CSCI 4800/5800 – Special Topics: Explainable AI
Fall 2024 – Dr. Doug Williams
Program 0 – Image LIME Streamlit App
Due: September 6, 2024

In this programming assignment you will get the Image LIME Streamlit application provided running on your computer. The purpose of this assignment is to ensure you have Python correctly installed on your computer and that you can get complex applications running correctly.

Python

I assume you are already familiar with the Python programming language and have it installed on your computer. Any recent version of Python should work. For example, I am using Python 3.11.9. Some packages that we use may have difficulties with either older versions (I would avoid anything before Python 3.8) or with very recent versions.

Note that on some OSes, you may have to use `python3` and `pip3` to execute `python` and `pip`, respectively.

I recommend that you use a virtual environment manager like Anaconda or Miniconda to manage you Python environments.

PyTorch, TorchSummary, Numpy, Pandas, and LIME

Program 0 uses several Python packages for data management (pandas), numeric processing (numpy), AI (torch and torchvision), and XAI (lime).

PyTorch is the trickiest of these and I recommend that you visit the PyTorch wed site (pytorch.org) and follow the installation instructions for your OS and Python version. You may also include CUDA support if you have a supported graphics card.

The other packages can be installed using `pip`.

Streamlit

The website for Streamlit is Streamlit • A faster way to build and share data apps and describes Streamlit as:

> … an open-source Python framework for data scientists and AI/ML engineers to deliver dynamic data apps with only a few lines of code. Build and deploy powerful data apps in minutes.

Browse the Streamlit web site for more information.

See the Install Streamlit section of the Streamlit documentation for full installation instructions. But the quick and dirty instructions are:

1. Set up your Python development environment.
2. Run:
   ```
   pip install streamlit
   ```

3. Validate the installation by running our Hello app:
   `streamlit hello`

This will open a new tab in your (default) browser with the streamlit application.

Notes:

1. PyTorch requires an older version of Numpy (`numpy<2`). This is not the version of numpy that would be installed with '`pip install numpy`'. So be careful.
2. PyTorch does support using a GPU but setting it up can be tricky. I recommend using the cpu version of PyTorch at this point.