Lab 7a: Serving & Deploying an ML Model

Overview

In this lab, you will:

- **Train a Simple Model:** Use scikit-learn's logistic regression on the Iris dataset.
- **Build an Interactive Interface:** Create a Streamlit app that lets users input Iris measurements and see the predicted species.
- **Deploy Your App:** Deploy your application for free on Hugging Face Spaces.

Focus: The emphasis is on the end-to-end data pipeline and deployment process rather than on complex ML modeling.

2. Prerequisites

1. **Python 3** environment and relevant packages. We'd recommend creating a new virtual environment using:
    - Navigate to the cloned folder lab5: cd <your-path>/lab7
    - Create environment: python -m venv env
    - Activate environment: source env/bin/activate
    - Install packages: pip install <package-name>
    - Packages: streamlit, numpy, scikit-learn, joblib
2. Download the lab7 zipped folder, containing following files, from LMS.
    - requirements.txt (for installing packages)
    - app.py (for model and server deployment)
    - train.py (for model development)

3. Model Training

The training script is already given as train.py. Run it to train and save the model.

- python train_model.py
- You should see iris_model.pkl file in your directory

4. Build an Interactive Interface using Streamlit

The server script is also given as app.py.

- Start the streamlit server by running streamlit run app.py in your directory
- You should see your application deployed at http://localhost:8501/

Congratulations! You just deployed your first model.

Exercise: Let's add a bar chart with the input measures. Look at the TO-DO comment in the app.py file.

5. Deploying to Hugging Face Spaces

Now, time to deploy this to a remote server so others can access this too!

Create a Hugging Face Account:
Sign in (or sign up) at Hugging Face.

Create a New Space:

- Navigate to Spaces.
- Click on "Create new Space" and choose the **Streamlit** template.
- Name your Space (e.g., iris-species-classifier).

Upload Your Project:

- Push your project files to the newly created Space repository (either using Git or the web upload interface).
- Hugging Face Spaces will automatically build and deploy your app.

Test and Share:

- Visit the Space URL (e.g., https://huggingface.co/spaces/your-username/iris-species-classifier) and interact with your app.
- Share the URL with others!

6. Submission

Zip all the changed (app.py) file and upload the zipped folder on LMS