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AN AI BASED MOCK INTERVIEW APPLICATION

[*1]Adithya Jeevakumar, [2]Nelavai Jyothika, [3]Gnanasree B., [4]Mr Nagabhiravanth K A., [4]Dr Krishna kumar P R

[1,2,3]Student, [4]Asst Prof, [5]Head

Dept of CSE, Sea College of Engineering & Technology.

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***Corresponding Author: Adithya Jeevakumar**
Student, Dept of CSE, Sea College of Engineering & Technology.

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ABSTRACT

The increasing competition in the job market has made interview preparedness a vital skill for students and job seekers. Traditional interview-preparation methods such as reading sample questions, attending coaching classes, or relying on peers often lack personalization, immediate feedback, and realistic simulation. To address these limitations, this project presents an AI-powered full-stack mock interview application designed to imitate an actual interview process. The system integrates modern technologies including Next.js, React, Drizzle ORM, PostgreSQL, Clerk authentication, and Gemini AI to create an interactive platform where users can participate in interviews, receive questions generated by AI, and obtain instant automated feedback. The application not only provides secure login and history tracking but also records interview responses and system-generated evaluations for continuous learning. The results from implementation show that the system successfully performs dynamic question generation, real-time feedback analysis, and smooth user interaction. This project demonstrates the practical potential of AI integrated with web technologies to deliver an advanced, scalable, and cost-effective solution for enhancing interview preparedness and professional development.

CHAPTER 1

INTRODUCTION

1.1 Background

Interviews are crucial in the recruitment process as they assess a candidate's communication skills, technical abilities, and problem-solving capabilities. While they are essential,

preparing for interviews remains a challenge for many students and job seekers who often rely on static materials, limited peer interactions, or costly professional coaching. These traditional methods do not provide continuous adaptive learning, nor do they offer real-time personalized feedback. With advancements in artificial intelligence and natural language processing, there is a growing demand for intelligent systems that can simulate realistic interview environments. AI-driven mock interview platforms can help candidates practice more effectively by generating dynamic questions, evaluating responses, and offering constructive guidance. This forms the foundation for creating an accessible AI-powered mock interview system using cutting-edge web technologies.

1.2 Problem Statement

Although various platforms exist to support interview preparation, most fall short in providing a complete simulated interview experience. Existing systems often rely on static question banks, lack automated feedback mechanisms, and do not track user progress over multiple sessions. Coaching centers that offer mock interviews are expensive, time-consuming, and not always accessible. Users also face issues such as inconsistent evaluations, limited mentor availability, and lack of personalized question generation. There is currently no integrated solution that brings together AI-driven question generation, real-time evaluation, secure user authentication, and persistent data storage in a single platform. Therefore, the problem this project addresses is the absence of a comprehensive, AI-supported mock interview system capable of providing personalized, automated, and scalable interview practice for users.

1.3 Introduction

This project introduces the design and development of a full-stack AI-powered mock interview application aimed at providing an interactive platform for users to practice interviews. Built using Next.js for both frontend and backend functionality, the application ensures efficient rendering and seamless navigation. The system integrates Gemini AI to generate interview questions and evaluate user responses using natural language processing. Clerk authentication manages user login and registration securely, while Drizzle ORM and PostgreSQL store user data, interview responses, and feedback. The interface allows users to select interview types, respond to dynamically generated questions, and receive real-time evaluation. The completed system displays all user activities in a well-organized dashboard, enabling users to track their progress and improve over time. This introduction sets the

context for the rest of the report, which elaborates on the methods, implementation, and results.

1.4 Importance of Study

The development of an AI-powered mock interview system is significant for several reasons. First, it enhances employability by helping users gain confidence and improve communication and problem-solving abilities. The personalized feedback provided by AI allows users to understand their strengths and areas requiring improvement, which is something traditional resources struggle to deliver. Additionally, the system is scalable and available anytime, making it a reliable tool for students who do not have access to professional coaches. It is cost-effective and provides a realistic environment that can be repeatedly practiced. From an academic perspective, this project is an excellent demonstration of integrating AI, authentication frameworks, databases, and full-stack web development into a functioning real-world application. Overall, this study contributes toward bridging the gap between theoretical learning and practical application in job interview preparation.

1.5 Organization of Report

This report is structured in a manner that guides the reader through the development of the project. Chapter 1 introduces the background, problem statement, objectives, and significance of the study. Chapter 2 discusses previous research, existing systems, and the gaps identified in current practices. Chapter 3 explains the methodology, system design, technologies used, and block diagram of the architecture. Chapter 4 presents the results from the implementation, including observations and system functionality. Finally, Chapter 5 concludes the work and outlines possible future improvements. The report ends with references used during the development.

CHAPTER 2

LITERATURE REVIEW

2.1 Motivation

SL.No.	AUTHOR NAME	TITLE	DEMERITS
1	khare et al., 2024	EMOTION RECOGNITION AND AI: AI REVIEW	Works poorly in real interviews due to bias.

2	**Saga et al.,2023**	**AI FEEDBACK FOR SOCIAL SKILLS TRAINING**	**Limited to training labs; no job link**
3	**Naim et al.,2015**	**AUTOMATED JOB INTERVIEW ANALYSIS**	**Ignored facial and posture cues.**

Preparing for interviews is often an overwhelming experience, particularly for students entering professional fields. While numerous platforms offer interview questions or coding challenges, they do not simulate interactive interview sessions. Existing solutions do not provide dynamic question generation, personalized feedback, or AI-driven evaluation. Most platforms rely on human intervention, which is inconsistent and cannot be scaled to thousands of users. The emergence of AI models capable of understanding and generating human-like responses inspired the creation of an automated interview practice system. The main motivation lies in providing users with a tool that mimics real interviews and gives evaluations without involving human interviewers. This reduces cost, increases accessibility, and ensures that users can practice as many times as required without limitations.

2.2 Gaps Identified

During the review of available literature and platforms, several gaps became evident. Many existing interview-preparation tools provide static questions, making users memorize answers rather than practice interview dynamics. Evaluation is rarely automated, forcing users to depend on subjective feedback from peers. There are no platforms that integrate question generation, assessment, user authentication, and data storage in one system. Additionally, progress tracking is limited, making it difficult for candidates to see how they have improved over time. The absence of AI-driven interview simulations creates a gap that this project seeks to fill by offering a comprehensive, intelligent, and interactive interview-preparation tool.

2.3 Objectives

The primary objective of this project is to build a functional AI-driven mock interview system that integrates full-stack development with artificial intelligence. The system aims to generate interview questions dynamically, evaluate user responses, and provide detailed feedback instantly. Another objective is to implement secure and reliable user authentication

using Clerk and to store interview history using Drizzle ORM with PostgreSQL. The project also aims to provide a clean and responsive user interface using Next.js and React, ensuring smooth navigation and a professional experience. Ultimately, the goal is to offer users a platform where they can improve their skills effectively through repeated practice and AI-supported guidance.

CHAPTER 3
MATERIALS AND METHODOLOGY

3.1 Functional Requirements and Inputs

The application operates by allowing users to register or log in using Clerk authentication. Once logged in, users can access a dashboard that displays their previous interview attempts and options to begin a new interview. When the user selects an interview type, the system uses Gemini AI to generate questions appropriate for that category. The user responds to each question by typing an answer, which is then sent back to Gemini AI for evaluation. The AI analyses the response and generates feedback that helps the user understand the correctness, clarity, or completeness of their answer. All interviews, responses, and feedback are stored in the PostgreSQL database using Drizzle ORM. The primary inputs to the system include user credentials, selected interview category, and user-typed responses.

3.2 Software Requirements

The software environment for this project consists of Next.js and React for building the interface and backend routes, Gemini AI for processing interview questions and answers, Drizzle ORM for structured database migrations, and PostgreSQL or Neon database for storing user information and interview results. Clerk authentication is used to allow secure registration and login. Git and GitHub are used for version control, while hosting platforms like Vercel may be used for deployment. Together, these technologies create an efficient, robust, and scalable system.

3.3 Technologies Used

Next.js serves as the core framework for both frontend and server-side operations, offering excellent rendering and routing capabilities. React provides reusable components for building the user interface. Drizzle ORM ensures type-safe database interactions and simplifies queries. PostgreSQL acts as the system's main data repository. Clerk authentication provides secure login and session management. Gemini AI is the brain of the system, generating

questions and analyzing the user's answers using natural language processing techniques. These technologies work in tandem to produce a seamless user experience.

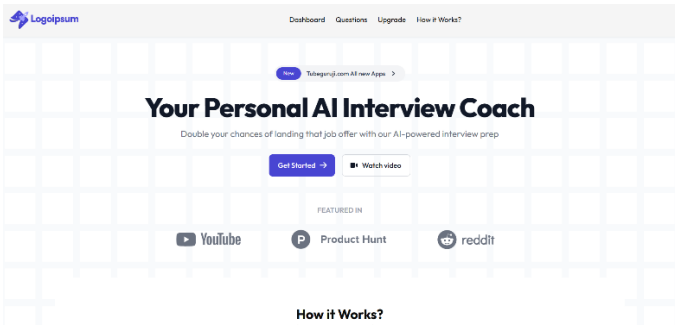
3.4 Block Diagram of the System

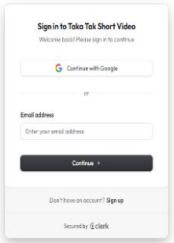
In the system architecture, the user interacts with the interface built using Next.js and React. When an action such as starting an interview is initiated, the request moves through the authentication layer handled by Clerk. The backend API routes then process the request and communicate with Gemini AI or the database depending on the task. Gemini AI generates questions and evaluates responses, while the database stores user history using Drizzle ORM. The processed data is then returned to the user interface where the user can review their performance.

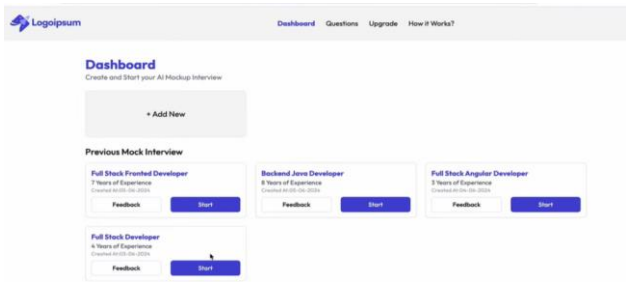
CHAPTER 4

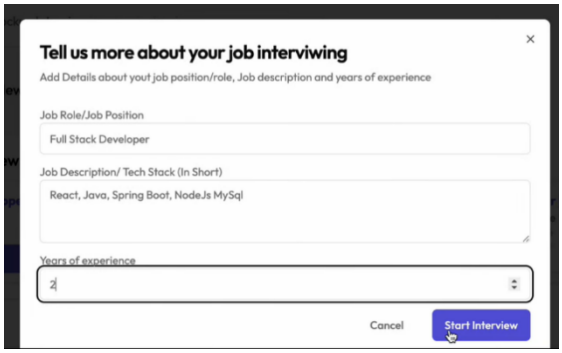
RESULTS

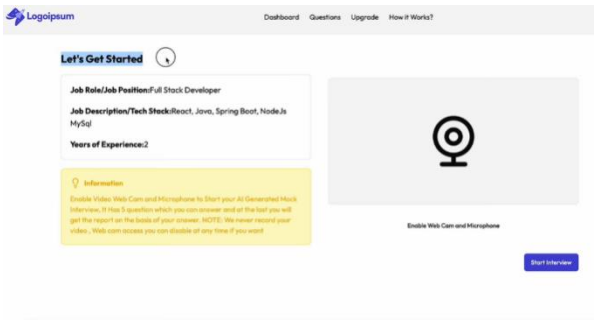
4.1 Results

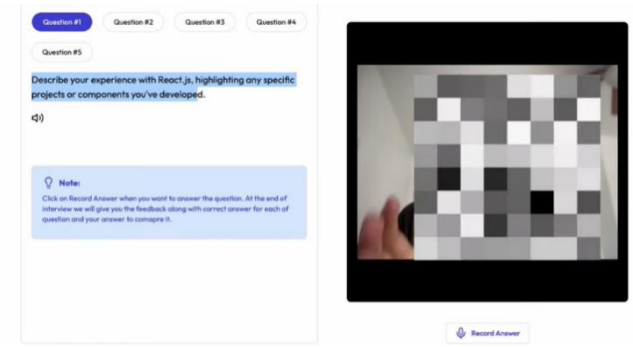


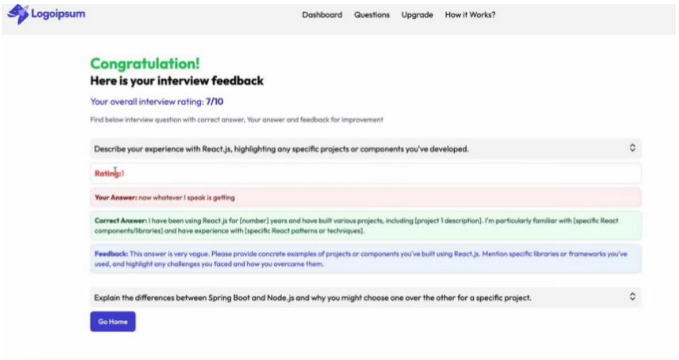












Upon implementation, the system demonstrated successful secure authentication, dynamic question generation, and AI-driven evaluation. Users were able to log in, select interview types, receive relevant questions, and provide responses. Gemini AI evaluated the responses and returned insightful feedback, helping users understand their level of preparation. All the data was stored correctly in the PostgreSQL database and retrieved efficiently. The dashboard

displayed previous interview sessions, allowing users to track improvement. The interface was responsive and worked well across devices, indicating a successful deployment of the system's core features.

CHAPTER 5

CONCLUSION

This project successfully developed an AI-powered mock interview system that integrates full-stack web development with artificial intelligence. By providing dynamic question generation, real-time feedback, secure authentication, and persistent data storage, the system offers a complete solution for students and job seekers looking to prepare for interviews. The application is scalable, user-friendly, and accessible, making it a strong alternative to traditional interview-preparation methods. Although the system performs well, additional features such as voice-based interviews, video simulations, coding test integration, and personalized scoring models could further enhance its capabilities. Future improvements may transform this system into a fully developed career development platform.

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