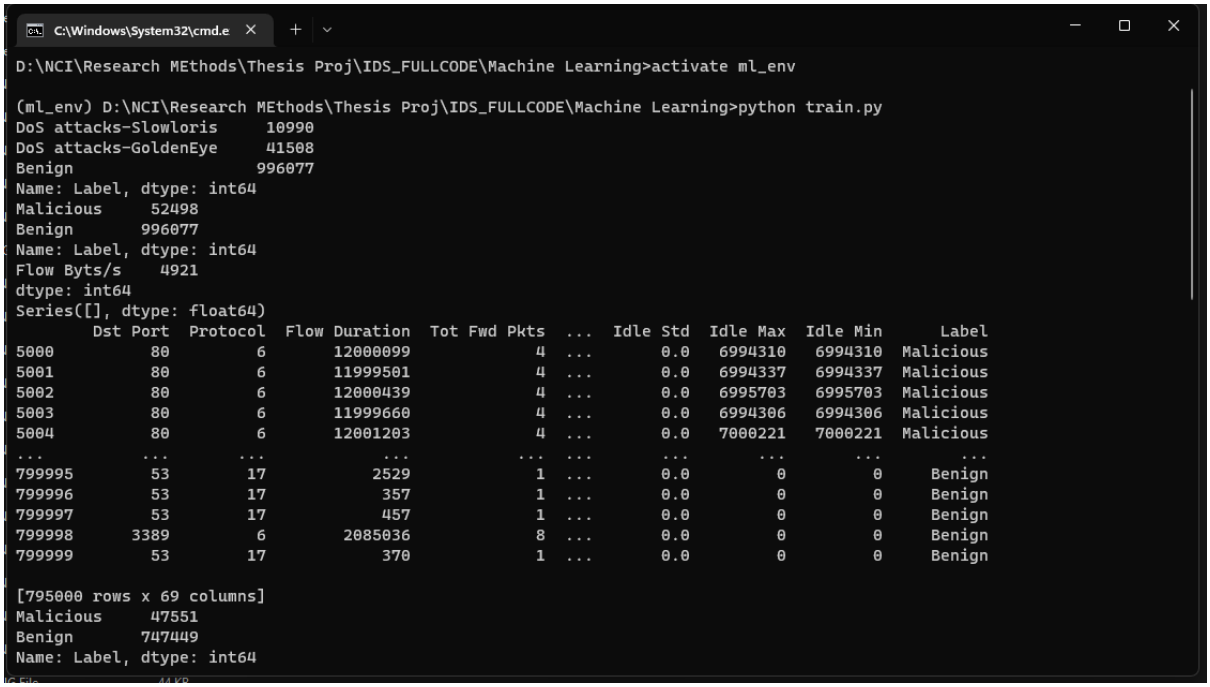

Figure 2 running train.py

- Run command: python predict.py || To predict whether the packet is Malicious or Benign based on the trained model.
  To add the data shown below and in the GUI, there is text file called Test.txt with the values of the 20 features.

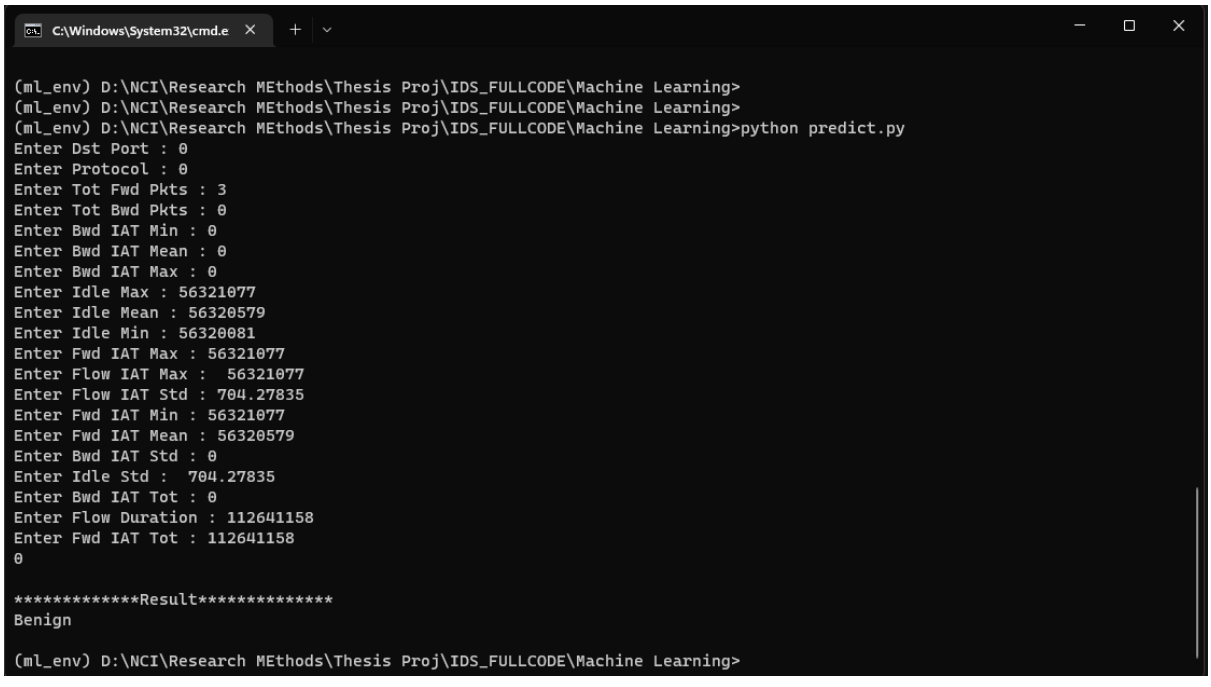

Figure 3 running predict.py

- Run command: python gui.py || To show the Graphical User Interface which takes user input and displays the result.

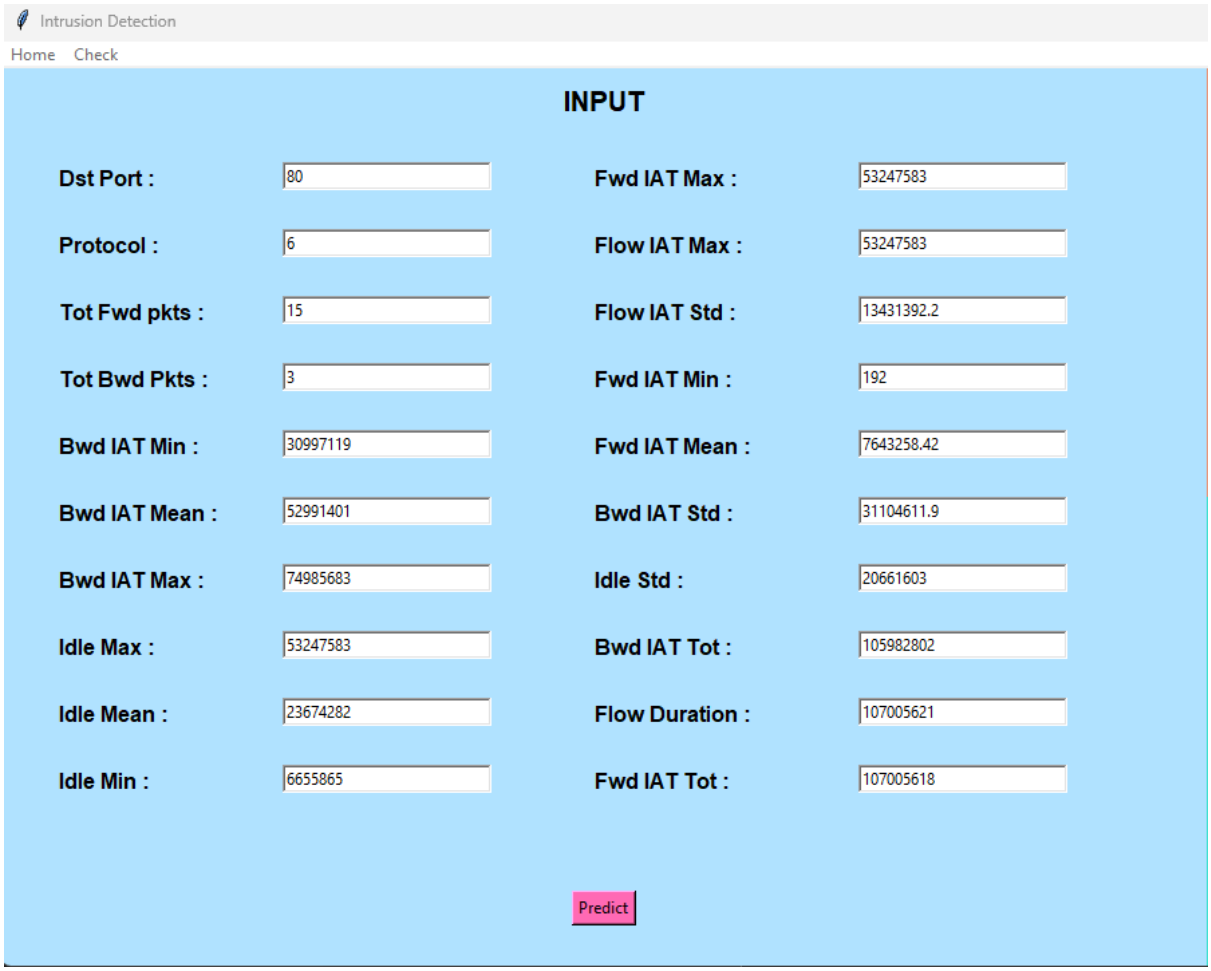

Figure 4: GUI 1

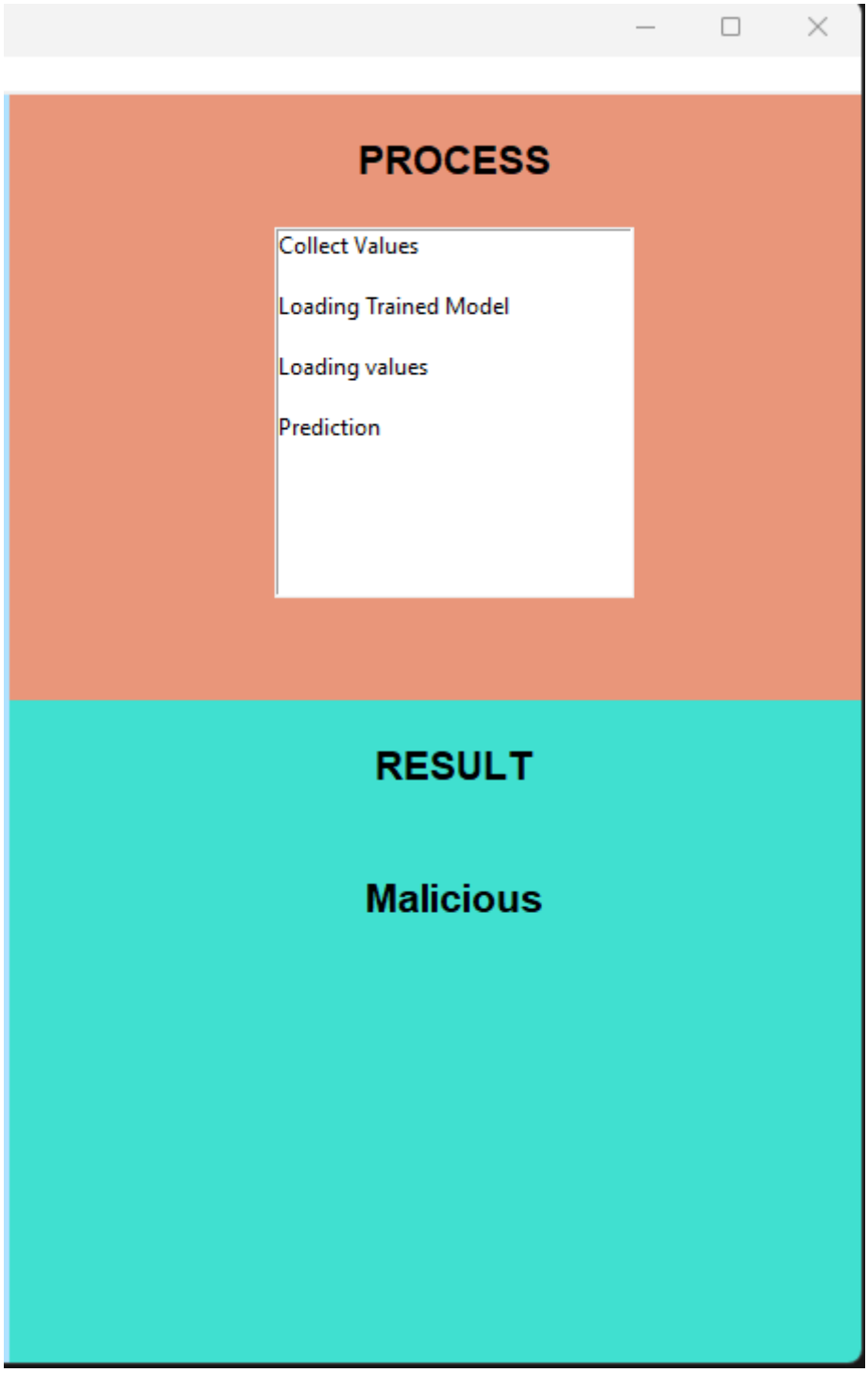

Figure 5: GUI 2

6 References

Anaconda | Anaconda Distribution [WWW Document], n.d. . Anaconda. URL https://www.anaconda.com/products/distribution (accessed 12.6.22).