Athlete Medal Prediction Web Application

Overview

This project is a **Streamlit web application** that predicts whether an athlete will win a medal based on their physical and performance attributes. The model is built using **Random Forest Classification** and trained on an athlete dataset. The web application allows users to upload their dataset, preprocess it, train the model, and make predictions interactively.

Features

- **Upload Dataset**: Users can upload their dataset in CSV format.
- **Data Preprocessing**: Handles missing values and encodes categorical variables.
- **Model Training**: Uses a **Random Forest Classifier** to train on the uploaded data.
- **Prediction**: Users can input new athlete data to predict medal-winning probability.
- **Visualization**: Displays data insights and model performance metrics.

Technologies Used

- **Python**
- **Streamlit** (for the web application UI)
- **Pandas** (for data handling and preprocessing)
- **Scikit-Learn** (for machine learning model training)
- **Matplotlib & Seaborn** (for data visualization)

Installation

To run this project locally, follow these steps:

1. Clone the Repository

```
git clone https://github.com/your-username/athlete-medal-prediction.git
cd athlete-medal-prediction
```

2. Create a Virtual Environment (Optional but Recommended)

```
python -m venv env
source env/bin/activate  # On macOS/Linux
env\Scripts\activate  # On Windows
```

3. Install Dependencies

```
pip install -r requirements.txt
```

4. Run the Streamlit App

streamlit run app.py

How to Use

1. Open the web app in your browser after running the above command.
2. Upload your CSV dataset containing athlete information.
3. The app will preprocess the data and train a **Random Forest Classifier**.
4. Enter new athlete details in the input fields to make predictions.
5. View the model accuracy and feature importance graphs.