AikApply

Project Proposal

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Contents

List of Figures

List of Tables

Chapter 1

Proposal Synopsis

1.1 Abstract

In the field of educational technology and automation, the manual submission of university admission forms remains a major bottleneck for students in Pakistan. Each university has its own online portal, requiring repeated entry of the same personal and academic details, leading to inefficiency and errors. This project proposes an AI-powered agent that automates the application process by collecting student data once, logging into various university websites, identifying form fields using LangChain, and filling them via Selenium. Any missing information is logged in a central file. The system reduces manual effort, improves accuracy, and offers a scalable solution to streamline university applications.

1.2 Introduction

Every year, thousands of students across Pakistan face the exhausting and repetitive task of applying to multiple universities, each with its own online portal and identical form fields name, contact details, academic records, and supporting documents. This outdated, manual process wastes valuable time, causes unnecessary stress, and often leads to frustrating errors. This project introduces a smart, Web based admission assistant designed to revolutionize the application experience. By collecting student data just once, the agent intelligently logs in to various university portals, reads and understands form structures using AI and language models, and accurately fills them out. Any incomplete fields are neatly tracked in a central log for easy review. With a focus on simplicity, speed, and accuracy, this solution aims to turn a traditionally process into a tech-enabled experience bringing automation and ease to one of the most important steps in a student's academic journey.

1.3 Problem Statement

The current university admission process in Pakistan lacks standardization, requiring students to manually fill out identical information across multiple, unconnected university portals. This repetition not only wastes valuable time but also increases the chances of submission errors, missed deadlines, and applicant fatigue. Despite advancements in automation and AI, no solution exists to ease this burden or streamline the process. The core problem is the absence of a unified or intelligent system that can handle form submission efficiently across different university platforms. This project sets out to turn the exhausting admission grind into a one-click, intelligent experience faster, smarter, and error-free.

1.4 Objectives

The objectives of the proposed system are to tackle the challenges highlighted in the problem statement by transforming the university application experience through intelligent automation and user-friendly design. Below are the key objectives:

- Develop an AI agent capable of collecting and securely storing student data through a user-friendly web based interface.
- Integrate the AI agent with selected university admission portals, enabling secure login and access to online forms.
- Use LangChain and natural language processing (NLP) to dynamically interpret and match form fields with student data.
- Automate the accurate filling of admission forms and generate a log of any fields that could not be completed.
- Evaluate system performance by measuring form completion accuracy, time saved per application, and user satisfaction.
- Provide access to a AI-based chatbot to assist students in exploring academic programs aligned with their interests.
- Offer personalized university recommendations using a recommender system trained on student preferences, and fee budget

1.5 Related Work

In the domain of educational technology and university admissions, several existing systems and tools attempt to streamline parts of the application process. However, they each suffer from notable limitations that leave significant room for improvement. In this section, we discuss five relevant systems/tools and how our proposed solution, AikApply, addresses their shortcomings.

1. Manual University Admission Portals
Most Pakistani universities operate independent online admission portals (e.g., PU, UET, FAST-NUCES). Students must repeatedly enter the same academic and personal information for each application, leading to redundancy, errors, and wasted time. No centralized or intelligent system currently exists to automate this repetitive task.

2. AutoFill Browser Extensions (e.g., Chrome AutoFill, LastPass)
AutoFill extensions can store and enter user credentials and basic form information. However, they lack semantic understanding of dynamically generated or differently structured forms. As a result, they fail to map correct information to new or unseen form fields in university portals.

3. Captcha Solving Bots
Captcha bots, such as 2Captcha-based services, aim to bypass login security measures. These tools only automate captcha solving but do not legally or ethically manage full form submissions. They also pose potential security risks when dealing with sensitive admission data.

4. Centralized Portals (e.g., UCAS UK)
Systems like UCAS in the United Kingdom offer centralized university applications. However, no such centralized application platform exists in Pakistan. Students must still navigate multiple different university systems individually.

5. Deadline Tracking Tools (e.g., MyStudyLife, Google Calendar)
While general-purpose calendar and reminder apps allow students to track deadlines manually, they require users to input data manually and do not integrate automatically with application form statuses.

1.6 Proposed System

The proposed system, AikApply, aims to create an AI-powered agent that enables students to complete admission forms for multiple universities using a single dataset. The methodology adopts a modular design that includes: data collection,

AI-assisted field mapping, web form automation, API integration, and user-facing services such as recommendations and notifications.

The development process will begin with a thorough analysis of admission portals from various Pakistani universities to identify common patterns, form structures, required fields, and submission processes. Based on this analysis, a custom web-based data intake form will be designed to allow students to input their details once. This data will be stored in a structured and reusable JSON format.

A central innovation of the system lies in the integration of LangChain with a large language model (LLM) to semantically interpret HTML form labels and accurately map them to the relevant fields in the student dataset. This removes the need for hardcoded field matching and allows the system to adapt to diverse and dynamic form layouts across portals.

Automated form submission will be executed through Selenium WebDriver, which will handle the login process, form navigation, data input, and file uploads for documents such as CNICs, academic transcripts, and photographs. If any fields cannot be automatically mapped or submitted, they will be logged, and the user will be notified for manual follow-up.

To enhance the student experience further, the system will feature a web-based dashboard where users can:

- Track the status of each university application
- Receive email alerts for approaching deadlines
- Access a GPT-based chatbot to explore and select academic programs
- View personalized university recommendations based on grades, interests, and preferences through an integrated recommender system

To validate the performance and reliability of the system, rigorous testing will be conducted across multiple student profiles and university portals. Evaluation will be based on the following metrics:

Field Mapping Accuracy – Accuracy of AI-generated field-to-data mappings

Form Submission Success Rate - Percentage of Successful Automated Submissions

System Responsiveness – Time efficiency for completing and submitting each form

1.7 Tools and Technologies

Following are the tools and technologies that we will use.

Table 1.1: Tools and Technology

Component	Stack
Frontend	HTML, CSS, React.js
Backend	Django[3]
Database	SQL
AI/NLP	OpenAPI[4], Label Matching
Automation	Selenium[2] or Playwright
Excel Logs	Python (openpyxl and pandas)
Chat Agent	LangChain[1]
Captcha	2Captcha[5]

1.8 Team Members Individual Tasks/Work Division

The following is the work division among members.

Table 1.2: Work Division

Team Member Name	Tasks
Amen Munir	LangChain AI integration, prompt design, chatbot assistant for recommendation features
Zunaira Kabeer Butt	Frontend form and dashboard, deadline alert integration, Data Collection and research
Tayyab Zahid	Selenium form filler automation, multi-step form handling and Data Collections
Muaaz Butt	Backend, API development, database integration, recommender system, Excel log export

1.9 Data Gathering Approach

We will conduct research on official university websites (e.g., PU [6], UET [7], LUMS [8], FAST [9]) to identify and extract commonly required application fields. This includes analyzing the structure of admission forms, input types, and validation patterns. Sample HTML tags and elements will be collected directly from these portals to simulate real-world scenarios and assist in designing accurate AI prompts. This structured analysis will serve as the foundation for the field mapping logic used by the LangChain-powered AI agent.

1.10 Timeline/Gantt chart

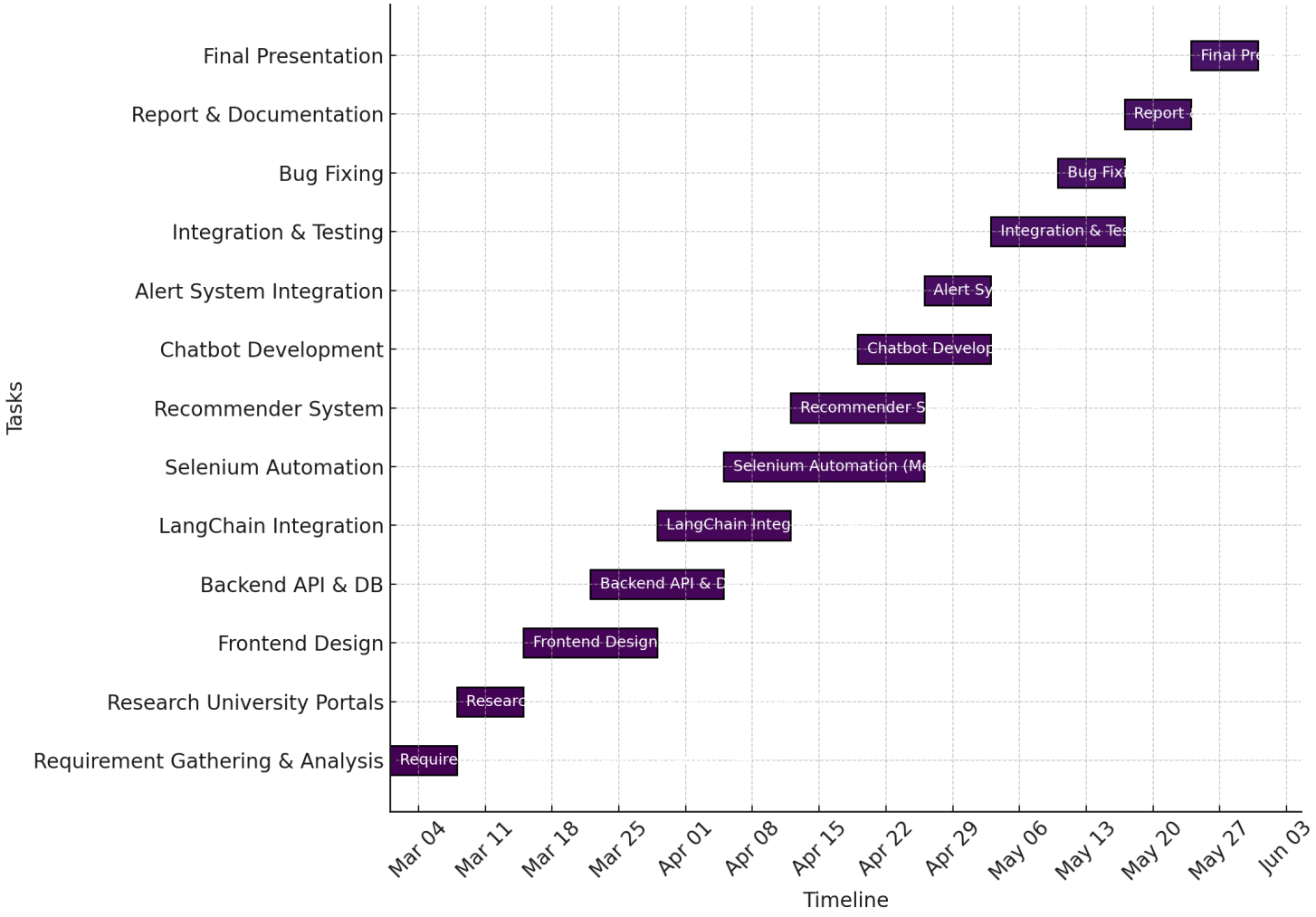

FIGURE 1.1: Gantt chart

References

References Guidelines

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