National College of Ireland

Configuration Manual

MSc Research Project
Data Analytics

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Project Submission Sheet
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Configuration Manual

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1 Introduction

The Football Player Scouting and Recruitment System is a machine learning application that uses data on a player's skills and his injury record to predict their performance. This configuration manual is an extensive guide setting up, configuring, and then deploying the system. Its target audience includes system administrators and developers responsible for application maintenance.

2 Screenshots of the System

2.1 Dataset Files

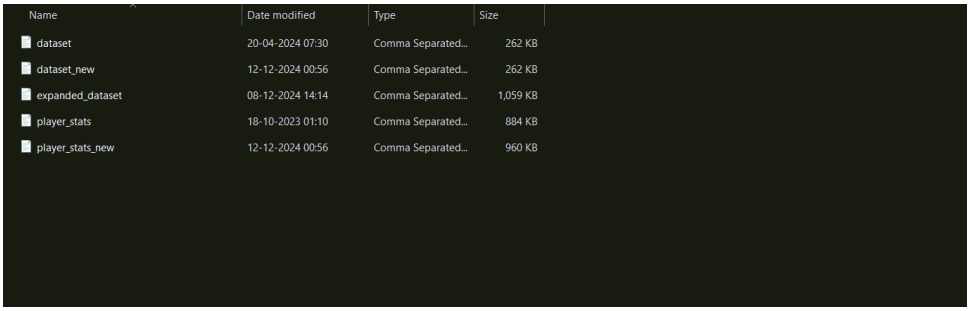

Figure 1: List of dataset files used for the system, including original and processed datasets.

2.2 Flask Backend Server

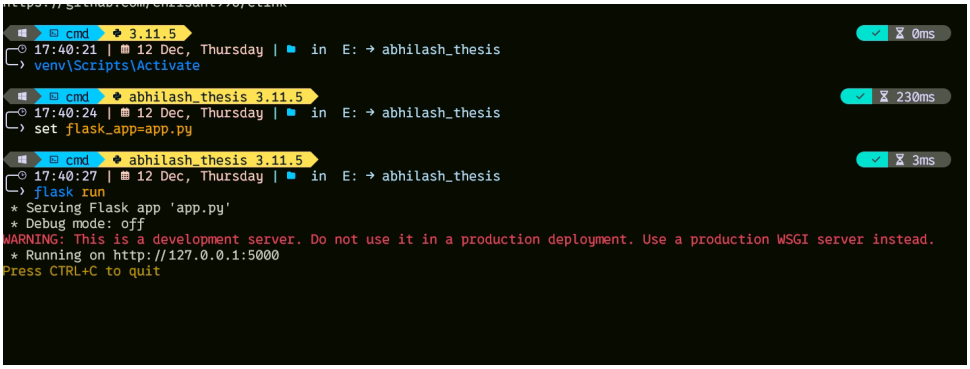

Figure 2: Flask backend server running on localhost at port 5000. This server handles API requests for the prediction model.

2.3 Frontend Compilation

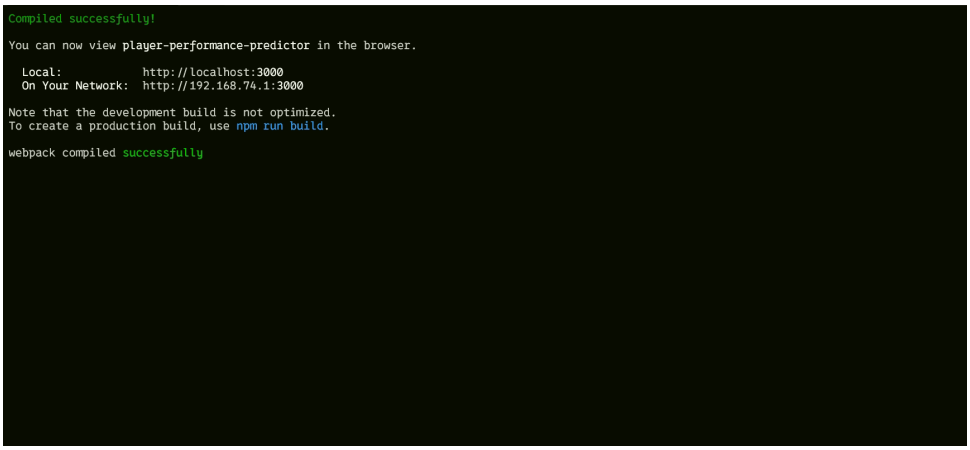

Figure 3: Frontend application compiled successfully. It can be accessed locally at port 3000 or over the network.

2.4 Player Input Form

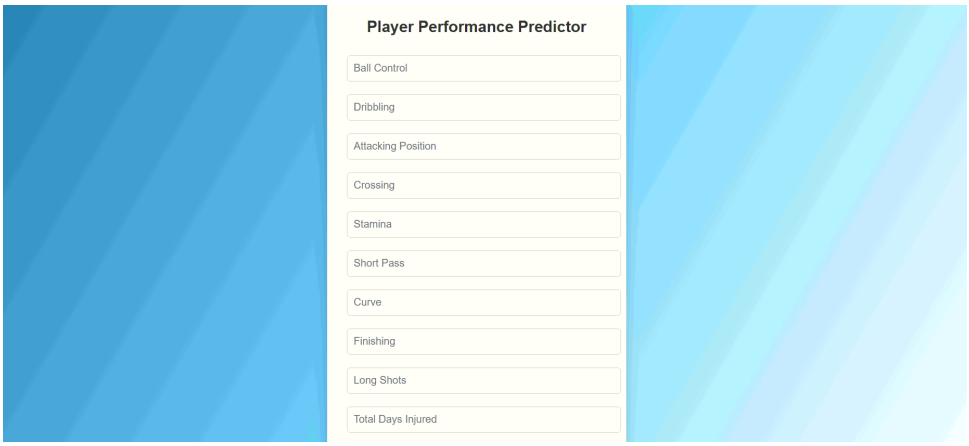

Figure 4: Frontend interface for inputting player statistics and injury details.

2.5 Performance Prediction Output

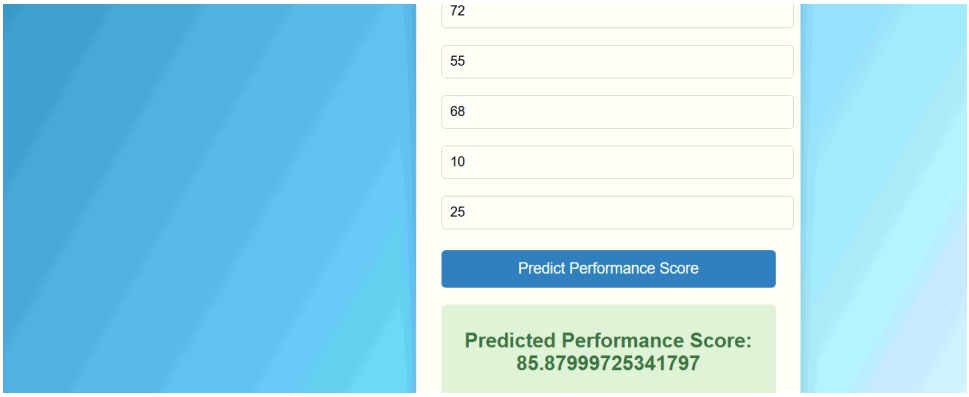

Figure 5: Predicted performance score displayed in the frontend after submitting player data.

3 System Requirements

Before proceeding with the installation and configuration, ensure that the following system requirements are met:

3.1 Hardware Requirements

- **Processor:** Intel i5 or higher
- **RAM:** 8 GB minimum
- **Storage:** 100 GB available space

3.2 Software Requirements

- **Operating System:** Ubuntu 20.04 LTS or later
- **Python:** Version 3.8 or higher
- **Node.js:** Version 14.x or higher

4 Installation

This section outlines the steps to install the necessary components for the system.

4.1 Backend Setup (Flask)

1. **Create a Virtual Environment:**

```
python3 -m venv venv
source venv/bin/activate
```

2. **Install Dependencies:**

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

3. **Configure Environment Variables:** Create a '.env' file in the project root and add the following:

```
FLASK_APP=app.py
FLASK_ENV=production
SECRET_KEY=your_secret_key
```

4. **Run the Flask Server:**

```
flask run
```

4.2 Frontend Setup (React)

1. **Install Dependencies:**

```
npm install
```

2. **Configure API Endpoint:** Edit the 'config.js' file to point to the Flask backend API.

3. **Run the React Application:**

```
npm start
```

5 Configuration

Correct configuration ensures that the machine runs smoothly without any hiccups or errors. This chapter contains the configuration instructions for all backend and frontend addons.

5.0.1 Model Deployment

1. **Place the Trained XGBoost Model:** Save the 'xgboost_model.pkl' in the 'models/' directory.

2. **Update Configuration:** This should ensure that the Flask application is configured to load the model from the right path.

5.1 Frontend Configuration

5.1.1 API Integration

1. **Set API Base URL:** Inside the file ‘config.js‘ define ‘API_BASE_URL‘ to equal the Flask backend endpoint.

2. **CORS Configuration:** Flask backend should allow CORS requests from frontend domain.

5.1.2 Environment Variables

1. **Create a ‘.env‘ File:** Import required environment variables like API endpoints and secret keys

6 Usage

After setting up the system and deployment, users are free to interact with the application that will predict how a player will perform.

6.1 Accessing the Application

Open your web browser and type into its address bar the frontend URL displayed on the CMD.

6.2 Inputting Player Data

The frontend interface is used to input participant facts and injury facts. All required fields must be filled up properly so that it would provide reliable predictions.

6.3 Viewing Predictions

Once submitted, the system processes the input data and shows a performance prediction by exercising a trained machine learning model.

7 Troubleshooting

This section provides solutions to common issues encountered during configuration and usage.

7.1 Backend Server Not Starting

- **Cause:** Missing environment variables.

- **Solution:** Verify that the ‘.env‘ file contains all necessary variables.

7.2 Frontend Fails to Connect to Backend

- **Cause:** Incorrect API endpoint configuration.
- **Solution:** Check the ‘config.js‘ file and ensure the API base URL is correct.

7.3 Model Prediction Errors

- **Cause:** Corrupted or incompatible model file.
- **Solution:** Re-train the model and replace the existing model file with the new one.

8 Conclusion

This configuration manual provides complete commands for setting up, configuring, and deploying the Football Player Scouting and Recruitment System. Adhering to these suggestions will make sure a easy installation system and most beneficial gadget performance. For similarly assistance, refer to the venture's GitHub repository or touch the improvement crew.