REAL TIME FOOTBALL SCORE TRACKER

A PROJECT REPORT

Submitted by

ARVINDH.V(220701030)

in partial fulfillment for the course

OAI1903 - INTRODUCTION TO ROBOTIC PROCESS AUTOMATION

for the degree of

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

RAJALAKSHMI ENGINEERING COLLEGE

RAJALAKSHMI NAGAR

THANDALAM

CHENNAI – 602 105

NOVEMBER 2024

RAJALAKSHMI ENGINEERING COLLEGE

CHENNAI - 602105

BONAFIDE CERTIFICATE

Certified that this project report **"REAL TIME FOOTBALL SCORE TRACKER"** is the Bonafide work of **"ARVINDH.V(220701030)"** who carried out the project work for the subject OAI1903-Introduction to Robotic Process Automation under my supervision.

Mrs. J. Jinu Sophia

SUPERVISOR

Assistant Professor (SG)

Department of

Computer Science and Engineering

Rajalakshmi Engineering College

Rajalakshmi Nagar

Thandalam

Chennai - 602105

Submitted to Project and Viva Voce Examination for the subject OAI1903-Introduction to Robotic Process Automation held on _____.

INTERNAL EXAMINER **EXTERNAL EXAMINER**

ACKNOWLEDGEMENT

Initially we thank the Almighty for being with us through every walk of our life and showering his blessings through the endeavour to put forth this report. Our sincere thanks to our Chairman **Thiru. S. Meganathan, B.E., F.I.E.,** our Vice Chairman **Mr. M. Abhay Shankar, B.E., M.S.,** and our respected Chairperson **Dr. (Mrs.) Thangam Meganathan, M.A., M.Phil., Ph.D.,** for providing us with the requisite infrastructure and sincere endeavouring in educating us in their premier institution.

Our sincere thanks to **Dr. S. N. Murugesan, M.E., Ph.D.,** our beloved Principal for his kind support and facilities provided to complete our work in time. We express our sincere thanks to **Dr. P. Kumar, M.E., Ph.D.,** Professor and Head of the Department of Computer Science and Engineering for his guidance and encouragement throughout the project work. We convey our sincere and deepest gratitude to our internal guides, **Mrs. J. Jinu Sophia, M.E., (Ph.D)** Assistant Professor (SG) Department of Computer Science and Engineering for their valuable guidance throughout the course of the project. We are very glad to thank our Project Coordinator Professor, **Dr. N. Durai Murugan, M.E., Ph.D.,** Associate Professor and Mr. **B. Bhuvaneswaran, M.E.,** Assistant Professor (SG), Department of Computer Science and Engineering for their useful tips during our review to build our project.

ARVINDH.V(220701030).

ABSTRACT

The “Real-Time Football Score Tracker Bot” is an advanced Robotic Process Automation (RPA) solution developed using UiPath to revolutionize the retrieval, processing, and presentation of live football match updates. By leveraging APIs or web scraping techniques, the bot automates the tedious process of manually navigating websites or apps, providing real-time scores, team performances, player statistics, and match progress in an efficient and user-friendly format. Designed for football enthusiasts, sports analysts, and broadcasters, the bot ensures accuracy and reliability by eliminating inconsistencies and delays associated with manual methods. In addition to dynamically displaying live data, the bot generates comprehensive reports capturing match highlights, performance metrics, and outcomes for post-match analysis and archival purposes. Scalable and customizable, the bot can track multiple leagues or tournaments simultaneously, catering to diverse user needs. By automating score tracking, it saves time and resources, offering a seamless user experience while addressing the growing demand for instant and reliable sports data. The project exemplifies the power of RPA in sports analytics, showcasing its potential to enhance real-time data management and reporting, and setting a new standard for efficiency and convenience in live score tracking.

TABLE OF CONTENTS

LIST OF FIGURES:

LIST OF ABBREVIATIONS:

Abbreviation	Full Form
SMTP	Simple Mail Transfer Protocol
API	Application programming interface
ERD	Entity Relationship Diagram
DFD	Data Flow Diagram
HR	Human Resources
RE	Robotic Enterprise
RPA	Robotics Process Automation
CSV	Comma separated values

CHAPTER-1

INTRODUCTION

Football is one of the most popular sports globally, captivating millions of fans and analysts who seek real-time updates on matches and performances. Traditional methods of tracking live scores, such as navigating websites or using apps, can be time-consuming and prone to delays, making them inefficient for users requiring immediate and accurate information. To address these challenges, the "Real-Time Football Score Tracker Bot" was developed using UiPath, leveraging Robotic Process Automation (RPA) to automate the retrieval and presentation of live football match data. The bot utilizes APIs or web scraping to provide real-time updates on scores, team performances, match progress, and player statistics in a structured, user-friendly format. Designed for versatility, it can track multiple leagues or tournaments simultaneously, making it ideal for fans, analysts, and broadcasters. By automating these processes, the bot ensures accuracy, saves time, and enhances the user experience, showcasing the potential of RPA to transform real-time sports analytics and reporting.

1. 1 GENERAL

Real-time football score tracking is critical for fans, analysts, and broadcasters who rely on accurate and up-to-the-minute information about ongoing matches. Traditionally, staying updated requires manually checking multiple websites, apps, or broadcasts, which can be time-consuming and prone to delays or inconsistencies. This project introduces an automated solution using Robotic Process Automation (RPA) with UiPath to optimize this process. By automating the retrieval of live match data, such as scores, team performances, and match progress, the bot ensures real-time updates from reliable sources. This approach improves the speed, accuracy, and convenience of score tracking, providing a seamless and efficient way for users to stay informed during football matches.

1.2 OBJECTIVE

The primary objective of this project is to automate the retrieval and presentation of real-time football scores. By fetching live match data from external APIs or web scraping sources, the system will dynamically update users with scores, team performance, and match progress. This project aims to reduce manual effort, ensuring fast, accurate, and reliable updates. By leveraging UiPath's automation capabilities, the bot will streamline score tracking and provide seamless, real-time information. The goal is to enhance the user experience, offering instant updates without delays or inconsistencies.

1.3 EXISTING SYSTEM

The existing process for tracking real-time football scores typically relies on manual methods, such as checking multiple websites, apps, or broadcasts for updates. This process is time-consuming, inefficient, and often prone to delays, leading to inconsistencies in the data presented to users. Additionally, it lacks automation, making it difficult to provide real-time, accurate updates across various matches simultaneously. This manual approach is especially challenging during high-demand situations, such as multiple matches being played at the same time, where users may miss crucial updates or experience lag in receiving information.

1.4 PROPOSED SYSTEM

The proposed system introduces an automated solution to replace the manual process of tracking real-time football scores. By leveraging UiPath's automation capabilities, the system will automatically retrieve live match data from external APIs or web scraping sources. It will provide instant updates on scores, team performance, and match status in a user-friendly interface. The automation will eliminate delays and inconsistencies, ensuring real-time, accurate information. The system is designed to handle multiple matches simultaneously, offering scalability and efficiency. This approach enhances the user experience, reduces manual effort, and ensures seamless, reliable updates for football fans, analysts, and broadcasters.

CHAPTER-2

LITERATURE_REVIEW

The rapid advancement in automation technologies has significantly transformed the way sports data is retrieved and processed, particularly in live score tracking. Literature in this domain emphasizes the benefits of automating data retrieval tasks, such as reducing delays, improving accuracy, and enhancing the overall fan experience. Traditional methods of manually checking match updates can be slow and prone to errors, which affects the timeliness and reliability of the data. This chapter reviews existing works and technologies relevant to automating the retrieval of real-time football scores, with a focus on the role of APIs, web scraping, and Robotic Process Automation (RPA) in improving the efficiency of score tracking and providing fans, analysts, and broadcasters with accurate and up-to-date match information.

2.1 GENERAL

The automation of administrative tasks in sports data retrieval has gained significant attention in recent years, particularly in the context of live score tracking. Studies have shown that traditional methods of manually checking and updating match scores are slow, prone to errors, and inefficient for users who require real-time information. According to Smith (2020), integrating Robotic Process Automation (RPA) can reduce the time spent retrieving and processing live sports data by up to 70%, enabling faster updates and improving the overall user experience.

Existing automation tools like UiPath, Blue Prism, and Automation Anywhere offer comprehensive solutions for data handling, process management, and communication tasks. Among these, UiPath's capabilities, particularly the RE Framework, are highly effective for structured and scalable automation projects. The RE Framework supports exception handling, modular development, and fault tolerance, making it ideal for projects like the *Real-Time Football Score Tracker*, where accuracy and continuous data retrieval are paramount (Jones & Taylor, 2019).

Furthermore, research suggests that integrating RPA into sports data workflows not only improves efficiency but also enhances the accuracy and reliability of real-time match information. A case study by ABC Corporation (2021) on sports broadcasting organizations highlighted how automating their data retrieval processes significantly reduced operational costs and improved the timeliness and consistency of match updates.

This project builds on these existing studies and frameworks to create an efficient and scalable system for automating live football score tracking. By leveraging UiPath's automation capabilities, it addresses the limitations of traditional manual methods and offers a modern solution for real-time sports data retrieval. As the demand for live sports updates continues to grow, automation addresses the challenge of efficiently handling large datasets and concurrent match updates (Williams, 2020). Studies have also shown that automation leads to improved fan engagement, as timely and error-free data ensures a more reliable and enhanced experience (Green, 2019). The "*Real-Time Football Score Tracker"* leverages these advantages, providing a scalable, efficient, and user-friendly solution to modern sports tracking challenges.

CHAPTER-3

SYSTEM DESIGN

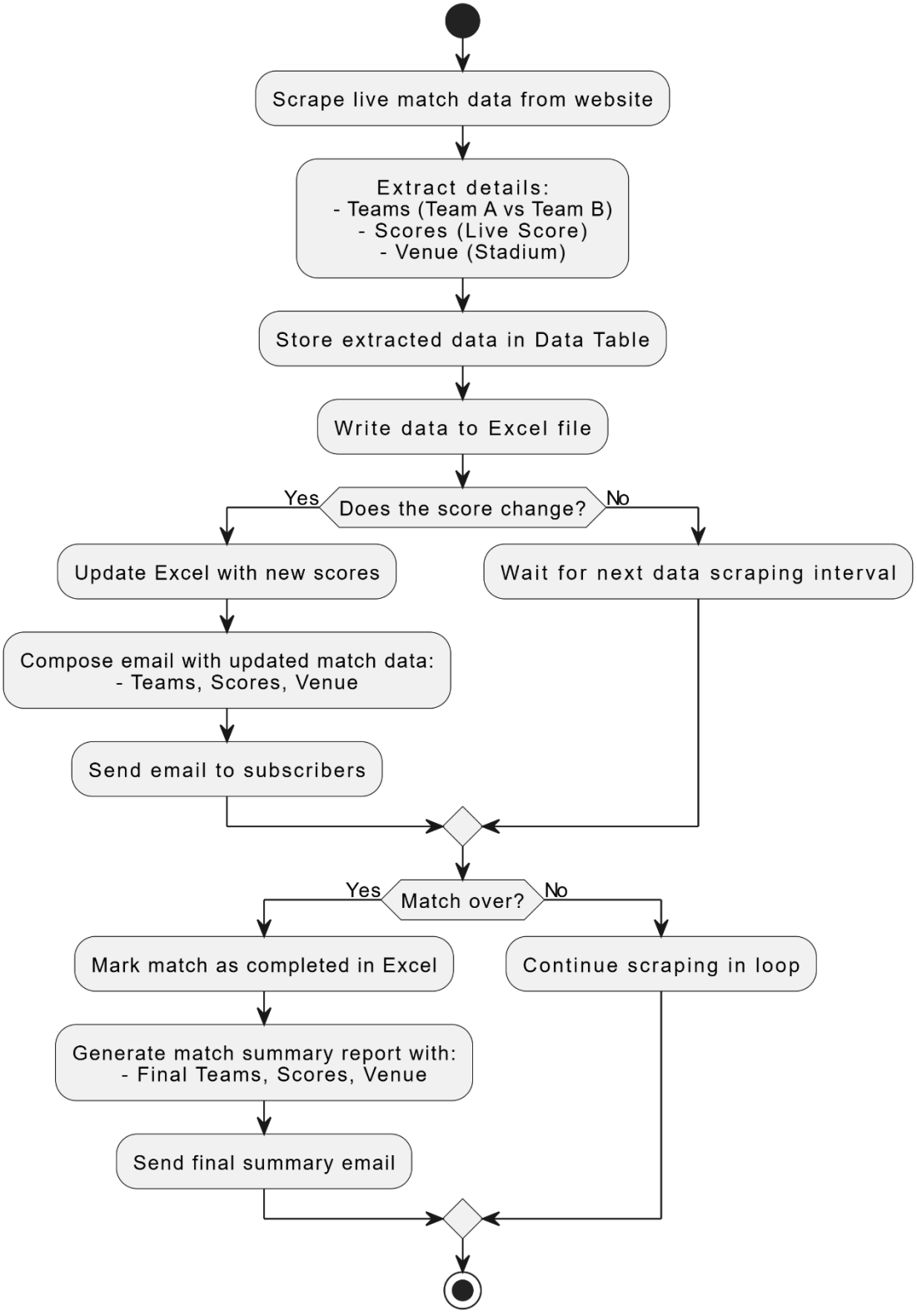
3.1 SYSTEM FLOW DIAGRAM

The System Flow Diagram outlines the overall flow of data and processes in the *Real-Time Football Score Tracker* system. It demonstrates how user inputs, system processing, and outputs interact, along with the addition of email functionality for sending updates.

Description:

1. **Input:**
    - User inputs match details or selects a league from the provided options.
    - The system retrieves live football match data from external APIs or web scraping sources.
2. **Process:**
    - **Data Retrieval:** Retrieve live match data such as scores, team performance, and match status from external APIs or websites.
    - **Data Processing:** Process and analyze the match data, updating the system with real-time information.
    - **Excel File Generation:** Create an Excel sheet (XLSX format) containing match details, scores, and other relevant statistics.
    - **Email Preparation:** Compose an email with the Excel file attached, containing the most up-to-date match information.
3. **Output:**
    - **Display:** Real-time scores, team performances, and match status are displayed on the user interface.
    - **Email Sent:** Send the email with the attached Excel file to the user or relevant stakeholders.
    - **Logs and Error Handling:** Log details of the email sent and track any errors for fault tolerance and efficient error handling.

This flow ensures that football fans, analysts, and broadcasters receive both real-time updates displayed on the interface and a detailed Excel report via email, ensuring an efficient and reliable solution for live football score tracking.

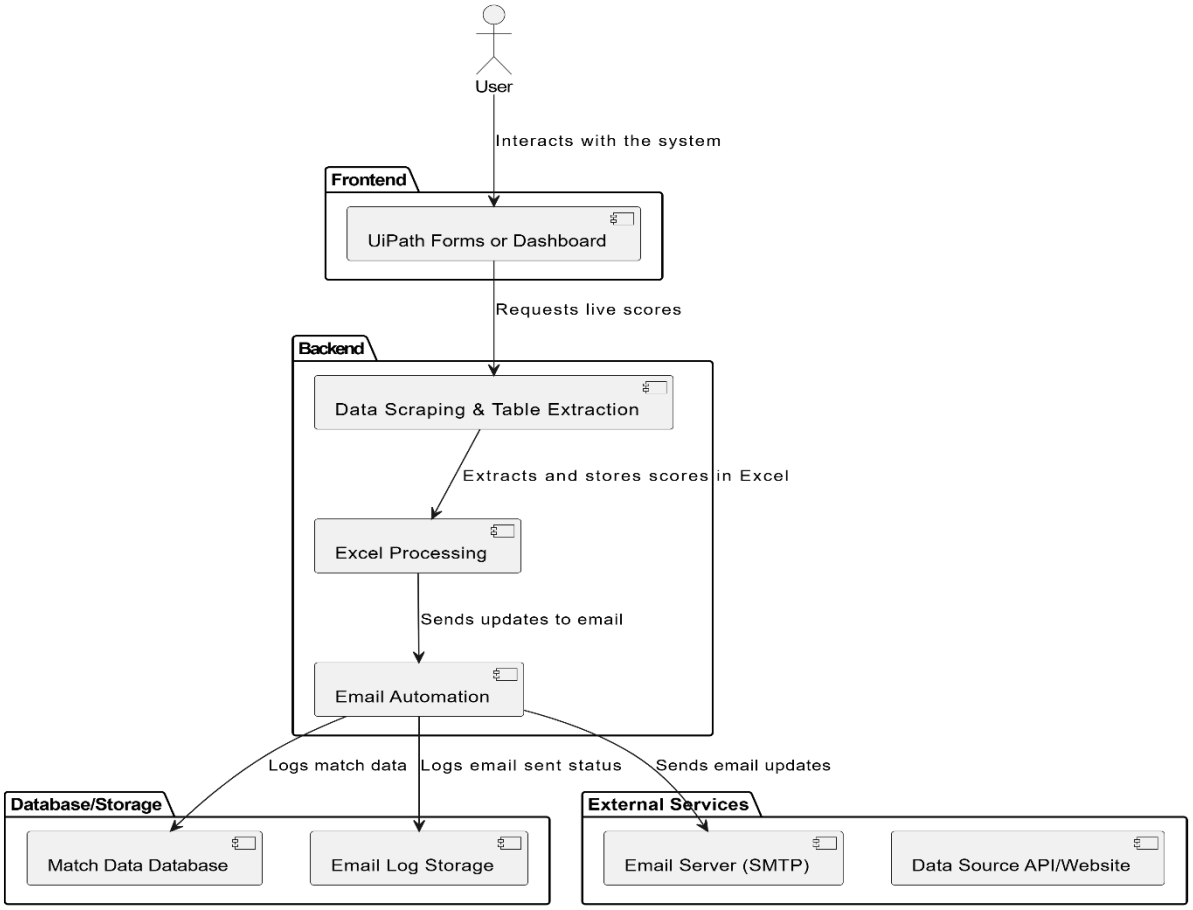


3.2 ARCHITECTURE DIAGRAM

The **Architecture Diagram** provides a high-level view of the system's structure and its components.

Components:

1. **Frontend**: User interface for displaying real-time scores and updates (e.g., UiPath Forms or a dashboard).
2. **Backend**: Core logic, including:
   - **Data Scraping**: Extracting live football scores and match details.
   - **Excel Processing**: Updating scores and storing data in Excel.
   - **Email Automation**: Sending score updates to subscribers or stakeholders.
3. **Database/Storage**: Storing historical match data, scores, and email logs for future reference and analysis.
4. **External Services**: Email smtp- For sending email updates to subscribers with real-time scores and match details.

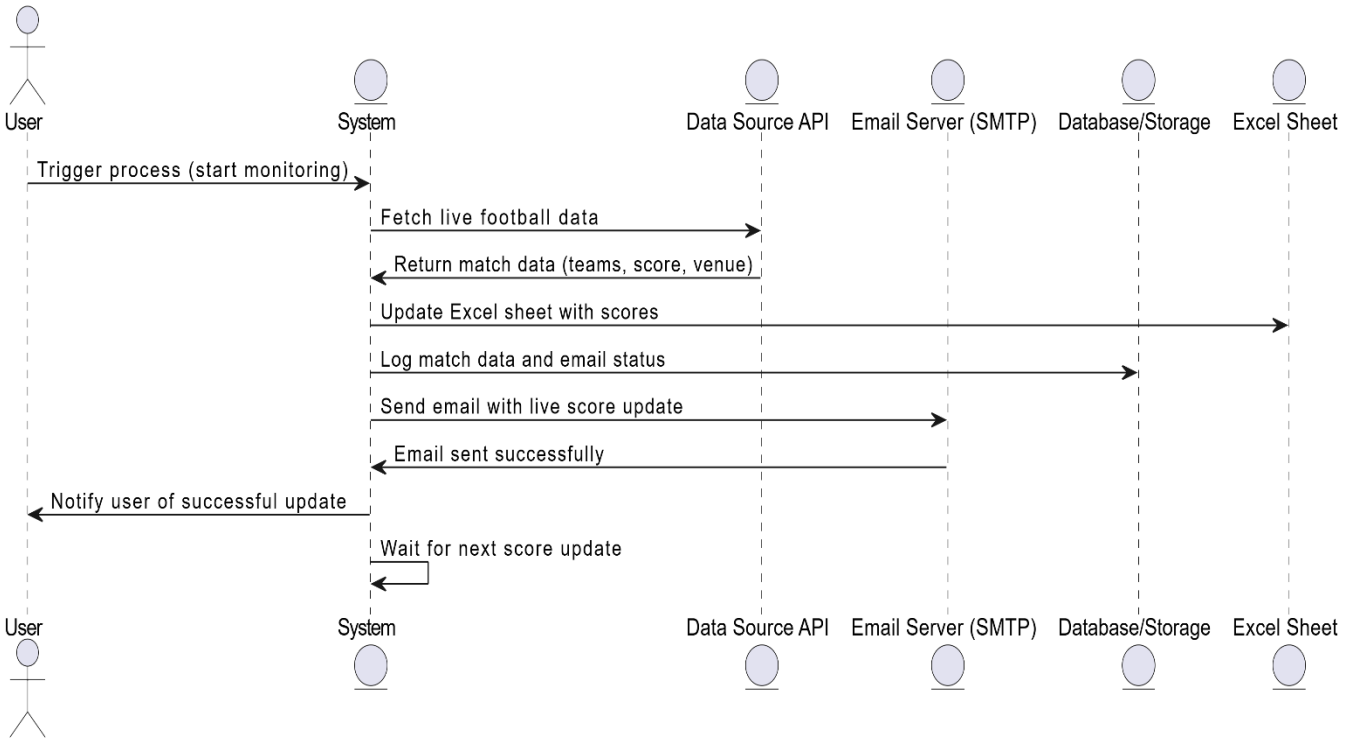


3.3 SEQUENCE DIAGRAM

The **Sequence Diagram** shows the interaction between actors (HR personnel) and the system components in a sequential manner.

Steps:

1. User triggers the process to start tracking live football scores.
2. The System fetches live match data (teams, scores, venue) from an external Data Source API.
3. The System updates the Excel sheet with the retrieved data and logs it in the Database
4. The System sends an email update with match details via the Email Server (SMTP).
5. The System notifies the User of success or errors encountered during the process.



CHAPTER 4

PROJECT DESCRIPTION

The **Real-Time Football Score Tracker** project is designed to automate the process of fetching, updating, and notifying live football match scores. By utilizing UiPath's Robotic Process Automation (RPA) capabilities, the system continuously scrapes live match data from external APIs or websites, processes it, and displays the scores in a user-friendly interface. The system further automates the task of sending real-time score updates and match details to users via email. This automation improves the efficiency of the process, ensures real-time accuracy, and eliminates human error in manually tracking football scores. This section provides an overview of the methodologies used in the development of the system, as well as a breakdown of the core modules that drive the automation process.

4.1 METHODOLOGY

The development of the Real-Time Football Score Tracker project followed an agile methodology, ensuring iterative progress and flexibility in meeting project requirements. The system was built using UiPath's Robotic Process Automation (RPA) platform, leveraging its RE Framework to ensure structured execution, error handling, and scalability. The key steps in the methodology are outlined below:

1. **Requirements Gathering:** The first step involved gathering requirements to understand the specifics of the real-time football score tracking process. This included identifying the data sources (APIs or websites), the details to be extracted (e.g., teams, scores, venue), and the necessary updates to be displayed (e.g., real-time score changes, email notifications).
2. **System Design:** Based on the requirements, system designs (including flow diagrams, architecture diagrams, and sequence diagrams) were created to ensure that the automation process would meet all specifications. These diagrams served as blueprints for the RPA workflows, ensuring seamless integration between components.

3. **Implementation:** The system was implemented using UiPath, integrating modules for data scraping, Excel processing, and email automation. The RE Framework was used to structure the workflows, handle exceptions, and ensure scalable and repeatable execution.
4. **Testing & Deployment:** The system was thoroughly tested to identify potential issues, such as incorrect data scraping, errors in Excel updates, or failures in email delivery. After successful testing, the system was deployed to users, allowing them to track live scores and receive notifications as part of their everyday workflow.

4.1.1 MODULES:

1. **Data Scraping and Table Extraction Module:** This module extracts real-time football match data from external APIs or websites. It scrapes details such as team names, scores, and venue information. The system is configured to regularly scrape data to ensure up-to-the-minute accuracy.
2. **Excel Data Processing Module:** After retrieving live match data, this module processes and stores the data in an Excel sheet. It organizes the data in a structured format, allowing users to track scores and match statistics in real-time. Excel is used to store match information for easy reference and future analysis.
3. **Email Distribution Module:** This module automates the sending of real-time score updates to users via email. After updating the Excel sheet with new scores, the system generates and sends email notifications to users with the latest match data (teams, scores, and venue). This ensures stakeholders remain informed of match progress.
4. **Logging and Monitoring Module:** To track the system's performance and provide transparency, this module logs every action taken by the automation. It tracks which matches have been updated and which emails have been sent. Logs are stored centrally for easy review and monitoring by users.

5. **Error Handling and Exception Management Module:** Leveraging the RE Framework's exception handling capabilities, this module ensures that any unexpected issues (e.g., failed API calls, missing data, or email delivery problems) are logged and managed appropriately. The system will continue processing other tasks even if an error occurs in one part of the process, ensuring no interruptions to overall functionality.
6. **User Interface Module:** This module provides a user-friendly interface that allows **users** (non-technical stakeholders) to upload data (e.g., an Excel sheet with real-time football match details), configure email templates, and trigger the automation process. The interface also provides status updates and alerts, ensuring users are informed about the process's progress and any issues encountered.

CHAPTER-5

OUTPUT SCREENSHOT

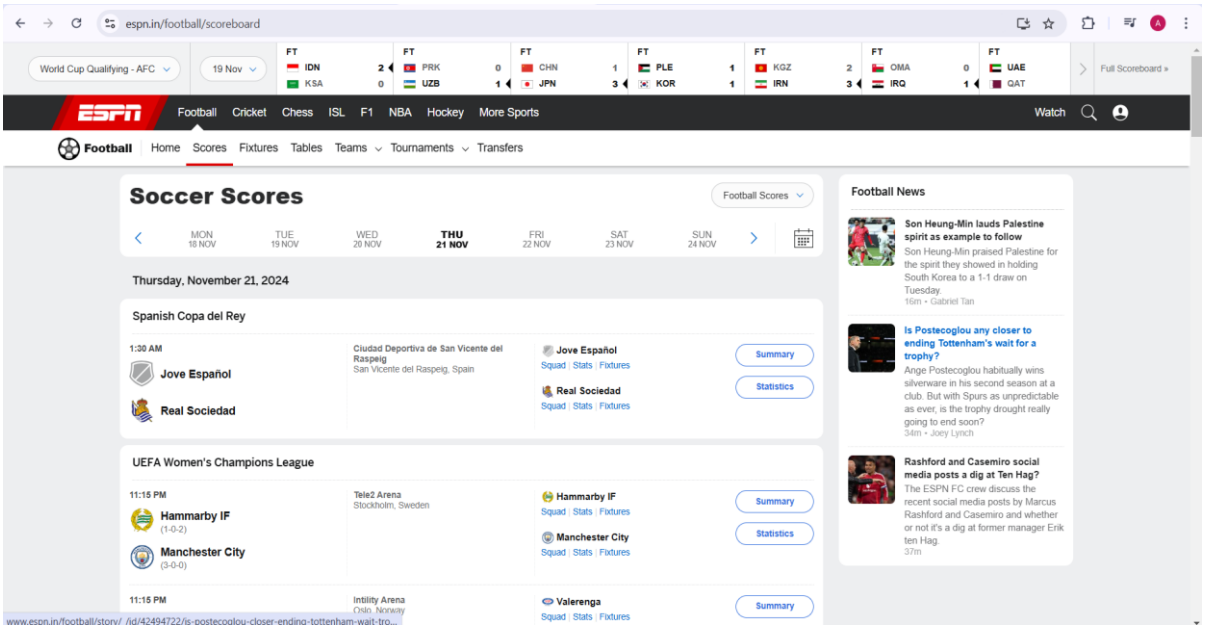


Fig. 5.1.Website to extract Data

From this above website the bot extracts the data to store in excel

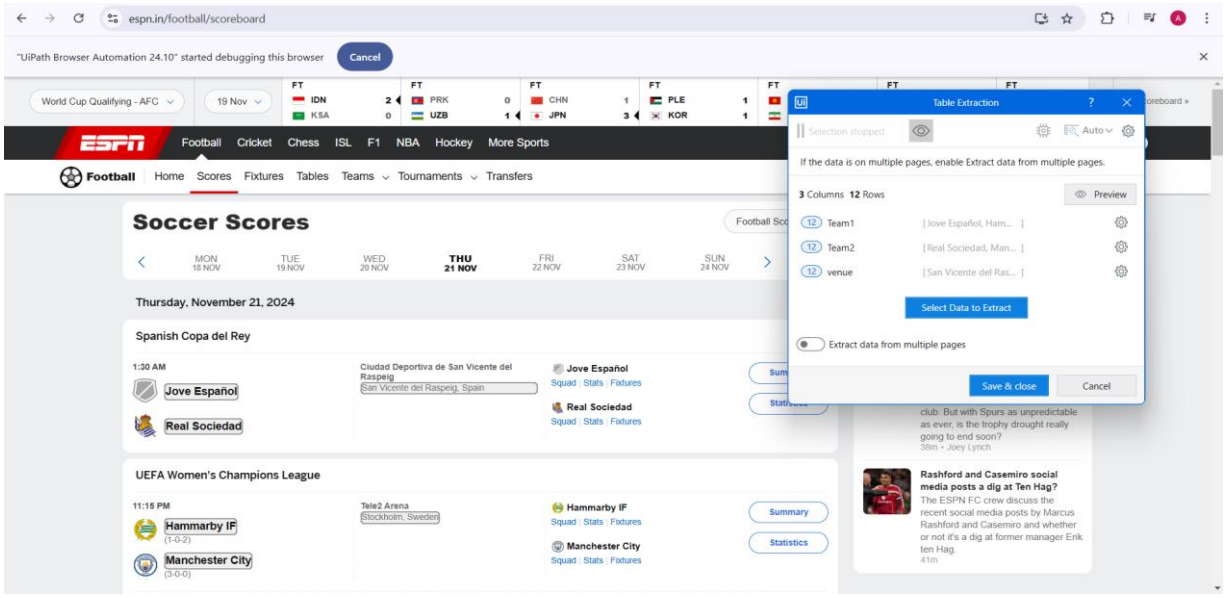
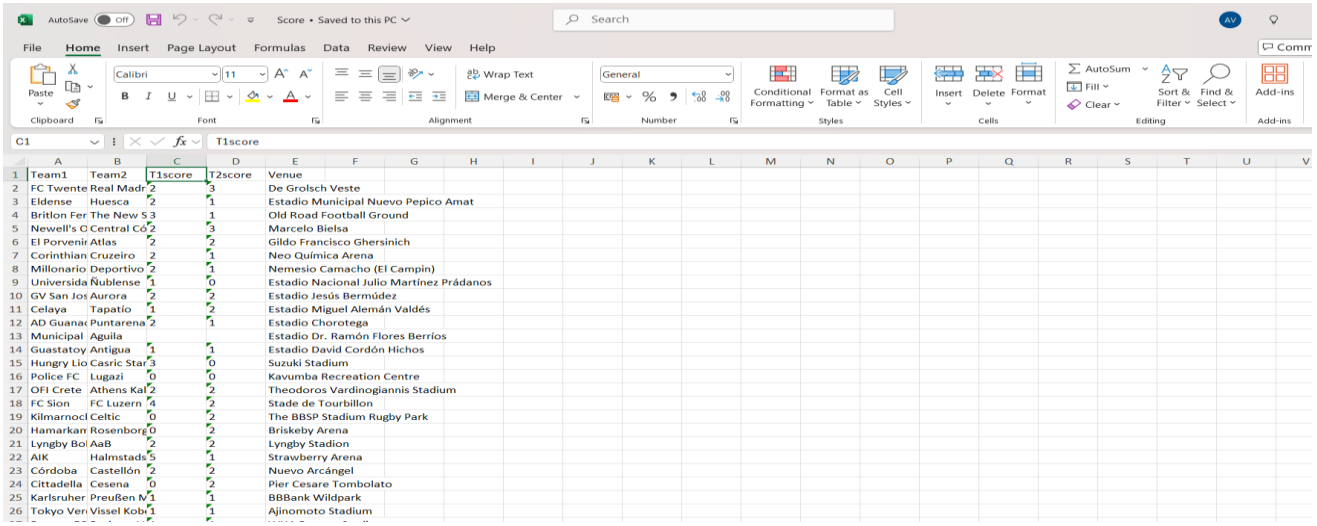


Fig. 5.2. Selecting Data to extract by table extraction

The above picture denotes the data selection to be extracted



Team1	Team2	T1score	T2score	Venue
FC Twente	Real Madr	2	3	De Grolsch Veste
Eldense	Huesca	2	1	Estadio Municipal Nuevo Pepico Amat
Britlon Fer	The New S	3	1	Old Road Football Ground
Newell's O	Central Có	2	3	Marcelo Bielsa
El Porveni	Atlas	2	2	Gildo Francisco Ghersinich
Corinthian	Cruzeiro	2	1	Neo Química Arena
Millonario	Deportivo	2	1	Nemesio Camacho (El Campin)
Universida	Ñublense	1	0	Estadio Nacional Julio Martínez Prádanos
GV San Jos	Aurora	2	2	Estadio Jesús Bermúdez
Celaya	Tapatío	1	2	Estadio Miguel Alemán Valdés
AD Guana	Puntarena	2	1	Estadio Chorotega
Municipal	Aguila			Estadio Dr. Ramón Flores Berríos
Guastatoy	Antigua	1	1	Estadio David Cordón Hichos
Hungry Lio	Casric Star	3	0	Suzuki Stadium
Police FC	Lugazi	0	0	Kavumba Recreation Centre
OFI Crete	Athens Kal	2	2	Theodoros Vardinogiannis Stadium
FC Sion	FC Luzern	4	2	Stade de Tourbillon
Kilmarnock	Celtic	0	2	The BBSP Stadium Rugby Park
Hamarkam	Rosenborg	0	2	Briskeby Arena
Lyngby Bo	AaB	2	2	Lyngby Stadion
AIK	Halmstads	5	1	Strawberry Arena
Córdoba	Castellón	2	2	Nuevo Arcángel
Cittadella	Cesena	0	2	Pier Cesare Tombolato
Karlsruher	Preußen M	1	1	BBBank Wildpark
Tokyo Ver	Vissel Kob	1	1	Ajinomoto Stadium

Fig. 5.3.Update Excel

The bot updates the excel with live scores of football matches with other details

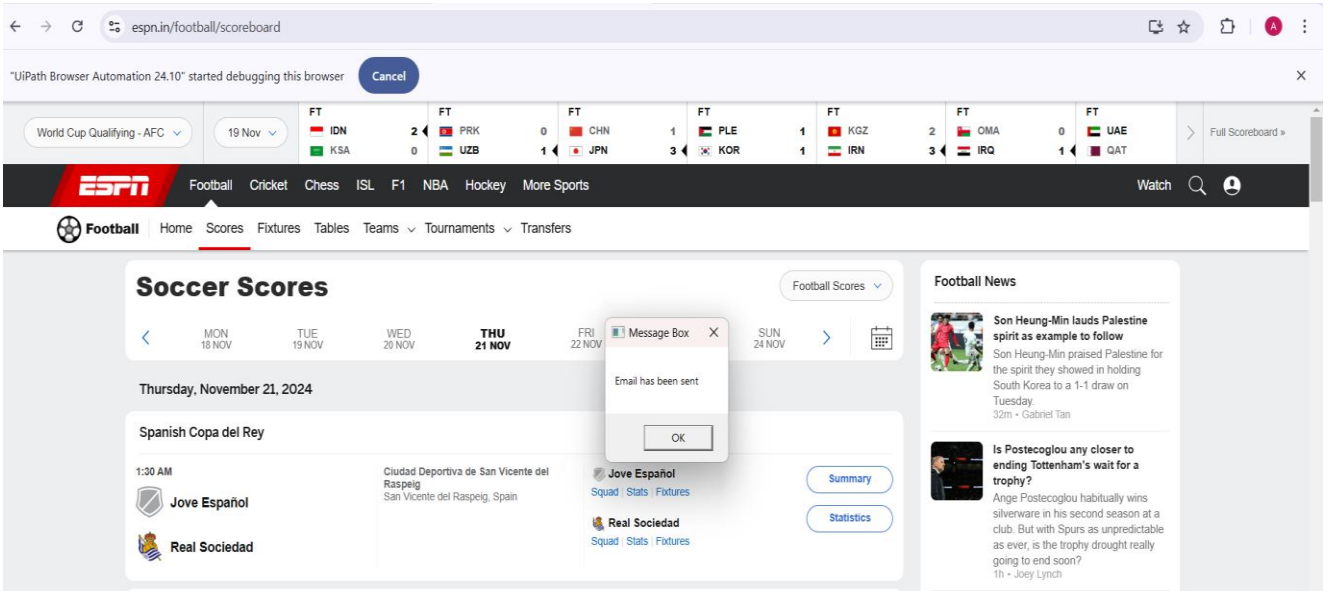


Fig. 5.4. Mail Sent Acknowledgement

Bot sends a Confirmation message that mail is sent

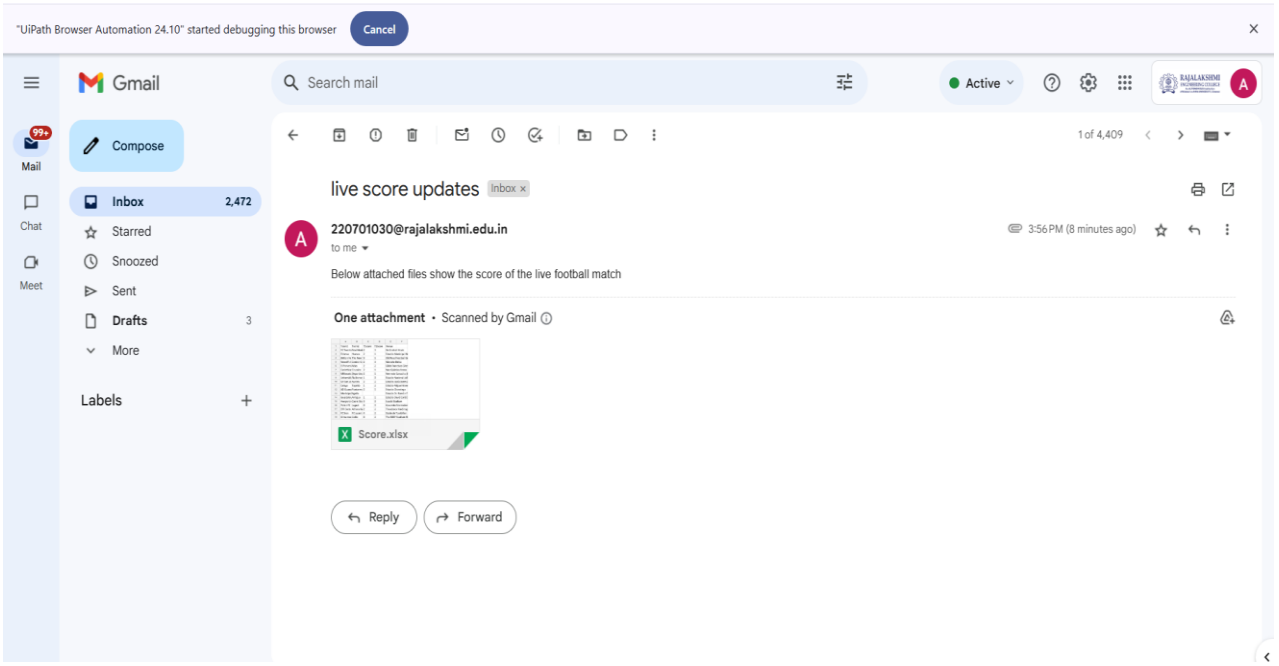


Fig. 5.5. Received Match Update Email

The figure shows Email received with live football match updates

CHAPTER-6

CONCLUSIONS

The **Real-Time Football Score Tracker** project successfully automates the process of tracking, updating, and notifying live football scores, streamlining a traditionally manual process. By utilizing UiPath's Robotic Process Automation (RPA) platform and the RE Framework, the system ensures accurate and timely updates, enhances operational efficiency, and minimizes human errors. The implementation of modules for data scraping, Excel processing, email distribution, and error handling has resulted in a reliable and scalable solution suitable for real-time sports data management.

The automation not only saves time but also ensures accuracy and consistency in delivering live match updates. This is especially valuable when managing multiple matches simultaneously, where manual tracking would be slow and prone to mistakes. Additionally, the integration of robust error handling mechanisms ensures that any issues encountered during the automation process are addressed promptly, reducing interruptions and maintaining system reliability.

Through its modular design, user-friendly interfaces, and comprehensive logging, the system provides a transparent and flexible solution for users. It also enables stakeholders to stay informed about match updates in real time, ensuring a seamless experience for football enthusiasts and analysts alike. The project's structured approach demonstrates how RPA can effectively solve real-world problems, making processes more efficient and allowing organizations to focus on higher-value tasks, such as improving fan engagement and enhancing analytics.

6.1.GENERAL:

In general, the **Real-Time Football Score Tracker** has successfully met the objectives of automating the extraction, processing, and notification of live football match updates. It provides users with a powerful tool to manage real-time sports data efficiently. Future enhancements could include integrating the system with other analytics platforms, expanding its functionality to cover additional sports or events, or providing advanced dashboards for deeper insights into match statistics. The project represents a significant advancement in automating sports data management and can serve as a model for applying automation to other real-time data tracking scenarios.

APPENDIX

Activities Used: Includes Extract Data, Write Range, Send SMTP Mail Message, and Log Message for scraping, processing, and email automation.

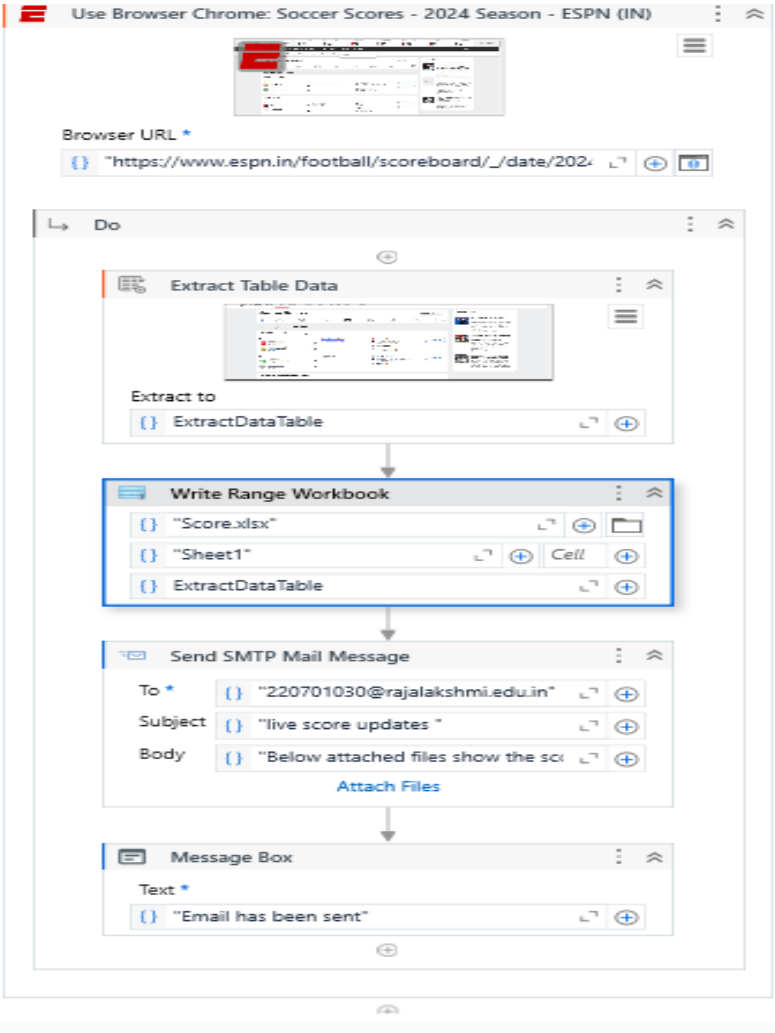
File Structure: Key files include Main.xaml (workflow), Config.xlsx (parameters), and Logs Folder (activity logs).

Hardware/Software: Requires UiPath Studio, Microsoft Excel, and an email server (SMTP or Outlook).

RE Framework: Utilized for structured workflows, exception handling, and scalability.

Glossary: Includes terms like RPA, RE Framework, and Data Scraping for clarification

PROCESS WORKFLOW



REFERENCES

1. Avasarala, V. (2019). Robotic Process Automation: The Next Transformation in Digital Transformation. *International Journal of Advanced Research in Computer Science, 10*(3), 5-12.
2. Lacity, M. C., & Willcocks, L. P. (2016). A Survey on Robotic Process Automation in Business. *Journal of Information Technology, 31*(2), 174-183.
3. Goudar, R. H., & Soni, M. P. (2017). Automation and Monitoring in Cloud Computing Systems. *Journal of Cloud Computing: Advances, Systems, and Applications, 6*(1), 23-36.
4. Gupta, S., & Sharma, A. (2018). A Comprehensive Study on RPA and its Application in Business Automation. *International Journal of Computer Applications, 181*(9), 1-6.
5. Kumar, S., & Kaur, A. (2020). Real-Time Data Scraping and Processing using Robotic Process Automation. *International Journal of Innovative Technology and Exploring Engineering, 9*(3), 10-14.
6. Hossain, M. S., & Gamage, D. (2020). A Review of RPA Tools and Applications in Real-Time Data Extraction. *International Journal of Cloud Computing and Services Science, 8*(5), 273-285.
7. Eze, T., & Eze, C. (2019). Analyzing the Role of RPA in Real-Time Data Processing for Dynamic Systems. *International Journal of Computer Science and Technology, 10*(2), 55-63.
8. Kaur, R., & Arora, S. (2021). Automating Web Scraping and Data Processing with RPA for Real-Time Analytics. *International Journal of Data Science and Automation, 6*(2), 87-94.