

AI ENABLED MOCK INTERVIEW SYSTEM

**Submitted in partial fulfilment of the
Requirements for the Degree of**

MASTER OF COMPUTER APPLICATION

by

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AI Enabled Mock Interview System

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ABSTRACT

The AI-Enabled Mock Interview System operates like a supportive mentor, leading individuals through the often daunting process of preparing for job interviews. This innovative platform aims to simplify and improve the experience of practicing for interviews by using the capabilities of smart technology known as artificial intelligence.

Consider a virtual space that serves as a helpful companion, specifically designed to help job seekers improve their interview skills. This system has been painstakingly designed to bridge the gap between traditional interview preparation methods and the ever-changing job-seeker requirements in today's competitive job market.

The system prioritises user convenience and effectiveness at its core. It starts with a simple process in which users upload their resumes and specify the job fields they prefer. This customisation allows the system to personalise the interview practice sessions based on the user's career goals and skill levels, making the experience more relevant and impactful. The interactive AI-driven virtual interviewer is what truly distinguishes this system. Consider it to be a friendly computer character who engages users in realistic interview simulations. This virtual interviewer evaluates the user's responses in real-time and provides constructive feedback by utilising advanced technologies such as natural language processing (NLP) and machine learning (ML). It's as if you have a supportive mentor guiding you through the interview, highlighting your strengths and pointing out areas for improvement.

The system's extensive question bank is an important component. This repository has been meticulously curated to contain a wide range of industry-specific interview questions. The question bank covers a wide range of job sectors, from technical questions to behavioural scenarios, ensuring that users have a diverse set of questions to practise regardless of their career interests.

The AI-Enabled Mock Interview System is, in short, more than just a piece of technological advancement. In order to make interview preparation less stressful for users, it is a helpful ally that is accessible, efficient, and customised to fit each user's unique path to professional achievement.

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Manmohan Dwivedi

TABLE OF CONTENTS

	Certificate	ii
	Abstract	iii
	Acknowledgements	iv
	Table of Contents	v
	List of Tables	vii
	List of Figures	viii
1	Introduction	1-4
	1.1 Overview	1
	1.2 Motivation	2
	1.3 Problem Statement	2-3
	1.4 Expected Outcome	3-4
2	Literature Survey	5-8
3	Design	9-17
	3.1 Data Flow Diagram	9-10
	3.1.1 Level 0 DFD	9
	3.1.2 Level 1 DFD	10
	3.2 Data Dictionary	11
	3.3 Sequence Diagram	11-15
	3.3.1 Sequence Diagram of Registration	11-12
	3.3.2 Sequence Diagram of Login Process	12-13
	3.3.3 Sequence Diagram of Domain Customization	13-14
	3.3.4 Sequence Diagram of Interview and Feedback	14-15
	3.4 Use Case Diagram	15-18
	3.4.1 Use Case Description of Registration	16
	3.4.2 Use Case Description of Login	16
	3.4.3 Domain Customization	16-17
	3.4.4 Use Case Description of Interview	17

	3.4.5 Use Case Description of Feedback Generation	17-18
4	Proposed Work	19-27
	4.1 Dataset Description	19
	4.2 Technology Description	19
	4.3 Approach Used	20
	4.4 Dependencies Required	20-22
	4.5 Algorithms and Flowchart	22-27
5	Results	28-32
	5.1 Screens and Explanation	28-32
6	Discussions	33-40
	6.1 Performance	33
	6.2 Limitations of the System	33-34
	6.3 Future Research Directions	34-36
7	Conclusion	37-38
8	References	39-40
9	Bibliography	41-42
	9.1 Online Websites	41
	9.2 Reference Books	41-42

LIST OF TABLES

Table No.	Name of Table	Page
3.1	Data Dictionary	11
4.1	Dataset Description	19

LIST OF FIGURES

Figure No.	Name of Figure	Page No.
1.1	Basic Architecture of Mock Interview System	2
2.1	System Architecture	5
2.2	Technology Acceptance Model	8
3.1	Level 0 DFD	9
3.2	Level 1 DFD	10
3.3	Sequence Diagram of Registration	12
3.4	Sequence Diagram of Login	13
3.5	Sequence Diagram of Domain Customization	14
3.6	Sequence Diagram of Interview and Feedback	14
3.7	Use Case Diagram of Mock Interview System	15
4.1	Interconnection of Technologies	20
4.2	Flowchart of signup	23
4.3	Flowchart of Login	24
4.4	Flowchart of Database Connectivity	25
4.5	Flowchart of API Connectivity	26
4.6	Flowchart of Feedback Generation	27
5.1	Home Page	28
5.2	Login and Registration Screen	29
5.3	Start New Interview Screen	30
5.4	Interview Customization screen	30
5.5	Interview Screen	31
5.6	Response Screen	32

CHAPTER 1

INTRODUCTION

1.1 Overview

The innovative AI-Enabled Mock Interview System aims to transform and update the conventional method of interview preparation. This cutting-edge platform seeks to provide users with a customized and immersive experience to hone their interview abilities by utilizing cutting-edge technologies like artificial intelligence (AI) and machine learning (ML). The method primarily focuses on customizing mock interview scenarios to fit each person's skill level and career goals, creating a simulated but authentic interview setting. Users interact in real-time through dynamic question-and-answer sessions with AI-driven virtual interviewers, receiving immediate feedback to help them improve. Practice sessions are varied and pertinent because of the platform's extensive question library, which covers multiple industry domains. To further support ongoing skill development, comprehensive performance statistics let users monitor advancement and pinpoint areas for improvement. The system's ultimate goal is to close the knowledge gap between theory and practice by giving users more self-assurance, flexibility, and success in actual job interviews."

The technology integration, tailored learning, simulated interview setting, and the system's potential to revolutionize interview preparation techniques are highlighted in this overview, which sums up the essence of the AI-Enabled Mock Interview System. Depending on what the project requires, changes can be made to highlight certain features of the system or incorporate specific project data.

1.2 Motivation

As a college student who is looking for job opportunities and wants to learn several aspects of an interview such as written test, technical interview, or HR interview. We as students also watch so many videos of how to crack a particular interview but all of these are waste if we won't implement it and practice it. But we do not have any proper platform where we can practice our interview without any hesitation. As some applications or websites are available which provide such services of taking interviews but all of them were with the real person which is a good practice but for a candidate who is new and wants to try the experience of interview may feel hesitant to talk to real person. That is why we came up with the idea of taking an interview with the help of an AI and get the feedback also on your interview.

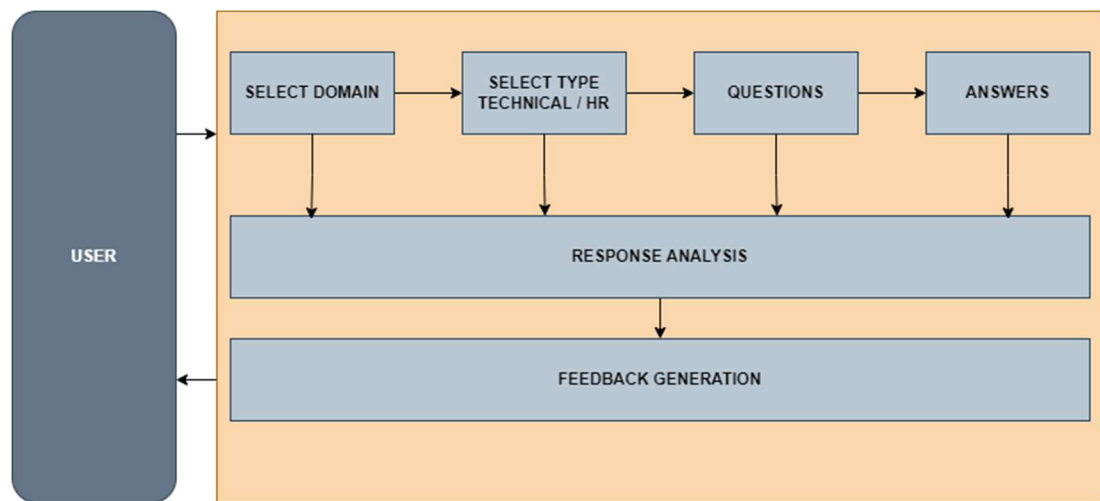


Fig. 1.1 Basic Architecture of Mock Interview System

Fig 1.1 represents the basic architecture of the mock interview system in which the user will interact with the system and will select the domain and type of interview the user wants to take then the system will ask questions to the user, user will answer those questions then all the answers will be analyzed by the AI and generate the feedback to display to the user.

1.3 Problem Statement

The AI-Enabled Mock Interview System revolves around the inadequacy of conventional interview preparation methods to meet the evolving needs of job seekers in today's competitive job market. Traditional approaches often lack personalization, real-time feedback, and adaptability to diverse interview scenarios, leading to limited readiness and confidence among candidates.

Inadequate Interview Preparation:

- Conventional interview preparation methods, such as reading articles or attending generic interview workshops, fail to provide tailored experiences aligned with individual career aspirations, skill levels, and industry-specific requirements.
- Limited access to realistic interview simulations leads to a lack of exposure to diverse questions and scenarios, inhibiting candidates from refining their interview skills effectively.
- Feedback mechanisms in traditional methods are often absent or delayed, impeding candidates' ability to understand their strengths and areas needing improvement in real time.

Existing online resources and mock interview platforms lack the sophistication needed to provide dynamic, adaptive, and AI-driven personalized experiences. These limitations contribute to job seekers' unpreparedness, affecting their confidence and competitiveness during actual job interviews.

The AI-Enabled Mock Interview System seeks to address these shortcomings by offering a technologically advanced platform that bridges this gap, providing personalized, adaptive, and realistic interview simulations coupled with immediate feedback to enhance users' interview readiness and confidence.

1.4 Expected Outcome

The AI-Powered Mock Interview System expects a variety of results that are intended to change the interview preparation scene. Based on innovative technology and user-centered design, the system envisions multiple significant results that will enable people looking to improve their interviewing abilities and thrive in the cutthroat job market.

- **Take Interview of Candidates**

The Systems major goal is to take the interview of the registered users and the guest users also. In this Project System will take the interview in the textual and the audio format. User should be able to simply select the type and domain of the interview and then attempt the mock interview.

- **Customized Domain**

The user will be able to select amongst various options such as HR or technical interview and also the domain of interview which user wants to take in order to achieve the future goals. Based on the customized selection the interview will take place

- **Interactive User Interface**

Our system will have the interactive User Interface so that user can take interview very easily and able to use the website without any issue as the UI is not at all complicated and is created considering the college students specially, so it is even more interesting, attractive, and easy to use.

- **Response Analysis**

One of the central objectives of the system is to enhance users' accuracy by giving them correct feedback on their answers to a particular question. Even if user does not know the answer to any question, then AI will tell them the correct answer so that they can remember that answer for the future reference.

- **Efficient and Targeted Practice Sessions**

The system's diverse question bank and customization features enable users to engage in efficient and targeted practice sessions. By focusing on specific industry domains and difficulty levels aligned with users' career goals, the system ensures that practice sessions are relevant, purposeful, and conducive to skill improvement.

- **Continuous Learning and Growth**

Beyond the immediate preparation for job interviews, the system fosters a culture of continuous learning and growth. By providing detailed performance analytics and feedback, users have the opportunity to identify areas for improvement, encouraging ongoing skill development even after securing a job.

CHAPTER 2

LITERATURE SURVEY

In [1], Helmut Prendinger and Mitsuru Ishizuka report on their efforts in developing affective character-based interfaces, i.e., interfaces that recognize and measure affective information of the user and address user affect by employing embodied characters. They describe the Empathic Companion, an animated interface agent that accompanies the user in the setting of a virtual job interview. This interface application takes physiological data (skin conductance and electromyography) of a user in real-time, interprets them as emotions, and addresses the user's affective states in the form of empathic feedback. The Empathic Companion is conceived as an educational agent that supports job seekers preparing for a job interview.

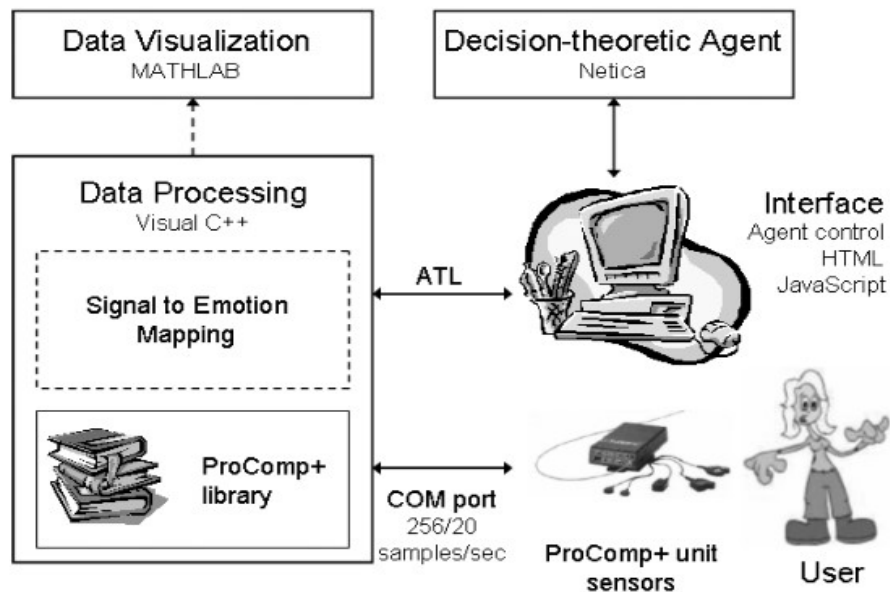


Fig. 2.1 System Architecture

They also present results from an exploratory study that aims to evaluate the impact of the Empathic Companion by measuring users' skin conductance and heart rate. While an overall positive effect of the Empathic Companion could not be shown, the outcome of the

experiment suggests that empathic feedback has a positive effect on the interviewee's stress level while hearing the interviewer question.

In [2] Jay F. Nunamaker Jr., Douglas C. Derrick, Aaron C. Elkins, Judee K. Burgoon And Mark W. Patton have created an automated kiosk that uses embodied intelligent agents to interview individuals and detect changes in arousal, behavior, and cognitive effort by using psychophysiological information systems. In this paper, they describe the system and propose a unique class of intelligent agents, which are described as Special Purpose Embodied Conversational Intelligence with Environmental Sensors (SPECIES). SPECIES agents use heterogeneous sensors to detect human physiology and behavior during interactions, and they affect their environment by influencing human behavior using various embodied states (i. e., gender and demeanor), messages, and recommendations. Based on the SPECIES paradigm, we present three studies that evaluate different portions of the model, and these studies are used as foundational research for the development of the automated kiosk. The first study evaluates human-computer interaction and how SPECIES agents can change perceptions of information systems by varying appearance and demeanor. Instantiations that had the agents embodied as males were perceived as more powerful, while female embodied agents were perceived as more likable. Similarly, smiling agents were perceived as more likable than neutral demeanor agents. The second study demonstrated that a single sensor measuring vocal pitch provides SPECIES with environmental awareness of human stress and deception. The final study ties the first two studies together and demonstrates an avatar-based kiosk that asks questions and measures the responses using vocalic measurements.

In [3] Katie Maras, Jade Eloise Norris, Jemma Nicholson etc mentions that despite possessing valuable skills, social communication differences mean that autistic people are frequently disadvantaged in job interviews. We examined how autistic and non-autistic adults compared on standard (unmodified) job interview questions, and then used these findings to develop and evaluate supportive adaptations to questions. Fifty adults (25 autistic, 25 non-autistic) took part in two mock job interviews. Interview 1 provided a baseline measure of performance when answering typical, unmodified interview questions. Employment experts (unaware of participants' autism diagnoses) rated all interviewees on question-specific performance and overall impressions and then provided feedback about how interviewees could improve and how questions could be adapted to facilitate this. Interviewees also provided feedback about the interview process from their perspective. Adaptations to the questions were developed, with Interview 2 taking place approximately 6 months later. Results demonstrated that, in Interview 1, employment experts rated autistic interviewees less favorably than nonautistic interviewees. Ratings of both autistic and non-autistic participants' answers improved in Interview 2, but particularly for autistic interviewees (such that differences between autistic and non-autistic interviewees' performance reduced in Interview 2). Employers should be aware that adaptations to job interview questions are critical to level the playing field for autistic candidates.

In [4] Marcia F. Robinson said that disruptive technologies that enable knowledge work automation through artificial intelligence (AI) and robotics are changing how we do work and precipitating the redesign of organizations. Although research suggests that HR offices have traditionally lagged other functional areas in the adoption of new technology, the current talent shortage and the competitive value of big data are driving the adoption and use of AI tools in the hiring process. This qualitative research study sought to hear the voices of HR practitioners on the uses of AI technology in the hiring process and to understand the attitudes and perspectives of participants towards the adoption and use of AI in this way. For this study, HR executives (HREs), HR recruiters (HRRs), and HR information systems analysts (HRISAs) from global organizations headquartered in the Northeastern region of the United States, were interviewed.

The data revealed that while HR practitioners acknowledged the relative advantage of AI for algorithm-based-hiring, they also acknowledge the value of human contact for successful recruiting outcomes. Data analysis revealed HR practitioners' personal beliefs and feelings about AI and framed their perspectives through organizational change experiences, social or environmental observations, and the uses of the technology itself. As technologies continue to usher in the automation of knowledge work, HR practitioners will need both academic and professional development training to design and support the automated workplaces of the future where human and artificial intelligence work side by side.

In [5] This research involves Liander, a transport utility. The organization faces the difficulty of integrating destabilizing renewable energy sources, while simultaneously delivering high quality power. The main challenge is to deploy their current assets as efficient as possible, considering the future grid. However, it is increasingly challenging to link performance outcomes to investment decisions as still a large amount of the planning is completed manually. Therefore, Liander has the desire to turn their asset management process into a more data-driven one, using information technology (IT) such as AI enabled DSS. Ultimately Liander has the desire to fully automate decision making within its asset management process. Liander has taken steps towards more data-driven decision-making. Liander created the Insights and Analytics (I&A) department, which is responsible for the transformation of the asset management process into a more data-driven one.

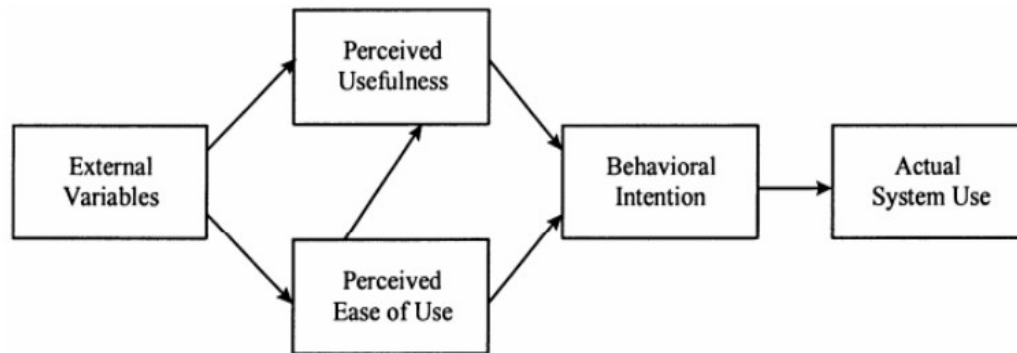


Fig. 2.2 Technology Acceptance Model

However, progress in developing, testing and getting the systems accepted among targeted users is still slow. The manager of the I&A department indicated that currently there seems little internal support for the experimentation and execution of data-driven projects. This lack of support seems to be mostly on the targeted user level. From initial conversations with the manager of the I&A department, several observations were made. First, it seems that the industry and firm's culture leave little room for error, transport utilities always have to assure high quality power to satisfy their customers. Experimenting with new ways of decision making, in the form of AI enabled DSS, seems risky to targeted users, as it could lower their performance. As a result, there is little space for experimenting with new ways of working and targeted users tend to stick to their current working processes.

CHAPTER 3

DESIGN

3.1 Data Flow Diagram

3.1.1 Level 0 Data Flow Diagram

Level 0 Data Flow Diagram will explain the basic flow of data in a system which shows how the new or old user will interact with the system.

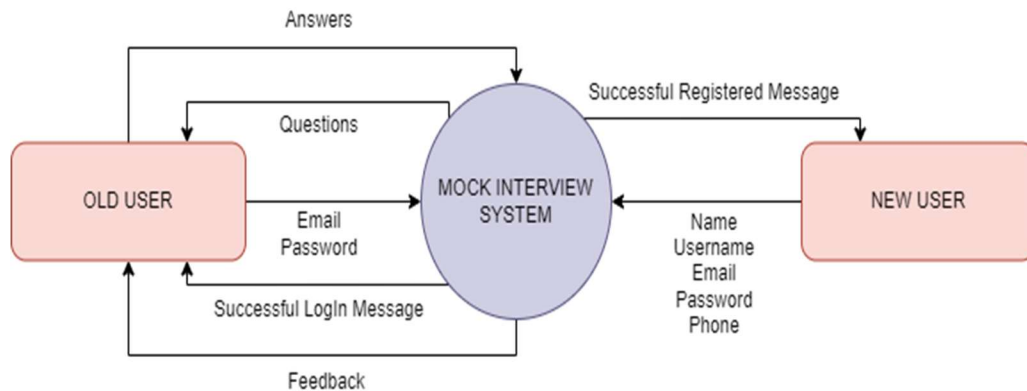


Fig. 3.1 Level 0 DFD of Mock Interview System

Fig. 3.1 elaborates the interaction between user and the system. If the user is new then user will first register to the system by providing name, username, email, password, phone. Once successfully registered a message will be display to the user of successfully registered. If the user is old, then they can directly login to the system. Once successfully logged into the system, it will provide a message to the user. Then the user will provide the domain and type of interview, based on that information system will provide you set of questions that user need to answer. System will also provide the feedback simultaneously.

3.1.2 Level 1 Data Flow Diagram

Level 1 Data Flow Diagram will explain the basic flow of data in a system which shows how the new or old user will interact with the system with different processes.

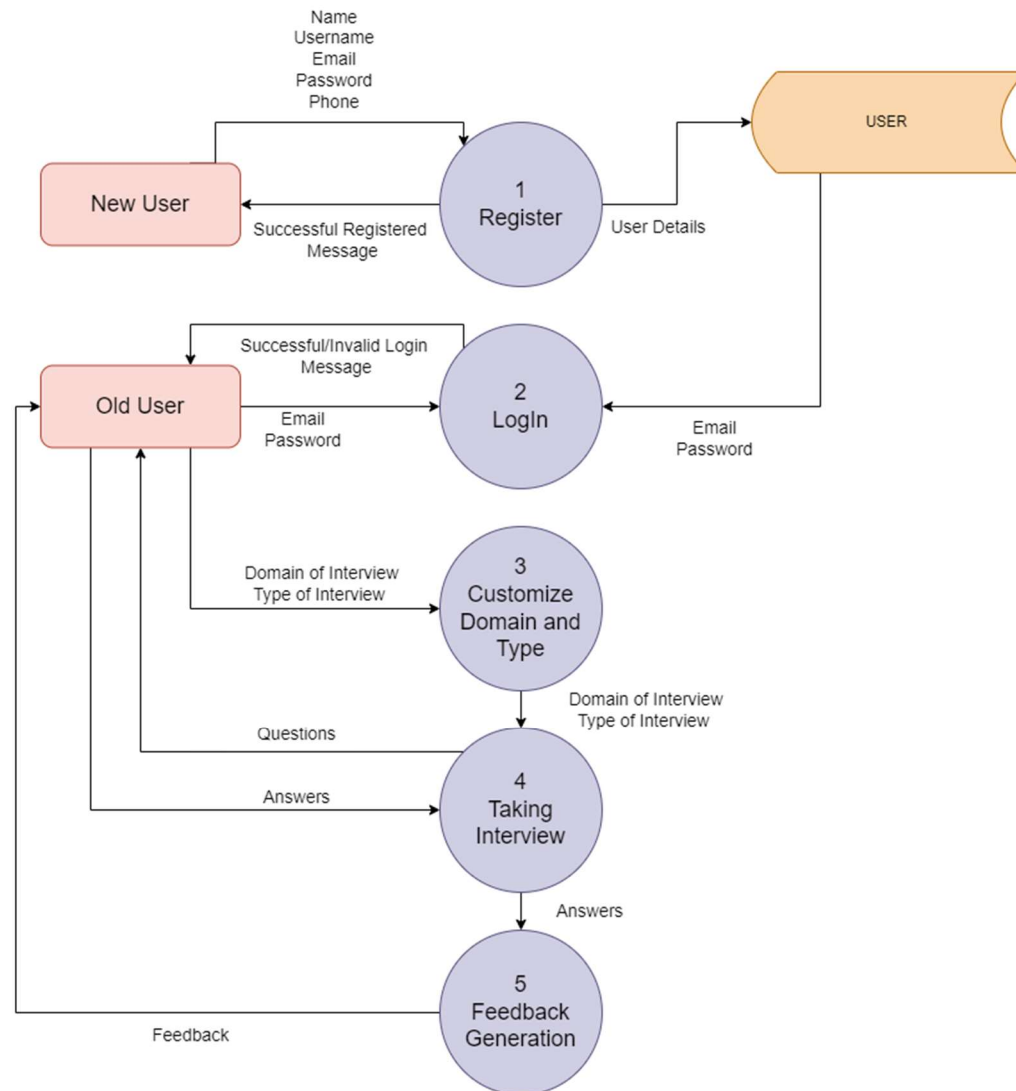


Fig. 3.2 Level 1 DFD of Mock Interview System

Fig. 3.2 explains the entire flow of user and system with all processes involved in the system. If the user is new to the system, then register to the system by providing the details to it. And all the details of the user will be stored in the database. If the user is old, then user will log into the system by email and password which will be validated from the database. Then the user will provide the customization of domain and type of the interview. After the customization system will take the interview of the user then feedback is generated and given to the user.

3.2 Data Dictionary

Legal character: [a to z| A to Z]

Digits: [0-9]

Special character: [@, \$, #, +, -, /]

Table 1: Data Dictionary

1	Name	Legal Characters
2	Domain	Legal Characters
3	Email	Legal Characters+ Digits+Special Character
4	College Name	Legal Characters
5	University	Legal Characters
6	Phone No.	Digits
7	Preferred Language	Legal Characters
8	Date of Birth	Digits+Digits+Digits

3.3 Sequence Diagram

Sequence Diagram is used to show the process of the system based on the different timeline.

3.3.1 Sequence Diagram of Registration Process

In this Diagram of Registration Process, it has 4 objects one actor, one boundary object, one control object, one store object.

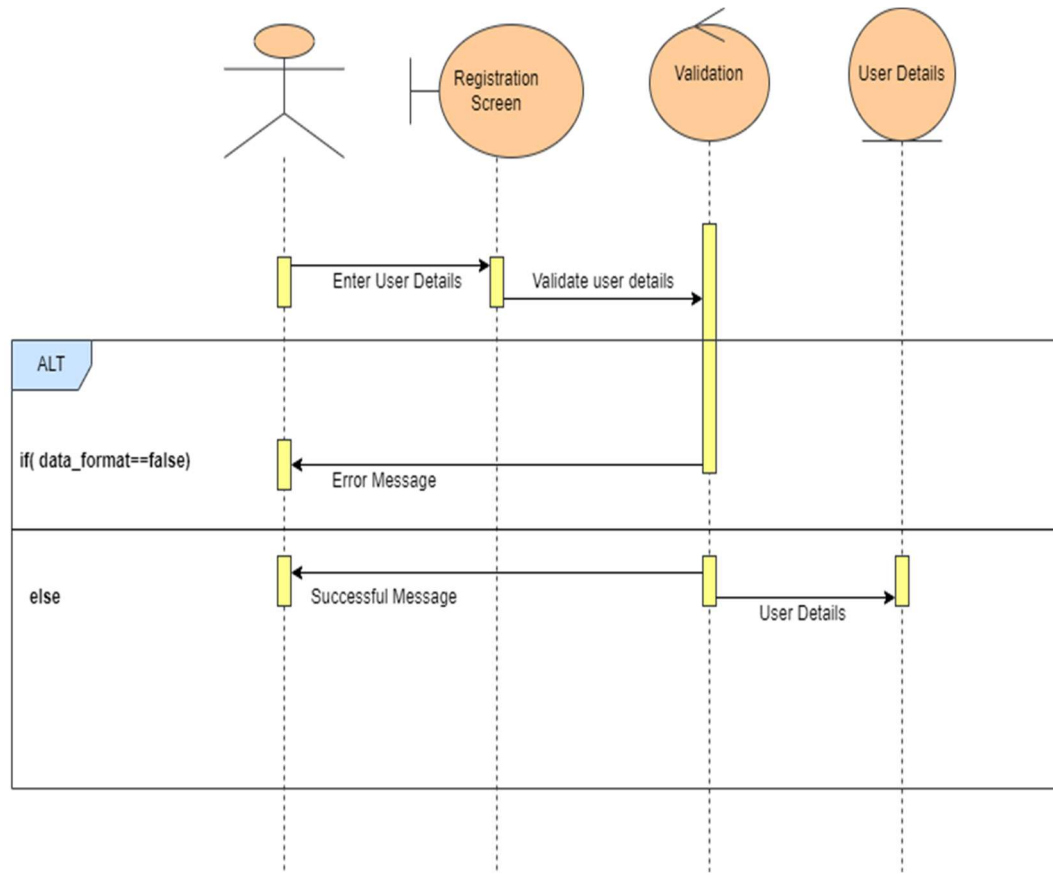


Fig. 3.3 Registration sequence diagram

Fig 3.3 explains about the process of registration where user send the details to the screen then validate those details. If details are not in correct format, then an error message is displayed. If details are in correct format, then successful message is displayed. Then details are stores in user database.

3.3.2 Sequence Diagram of Login Process

In this Diagram of Login Process, it has 4 objects one actor, one boundary object, one control object, one store object.

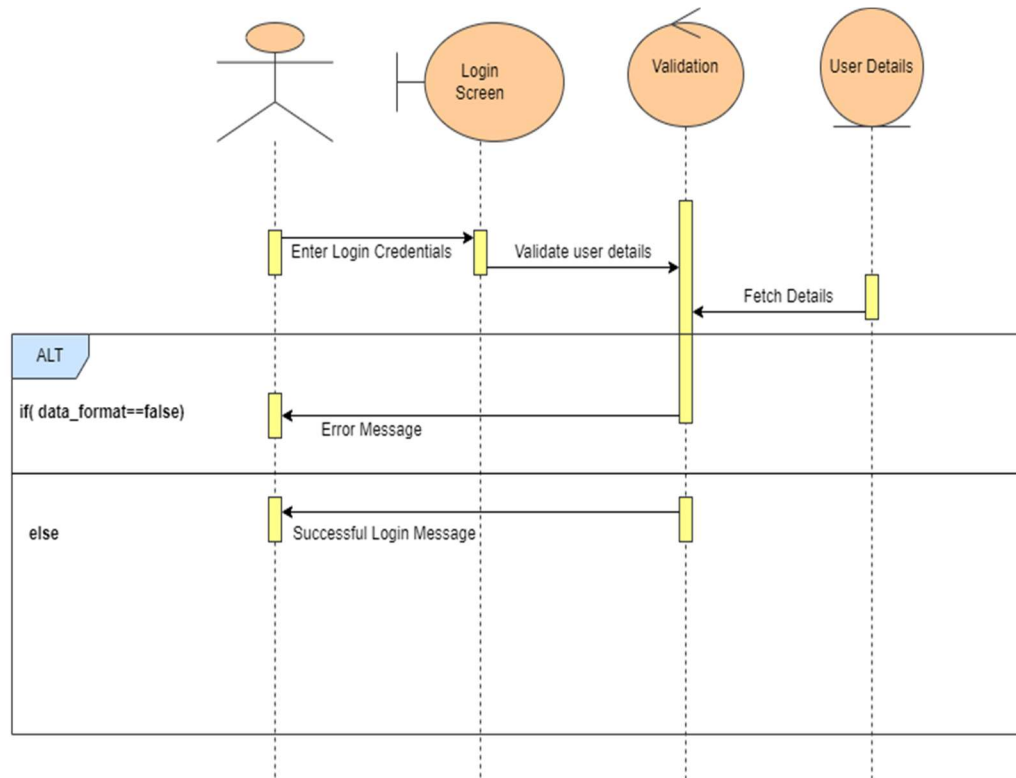


Fig. 3.4 Login sequence diagram

Fig 3.3 explains about the process of login where user send the details to the screen then validate those details. If details are not correct from fetched data from database, then an error message is displayed. If details are correct from fetched data from database, then successful message is displayed.

3.3.3 Sequence Diagram of Domain Customization Process

In this Diagram of Customization Process, it has 3 objects one actor, one boundary object, one store object.

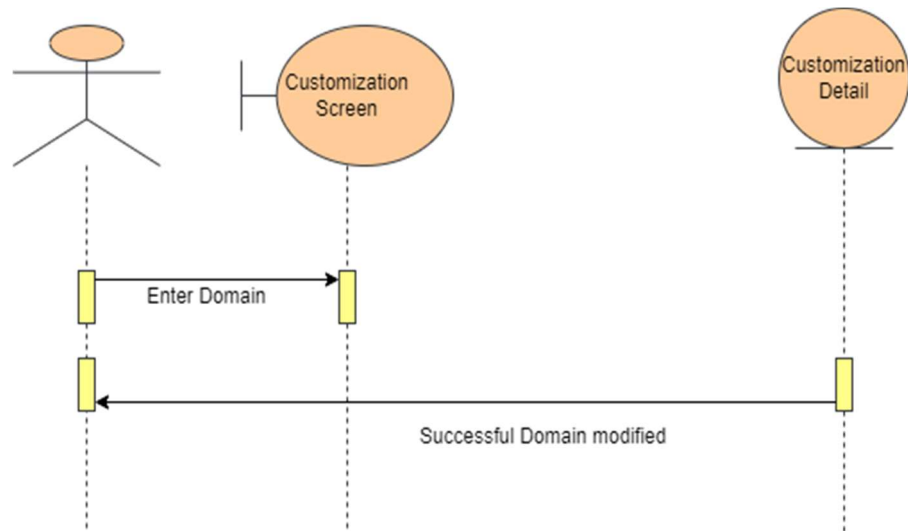


Fig. 3.5 Domain Customization Sequence Diagram

Fig 3.3 explains about the process of domain customization where user send the domain and type of interview details to the screen, then details are stores in Customization details and send the successful domain modified message.

3.3.4 Sequence Diagram of Interview and Feedback Process

In this diagram of interview and feedback Process, it has 3 objects one actor, one boundary object, one control object.

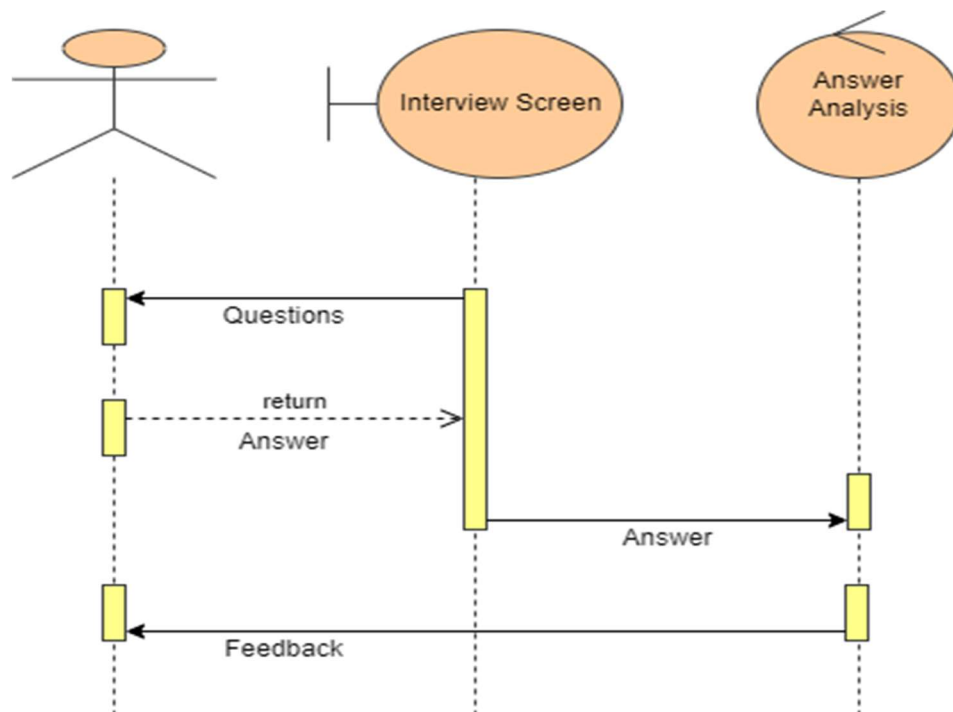


Fig. 3.6 Interview and Feedback Sequence Diagram

Fig 3.3 explains about how user will take the interview, analyze the answers, and then provide the feedback to them. Initially the Interview screen will show the questions to the user and wait for the response of the user. Now, the user will return the answers to the questions that are asked on the interview screen. Then those answers are now analyzed. Once the answers are analyzed, then those feedback are given to the user.

3.4 Use Case Diagram

In Use Case Diagram we elaborate about the purpose, actor, pre-condition, post-condition, basic flow, and alternate flow of all the use cases. In our system there are two actors, one is an old user and other is the new user who interacts with the use cases of the mock interview system. It explains the details and conditions of the system to be fulfilled in order to successfully complete each use case.

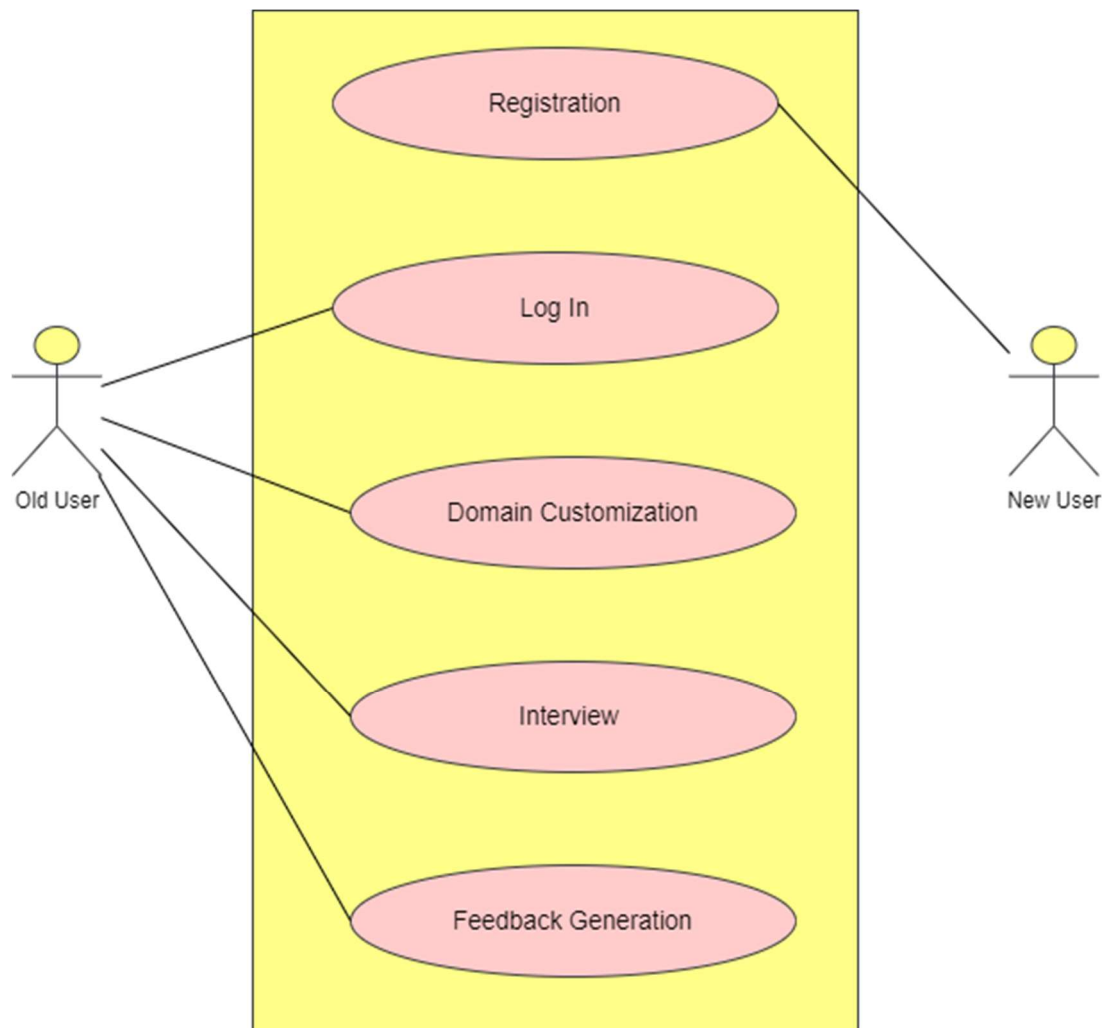


Fig. 3.7 Use Case Diagram of Mock Interview System

3.4.1 Use Case Description of Registration

Purpose:

The purpose is to register the user into the system who is new to the system.

Actor:

New User

Pre-condition:

None

Post-condition:

The user will successfully register to the system.

Basic Flow:

- The user will enter the name, email, phone, college details of themselves.
- The System will check the format of the details.
- If the details of the user are correct, then it will successfully register the user.

Alternate Flow:

If the details entered by the user are not in the right format, then it will return the error message to the user.

3.4.2 Use Case Description of Login

Purpose:

The purpose is to Login the user into the system.

Actor:

Old User

Pre-condition:

The user must be registered into the system.

Post-condition:

The user will successfully Logged in to the system.

Basic Flow:

- The user will enter the email and password.
- The System will check the email and password from the database.
- If the details of the user are correct, then it will successfully Logged in the user.

Alternate Flow:

If the details entered by the user are not correct, then it will return the error message to the user.

3.4.3 Use Case Description of Domain Customization

Purpose:

The purpose is to specify the domain and type of interview.

Actor:

Old User

Pre-condition:

The user must be logged in to the system.

Post-condition:

The domain and type of the interview are specified.

Basic Flow:

- The user will enter the type of interview i.e. HR or technical.
- The user will enter the domain of the interview.

Alternate Flow:

If the details entered by the user are not present then error message displayed.

3.4.4 Use Case Description of Interview

Purpose:

The purpose is to take the interview of the user.

Actor:

Old User

Pre-condition:

Domain and type of the interview should be specified.

Post-condition:

The interview will be successfully completed.

Basic Flow:

- The user will copy and paste the instruction to the inbox.
- The system will give questions to the user.
- Then the user will answer the questions.

Alternate Flow:

If there is no internet connection, then the interview cannot be successfully completed.

3.4.5 Use Case Description of Feedback Generation

Purpose:

The purpose is to generate feedback on the answers given by the users.

Actor:

Old User

Pre-condition:

Interview answers must be given by the user.

Post-condition:

The user will successfully get the feedback of the answers.

Basic Flow:

- The user will complete the interview.
- Then the system will give feedback to the user.

Alternate Flow:

If internet is not available, then feedback cannot be generated.

CHAPTER 4

PROPOSED WORK

4.1 Dataset Description

A dataset comprises similar sets of information that are made up of distinct elements but can be modified by a computer. In our dataset model, there are 1 main table i.e. of the user details.

Users Table: It stores the details of the user such as name, phone, email, password, college.

Table 2: Users Table Description.

Field	Type	Null	Key	Default
Name	Varchar(30)	No		NULL
Username	Varchar(10)	No	Primary Key	NULL
Phone	Number(10)	No		NULL
Email	Varchar(50)	No	Unique Key	NULL
Password	Varchar(20)	No		NULL
College	Varchar(30)	Yes		NULL

4.2 Technology Description

- **Selection of Operating System:** Our website is platform independent, so it does not depend on the operating system.
- **Selection of Software:** Visual Studio is used to create our software.
- **Languages Used:** React JS, Node JS, Bootstrap, MongoDB.

4.3 Approach Used

In the architecture of the AI-Enabled Mock Interview System, MongoDB serves as the database for its adaptability with a dynamic schema and scalability, allowing the system to efficiently manage evolving user data. The selection of React for the frontend is substantiated by its declarative UI, fostering a straightforward development of interactive interfaces through its component-based structure and the performance optimization achieved with its virtual DOM. Complementing this, Node.js is employed for the backend, providing a seamless JavaScript development environment across both frontend and backend, facilitating a unified language throughout the project. Node.js' non-blocking I/O model proves beneficial for real-time interactions in the mock interview system, ensuring responsive handling of simultaneous user actions. Additionally, Node.js leverages its extensive ecosystem via npm, contributing to the project's overall efficiency and flexibility. Together, the MongoDB, React, and Node.js creates cohesive and scalable foundation, streamlining the development process and enabling seamless interaction between the frontend and backend components in the AI-Enabled Mock Interview System.

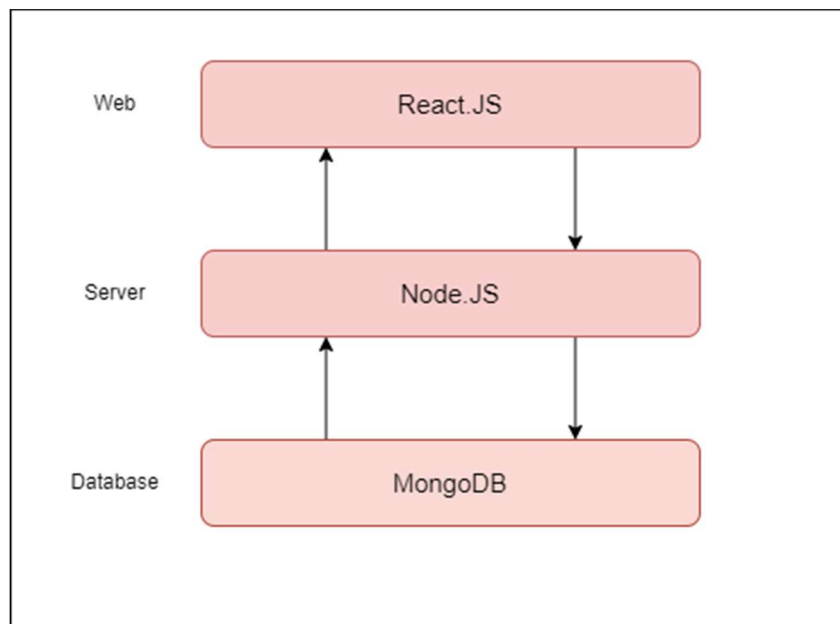


Fig. 4.1 Interconnection of Technologies

4.4 Dependencies Required

- **Axios:** In this project version 1.4.0 of axios is used to simplify the process of sending asynchronous requests to a server and handling the responses. Axios is commonly employed in React applications to interact with APIs, fetch data, and update the state of components based on the received information. One of the key advantages of Axios in

React is its simplicity and conciseness. It provides a clean and straightforward syntax for making HTTP requests compared to traditional methods.

- **Chart.js:** Version 4.3.0 is used in this project. It is a popular JavaScript library for creating interactive and visually appealing charts in web applications. In React, integrating Chart.js involves installing the library, creating a React component, and utilizing the library to render charts.
- **Concurrently:** Version 8.2.2 is used in this project. It is a Node.js package commonly used in the context of development workflows, especially with projects that involve both a frontend (e.g., React) and a backend (e.g., Node.js, Express). This package enables running multiple commands concurrently in a single terminal window. This can be particularly useful during development when you need to start both the frontend and backend servers simultaneously. It simplifies the process of managing different parts of your application that run on separate ports or even in different directories.
- **Farmet-motion:** Version 10.12.16 is used in this project. Framer Motion is a popular animation library for React. It allows you to add smooth and declarative animations to your React components, enhancing the user experience.
- **Mdb-react-ui-kit:** Version 6.1.0 is used in this project. MDB React UI Kit provides a set of ready-to-use Bootstrap components for React applications. It simplifies the process of building responsive and visually appealing user interfaces.
- **React:** Version 18.2.0 is used in this project. React is a JavaScript library for building user interfaces. It enables the creation of reusable UI components and facilitates the development of single-page applications with efficient updates through its virtual DOM.
- **React-chartjs-2:** Version 5.2.0 is used in this project. React Chartjs is a wrapper for the Chart.js library, making it easier to integrate dynamic and interactive charts into React applications. It provides React components that correspond to different Chart.js chart types.
- **React-dom:** Version 18.2.0 is used in this project. React DOM is a package that provides methods for interacting with the DOM (Document Object Model). It's a necessary part of React to render components into the DOM, handle events, and update the user interface.
- **React-icons:** Version 4.10.1 is used in this project. React Icons is a library that offers a collection of popular icon libraries as React components. It simplifies the process of adding icons to your React application without the need for additional dependencies.
- **React-router-dom:** Version 6.13.0 is used in this project. React Router DOM is a library for handling navigation in React applications. It enables the creation of dynamic and responsive Single Page Applications (SPAs) by allowing the mapping of components to different routes.

- **React-scripts:** Version 5.0.1 is used in this project. React Scripts is a set of scripts provided by Create React App (CRA) to facilitate the development and build processes. It abstracts away configuration complexities, allowing developers to focus on building React applications.
- **React-speech-recognition:** Version 3.10.0 is used in this project. React Speech Recognition is a library that allows integration of speech recognition capabilities into React applications. It provides components and hooks to easily capture and process speech input.
- **Redux:** Version 4.2.1 is used in this project. Redux is a state management library for React applications. It helps manage the state of the application in a predictable and centralized way, making it easier to handle complex state logic.
- **Redux-thunk:** Version 2.4.2 is used in this project. Redux Thunk is a middleware for Redux that enables the handling of asynchronous actions. It allows you to dispatch functions as actions, providing flexibility when dealing with side effects like API calls.
- **Twind:** Version 0.16.19 is used in this project. wind is a utility-first CSS framework for React. It allows you to write styles in your JavaScript/JSX files, providing a highly efficient way to manage styles in React applications.
- **Web-vitals:** Version 2.1.4 is used in this project. Web Vitals is a set of metrics that help measure the performance and user experience of a web application. It includes tools and libraries for capturing and reporting essential performance metrics.

4.5 Algorithms and Flowcharts

The description of major functionalities of the Mock Interview System are given below:

- **Sign up():**
This function will make the user to sign up to the system.

Algorithm

- 1 save the requested name, email and password to a constant variable
- 2 write the regular expression to validate the password
- 3 try to find the entered email in the database
- 4 if user is not present in the database then go to line 5 else go to line 8.
- 5 if password entered is validated properly and is right then go to line 6 else go line 7.
- 6 save the details of the user to the database and print “successfully registered message”.
- 7 error message is given to the user.
- 8 message printed “User already exists.”

Flowchart

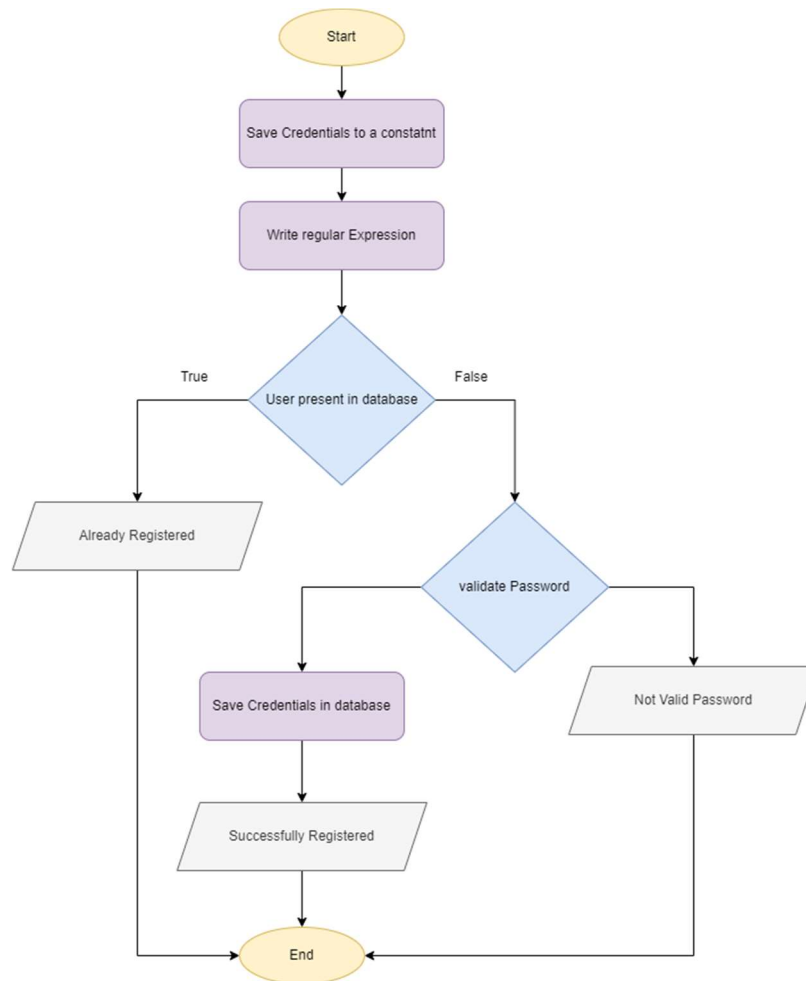


Fig. 4.2 Flowchart of signup process

- **Log In():**

This function will make the user to logged in to the system.

Algorithm

- 1 save the requested name, email and password to a constant variable
- 2 try to find the entered email in the database
- 3
- 4 if user found in database then go to line 5 else go to line 6.
- 5 open dashboard of the user.
- 6 error message is given to the user.

Flowchart

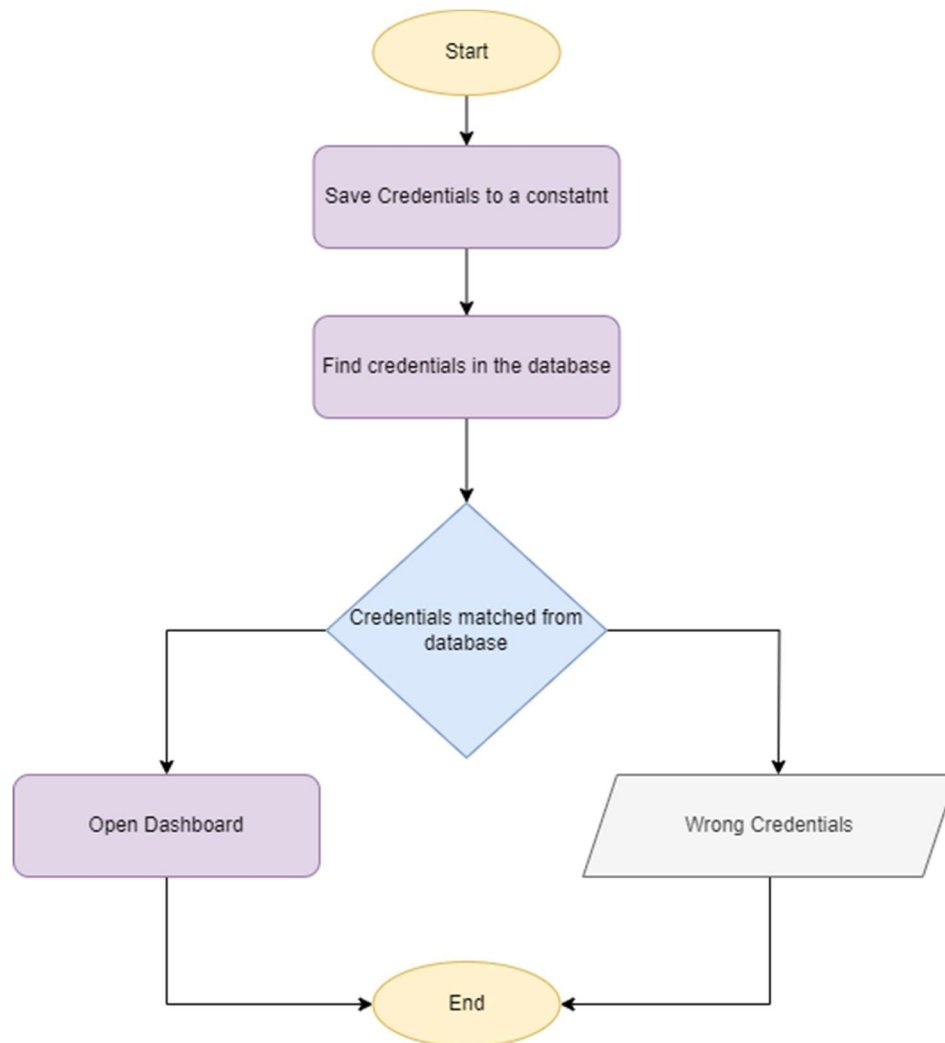


Fig 4.3 Flowchart of LogIn

- **Database Connectivity ():**

This function will connect the server to the database.

Algorithm

- 1 call require("mongoose") method and store the return value in a constant as mongoose.
- 2 call mongoose.Schema({token:String}) and store the return value in constant blackschema
- 3 call mongoose.model("black",blackschema) and store the return value in constant blackmodel
- 4 module.exports={blackmodel}

Flowchart

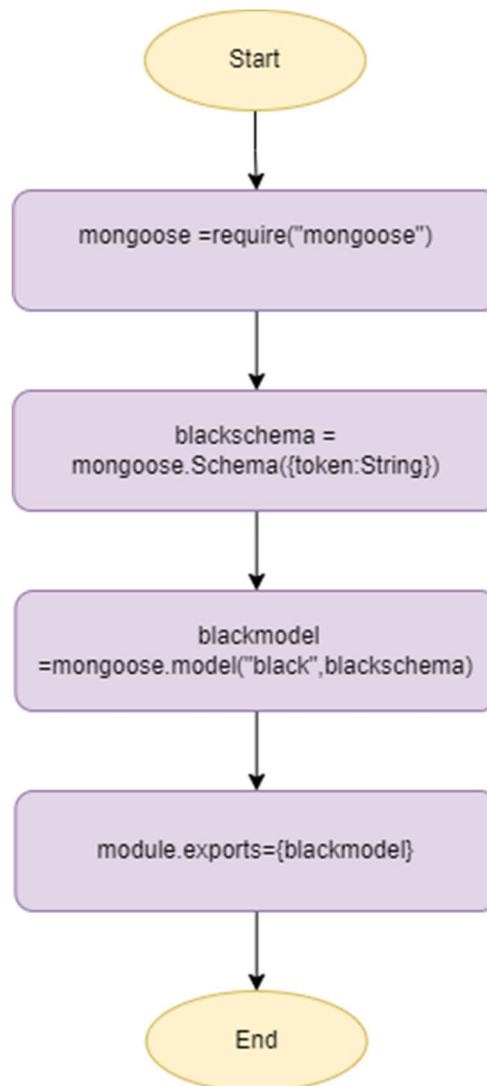


Fig 4.4 Flowchart of Database Connectivity

- **API Connectivity ():**

This function will connect our website to the openAPI.

Algorithm

- 1 save the url of mongoDB to the variable named as mongourl
- 2 save the port number
- 3 add token key and refresh token key
- 4 add the open api key

Flowchart

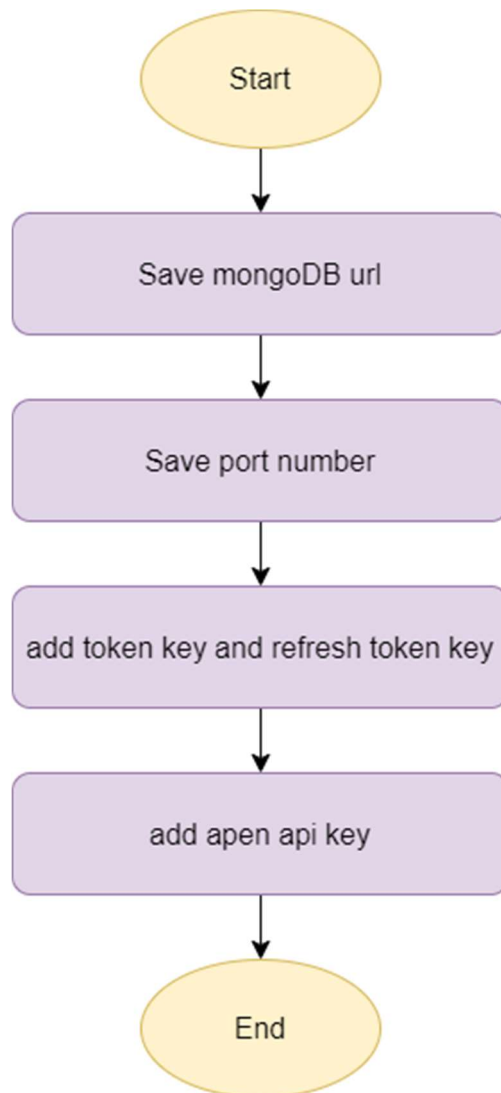


Fig 4.5 Flowchart of API Connectivity

- **Feedback Generation ():**
This function will generate the feedback.

Algorithm

- 1 save the history by using HistoryModel.findById method
- 2 if history is not present then go to 3 else go to 4
- 3 return error status that history is not present go to end.
- 4 get the last conversation history
- 5 convert the last conversation to json.

Flowchart

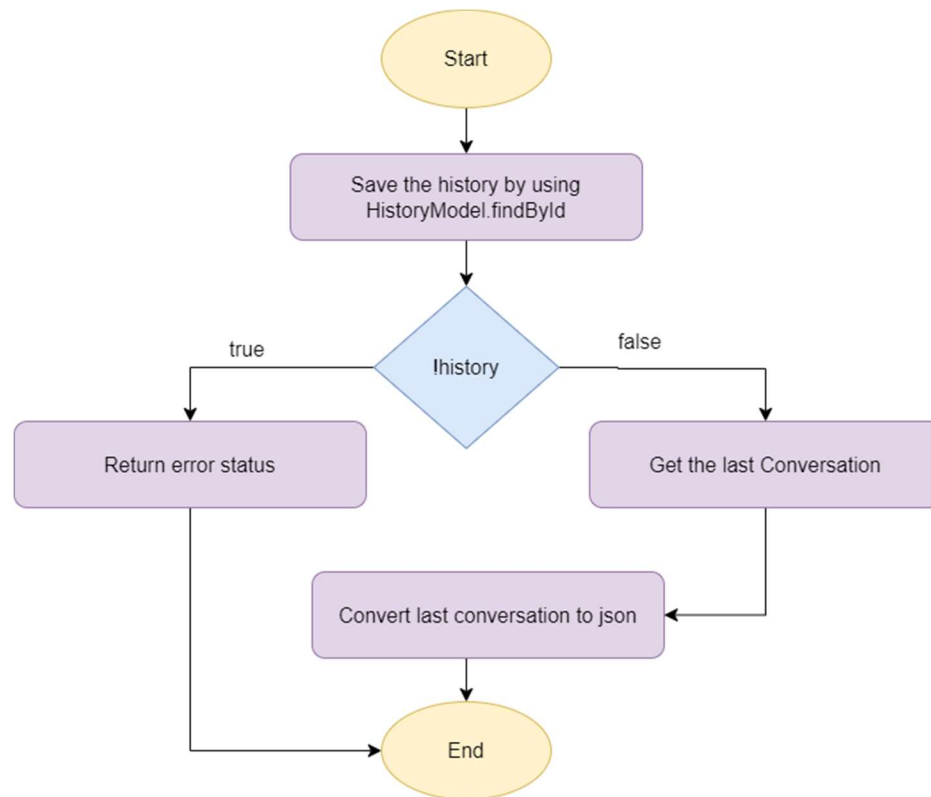


Fig. 4.6 Flowchart of Feedback Generation

CHAPTER 5

RESULTS

5.1 Screens and Explanations

This chapter will include all the screens available in the project such as home page, registration page, login page, start new interview, interview customization, interview screen and response screen along with detailed explanation of each screen and its functionality. Screens available in the system are as follows:

Screen 1: Home Page

Screen 1 is the home page of the website which displays the basic information about the MockMaster such as why interview preparation is important and what our system will provide. From this home page you can log in or register to the system to start your mock interview.

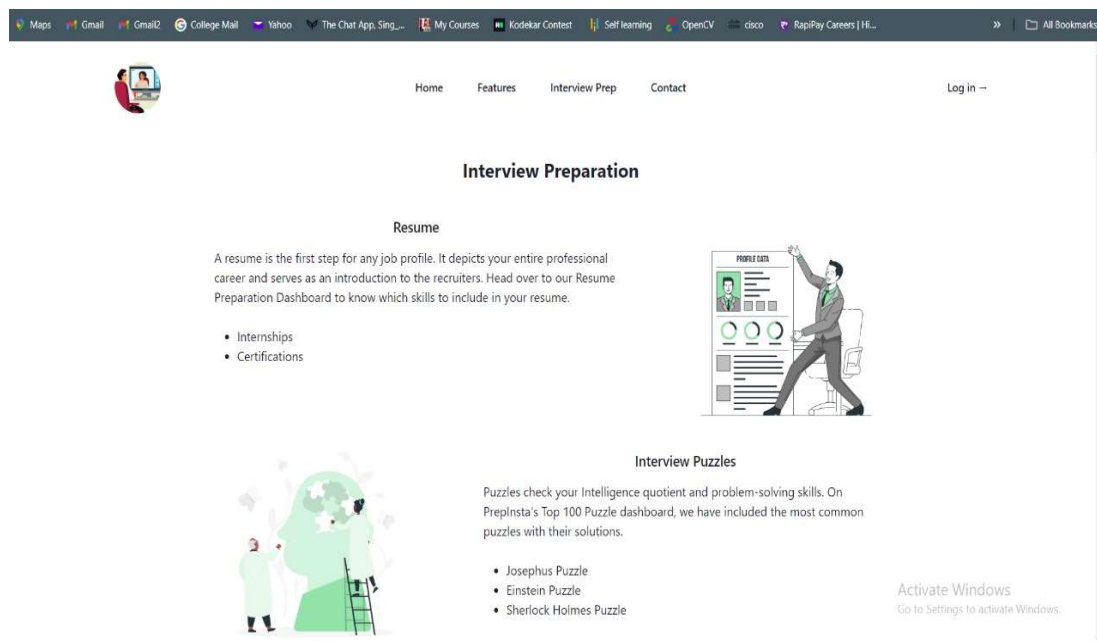


Fig. 5.1 Home Page

Screen 2: Login and Registration Screen

Screen 2 is the log in and the registration page. Where if the user is new to the system, then he or she can register themselves to the system by providing the name, email and password. Password validation is also done at the time of registration. If the user is not new or already registered to the system, then he or she can directly log in to the system by proving some credentials such as email and password. The user can toggle between the login and the registration page.

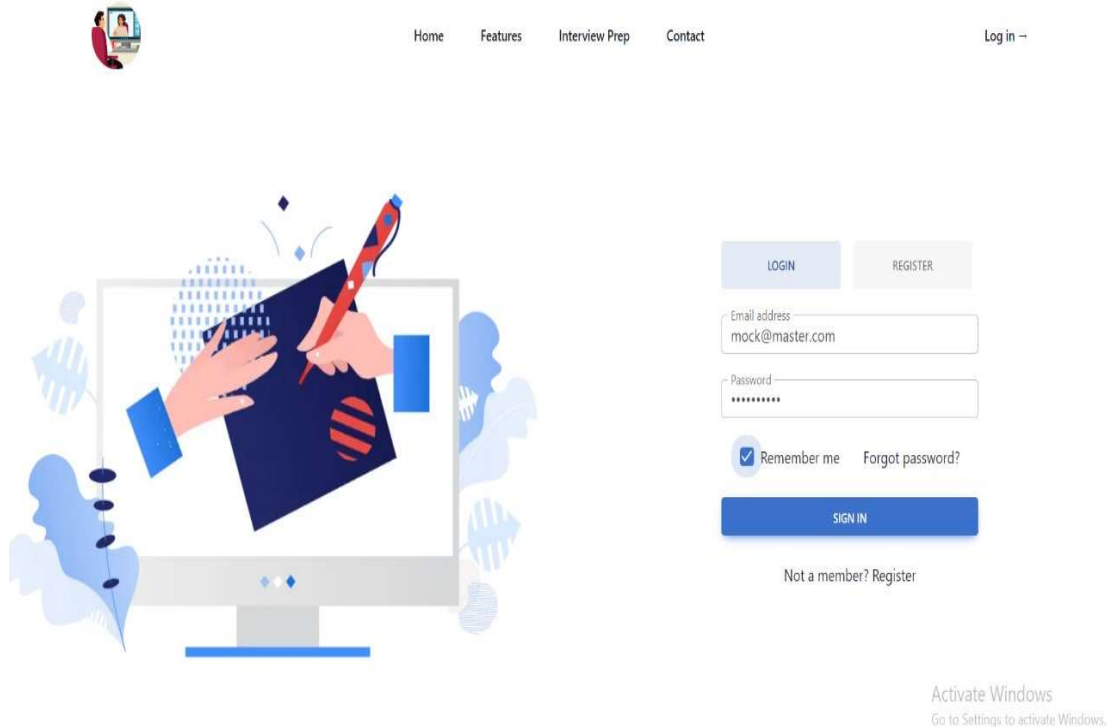


Fig. 5.2 Login and Registration Screen

Screen 3: Start New Interview Screen

Screen 3 is the page of Interview once user successfully logged into the system then the user can start the new interview by clicking on the button “Start New Interview” and history of the previous interviews are also visible at this page only.

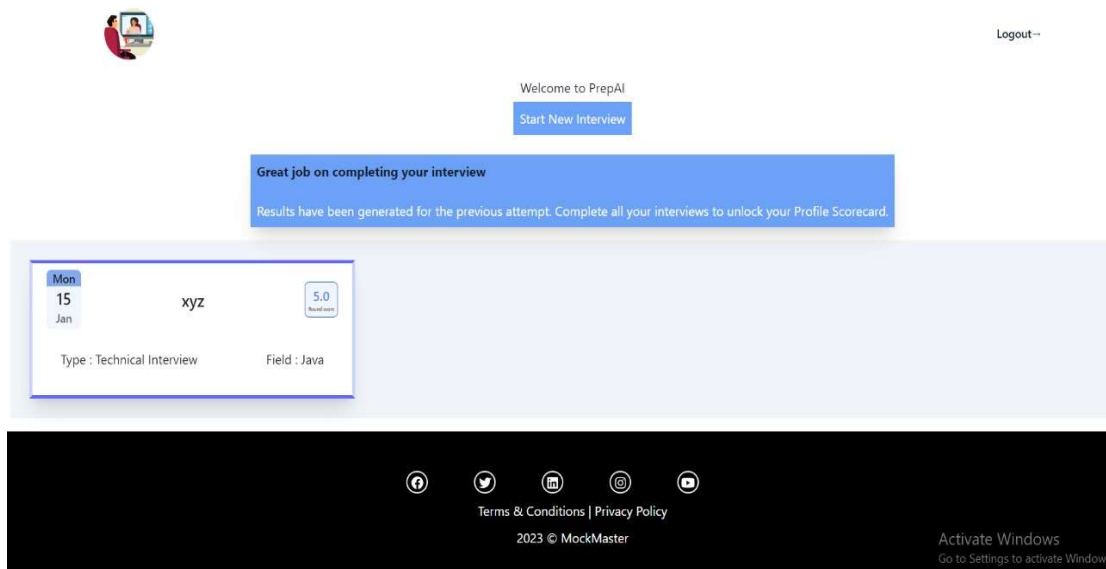


Fig. 5.3 Start New Interview Screen

Screen 4: Interview Customization Screen

Screen 4 is post-process of the Start New Interview, once we click on the button “Start New Interview” a pop up is displayed that is our screen 4 which asks about the title of the interview that the user wants to save with. It also includes the type of interview the user wants to take such as technical interview or the HR interview. At the end it will ask for an interview track or the domain of technology in which the user wants to give the interview in.

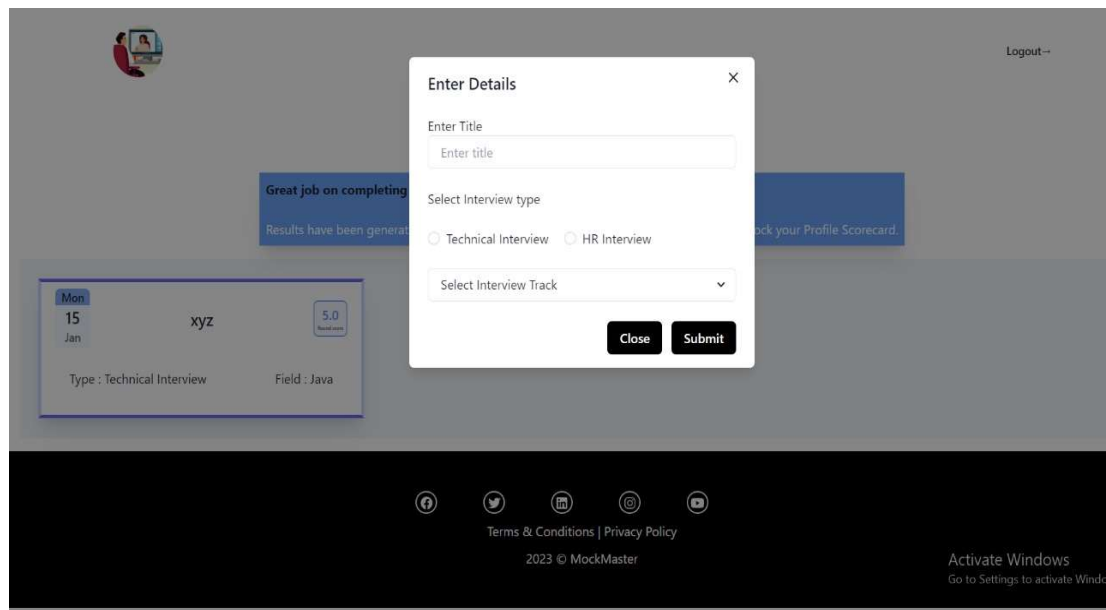


Fig. 5.4 Interview Customization Screen

Screen 5: Interview Screen

Screen 5 is the screen where the actual interview takes place. To start the interview the user, have to follow instructions given at the left-hand side and copy the text given in the instruction to be copied and paste it in the chat box. And send it to the system the system will use the open ai to ask the questions to the user on that user specified domain and type. We will also provide audio-based chat just as in WhatsApp and other chatting tools. And the user can also start a fresh interview at any point of time if he or she wants to do so.



Fig. 5.5 Interview Screen

Screen 6: Response Screen

Screen 6 will show the response from the open ai which includes the questions based on the domain given by the user. Then the user will provide the answer either by writing it or by sending the audio. Then the open ai will give the feedback to the user through which user can check if he or she gave the right answer or not. Even if the user does not know the answer the ai will provide the answer to the user so that he or she can learn from the response of the system.



Logout--

Follow the below steps to conduct the interview:-

Step 1: Copy the below prompt and send to start the interview -

You are an interviewer. Ask me 3 questions related to , one after the other. You should go to the next question only after I give an answer to the already asked question. Give me feedback at the end and give me rating out of 10

Step 2: Record or Type your answer to the question asked and send

Step 3: Once all the questions are answered, send the below prompt to get your feedback and score -

Step 4: Click on Finish Interview to save your Interview.

Step 5: Copy the feedback received and submit it along with scores in the Form shown.

Please answer the first question.

One significant difference between Abstraction and Encapsulation in Java is how they represent data. Abstraction represents only useful data, whereas encapsulation wraps data and codes for necessary information. Moreover, it helps developers to easily organize the whole code.1

Great answer! You mentioned the key differences between abstraction and encapsulation in Java. Abstraction focuses on providing a simplified view of an entity by hiding unnecessary details, while encapsulation is about bundling data and methods together to ensure data integrity and access control. Now, let's move on to the second question. Can you explain the concept of multithreading in Java?

Send

Finish Interview

Activate Windows
Go to Settings to activate Windows.

Fig. 5.6 Response Screen

CHAPTER 6

DISCUSSIONS

The Discussions section of this report delves into crucial aspects of the AI-Enabled Mock Interview System, shedding light on the strategic choices and implications for user experience, scalability, and future developments. The technological integration within the MERN stack is highlighted, emphasizing the deliberate use of MongoDB for its flexibility and scalability, React for its declarative UI, and Node.js for its non-blocking I/O, crucial for real-time interactions.

6.1 Performance

The success of the AI-Enabled Mock Interview System is contingent upon the robustness and efficiency of the underlying AI model responsible for generating interview questions and providing feedback.

- The Performance of the system based on the version of the open ai used as we had used the api for the question generation and feedback generation.
- Internet connectivity of the user also affect the performance of the system.
- If the user provides irrelevant information for the questions, then interview will never be the accurate and professional.
- Versions of the modules used in node.js and react.js will also affect the performance based on their functionalities and optimality.

6.2 Limitations of the System

The disadvantage of our system is mainly because of the dependency on the API. Since the system is completely based on API so if the API has any issue will definitely affect the system.

- **Dependency on AI model accuracy:** The effectiveness of the mock interviews heavily relies on the accuracy and relevance of the underlying AI model, and limitations or biases in the model may impact user experience.
- **Limited real-world unpredictability:** While the system aims to simulate real-world interviews, it may not fully capture the unpredictability and nuances encountered in actual job interviews, potentially resulting in a gap between the simulated and real experiences.
- **Lack of natural human interaction:** The system, being AI-driven, may not fully replicate the nuanced and spontaneous interactions that occur in face-to-face interviews, potentially missing certain aspects of human communication and rapport-building.
- **Generalization challenges:** The AI model's ability to generate questions and provide feedback may face challenges in adapting to highly specialized or niche industry domains, limiting its effectiveness in certain professional fields.

6.3 Future Research Directions

Our System is initial stage of the interview system. So, there is a lot of scope to enhance the system in system. Here are some research directions that should be considered in the future.

- In future a audio and video based interview can also be implemented in future to improve the user interactivity with the system.
- Explore expanded industry domains to cater to diverse professional backgrounds.
- Investigate the integration of advanced AI capabilities, including NLU, sentiment analysis, and adaptive learning algorithms for nuanced interactions.
- Consider implementing multilingual support to accommodate users in languages other than the primary one.
- Explore features for real-time collaboration, simulating group interview scenarios or collaborative problem-solving exercises.
- Investigate partnerships or integrations with job platforms and career services for tailored feedback based on industry trends.

- Implement advanced user analytics to provide detailed insights into user performance over time.
- Explore virtual reality (VR) integration for a more immersive and lifelike interview environment.
- Collaborate with educational institutions to incorporate the system into career development programs and curricula.
- Establish a continuous model refinement process using user feedback and performance data.
- Incorporate features assessing and providing feedback on soft skills such as communication, empathy, and adaptability.
- Conduct ongoing research on ethical AI practices, addressing biases and ensuring responsible AI algorithms.

The AI-Enabled Mock Interview System showcases a promising avenue for revolutionizing traditional interview preparation. Its current performance is measured through various metrics such as question relevance, coherence, and contextual appropriateness, ensuring a simulated interview experience that aligns with user preferences and industry domains. User feedback integration plays a pivotal role in refining the underlying AI model, fostering an iterative development process that addresses challenges like question ambiguity and coherence issues. Despite its strengths, the system faces limitations, including dependency on AI model accuracy, potential biases, and an occasional lack of natural human interaction, prompting considerations for future improvements.

Looking ahead, several future directions aim to propel the system's effectiveness and user impact. Exploring expanded industry domains and multilingual support seeks to make the system more versatile and inclusive. The integration of advanced AI capabilities, real-time collaboration features, and virtual reality (VR) enhancements aims to enrich the mock interview experience, providing users with a more immersive and adaptive platform. Collaborations with job platforms and educational institutions, coupled with continuous model refinement and advanced user analytics, are envisioned to further tailor the system to user needs and industry trends. Additionally, the system's ethical considerations are addressed through ongoing research on responsible AI practices, ensuring fairness, transparency, and unbiased performance evaluation.

In conclusion, the AI-Enabled Mock Interview System, while currently demonstrating commendable performance, acknowledges its limitations and looks toward a future marked by continuous improvement and innovation. The blend of user-centric enhancements, technological advancements, and ethical considerations positions the system as a dynamic

and evolving tool for individuals seeking to enhance their interview preparedness and professional success.

CHAPTER 7

CONCLUSION

The AI-Enabled Mock Interview System marks a pivotal advancement in the realm of interview preparation, ushering in a dynamic and technology-driven approach to refine users' skills. Performance evaluation forms the cornerstone of the project, employing metrics like question relevance and coherence to ensure a nuanced and tailored mock interview experience. Through this evaluative lens, the system demonstrates its commitment to providing a realistic platform that adapts to user preferences and industry domains. The integration of user feedback stands as a testament to the project's responsiveness, fostering an iterative development process. This iterative approach addresses challenges, such as question ambiguity and coherence issues, ensuring a continual refinement of the underlying AI model.

However, a comprehensive understanding necessitates acknowledging the inherent limitations of the project. The dependency on AI model accuracy emerges as a critical consideration, and the occasional shortfall in mimicking natural human interaction prompts contemplation for future advancements. This candid recognition of challenges underscores the project's commitment to transparency, user awareness, and a relentless pursuit of improvement. The systemic recognition of potential biases is crucial, aligning with ethical considerations that are vital in the development and deployment of AI technologies.

Looking ahead, the future trajectory of the project is envisioned through a lens of innovation and adaptability. The exploration of expanded industry domains and multilingual support aims to broaden the system's applicability, fostering inclusivity across diverse professional backgrounds. Integrating advanced AI capabilities, such as natural language understanding and sentiment analysis, seeks to enrich the mock interview experience, making it more nuanced and aligned with real-world scenarios. Features like real-time collaboration and virtual reality enhancements underscore the commitment to creating an immersive and adaptive environment, pushing the boundaries of traditional interview preparation.

Collaborations with job platforms and educational institutions are strategic initiatives to embed the system within wider career development ecosystems. This collaborative approach positions the project as an integral component of holistic professional growth, seamlessly connecting users with industry trends and educational resources. Continuous model refinement emerges as a linchpin, ensuring that the AI model evolves in tandem with user needs and technological advancements. Advanced user analytics provide a granular understanding of user performance over time, enabling users to tailor their preparation strategies.

Ethical considerations are interwoven throughout the project's fabric, with ongoing research focused on responsible AI practices. This commitment to ethical standards is pivotal in addressing biases, ensuring fairness, and establishing a system that prioritizes user trust and societal impact. The project, in its envisioned future, transcends its role as a technological tool, assuming the mantle of a catalyst in broader discussions about the ethical use of AI in professional development.

As the project matures, it not only redefines individual interview preparedness but also contributes meaningfully to discussions on the responsible use of technology. The adaptability, user-centric design, and unwavering commitment to improvement position the AI-Enabled Mock Interview System as a valuable asset for individuals navigating the competitive landscape of job interviews. Its impact extends beyond individual users, resonating with the broader narrative of technology's potential to empower individuals on their career paths.

In essence, the AI-Enabled Mock Interview System represents a convergence of technological innovation, user-centric design, and ethical considerations. The project's journey from conception to continuous refinement mirrors the evolving nature of the professional world it seeks to prepare users for. In navigating this journey, the project not only meets the immediate needs of users but contributes to a future where interview preparation is not merely a process but a reflection of the diverse and dynamic nature of the professional landscape.

CHAPTER 8

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CHAPTER 9

BIBLIOGRAPHY

9.1 Online Websites

The following are the AI enabled mock interview system websites that we had analyzed for ours:

- <https://www.greetai.co/practice>
- <https://beta.interviewai.in/>
- <https://www.acetheinterview.app/>
- <https://geekflare.com/ai-powered-interview-preparation-platforms/>
- <https://interviewly.ai/>
- <https://www.myamcat.com/products/mock-ai>

9.2 Reference Books

Following are the books that we had referred for our project Mock Interview System:

- "Artificial Intelligence: A Modern Approach" by Stuart Russell and Peter Norvig
This comprehensive textbook provides insights into various aspects of artificial intelligence, including machine learning and natural language processing.
- "Building Scalable and Responsive Web Applications with React" by Adam Freeman
Ideal for those working with ReactJS, this book covers building scalable and responsive web applications, which aligns with the frontend development aspect of your project.

- "Mastering React: Build Scalable and High-Performance Web Applications with React 17" by Tom Banks

This book delves into advanced concepts and best practices for mastering React, which can be valuable for optimizing the frontend of your application.

- "Practical Natural Language Processing with Python: A Comprehensive Guide to Building Real-World NLP Applications" by Dipanjan Sarkar

Focused on natural language processing, this book provides practical insights and hands-on examples for building NLP applications, aligning with the language processing aspect of your project.

- "Virtual Reality in Education: A Practical Guide for Teachers and Developers" by Charles Wankel and Patrick Blessinger

Explore the potential of virtual reality in education, which could be insightful for understanding the implications of VR integration in your mock interview system.

- "Web Analytics: An Hour a Day" by Avinash Kaushik

For those interested in understanding web analytics, this book provides a structured approach and best practices, which can be beneficial for analyzing user interactions on your platform.