# **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.