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An AI-Driven Multimodal Framework for Interview Readiness Assessment and Skill Enhancement

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Abstract: ***In today's competitive job market, candidates often struggle with structured preparation, resume optimization, and real-world interview exposure. This paper presents an adaptive multimodal Artificial Intelligence (AI) framework designed to enhance interview readiness through integrated modules for skill assessment, resume analysis, and interview simulation. The system leverages Machine Learning (ML) and Natural Language Processing (NLP) techniques to provide personalized feedback and performance evaluation. The proposed framework consists of three core modules: an aptitude and Data Structures & Algorithms (DSA) practice system, an AI-powered resume analyzer, and an AI-driven interview simulator. Built using the MERN stack (MongoDB, Express.js, React.js, Node.js), the system ensures scalability and real-time interaction. Experimental usage indicates improved candidate preparedness, confidence, and alignment with job requirements. The framework bridges the gap between academic learning and industry expectations.***

Keywords: Artificial Intelligence, Interview Preparation, Resume Analysis, Machine Learning, Natural Language Processing, MERN Stack.

I. INTRODUCTION

The recruitment landscape has evolved significantly, requiring candidates to demonstrate not only technical knowledge but also effective communication and presentation skills. Traditional preparation methods lack personalization and real-time feedback.
This work proposes an AI-based integrated platform that combines:

- Skill evaluation through aptitude and DSA practice
- Resume optimization using NLP
- AI-based mock interview simulation

The system enables candidates to assess their strengths, improve weak areas, and gain practical interview experience in a structured environment.
which incorporates data from 81 nations, the most frequently confiscated firearms for illegal purposes are revolvers (14%), pistols (39%), shotguns (25%), rifles (18%), submachine guns (3%), and machine guns (1%). In addition, the UNODC has found that 46 out of 100,000 men between the ages of 18 and 19 are killed on the American continent. In addition, killings in the Americas involve weapons significantly more frequently than in other regions of the world. These figures back up the conclusion that the use of handguns should be the main focus of this study. The model must have a respectable processing speed for the detections in order to

II. LITERATURE SURVEY

The rapid advancement of Artificial Intelligence (AI) and web technologies has led to the development of various systems aimed at improving interview preparation and recruitment processes. This section reviews existing approaches relevant to interview readiness, resume analysis, and AI-based preparation systems.

A. Interview Experience Portals

The work titled *"Interview Experience Portal Using MERN Stack"* by Sangita Lade et al. focuses on creating a platform where candidates can share their interview experiences. These portals help students understand company-specific interview patterns and questions. However, such systems primarily rely on static user-generated content and lack personalization and intelligent feedback mechanisms.

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B. AI-Based Interview Preparation Systems

In *"A Real-Time Web Platform to Help in Student Interview Preparation using AI"*, Mann Monpara et al. developed a system that conducts AI-driven mock interviews with dynamic questioning and feedback. The platform enhances candidate confidence through interactive sessions and real-time evaluation. While effective, the system mainly emphasizes interview simulation and does not fully integrate resume analysis or structured skill assessment.

C. Machine Learning-Based Recruitment Systems

The study *"A Machine Learning-Based AI Framework to Optimize the Recruitment Screening Process"* by Anshul Ujlayan et al. presents a framework that automates candidate screening by matching resumes with job descriptions using similarity analysis. The system significantly reduces manual effort in recruitment. However, its focus is on recruiter-side optimization rather than assisting candidates in improving their readiness.

D. Mobile Application Development Approaches

The work *"Developing of Android Mobile Application Using Java and Eclipse"* by Şenay Kocakoyun provides insights into mobile application development methodologies. Although not directly related to interview preparation, it highlights the importance of accessible platforms for user engagement and learning.

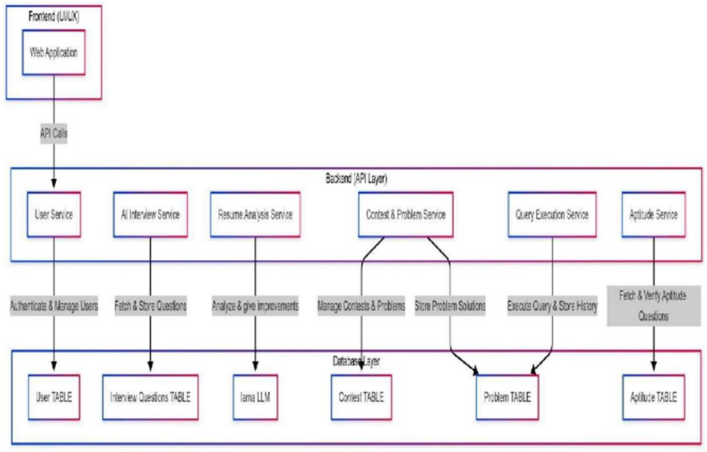
E. Research Gap and Motivation

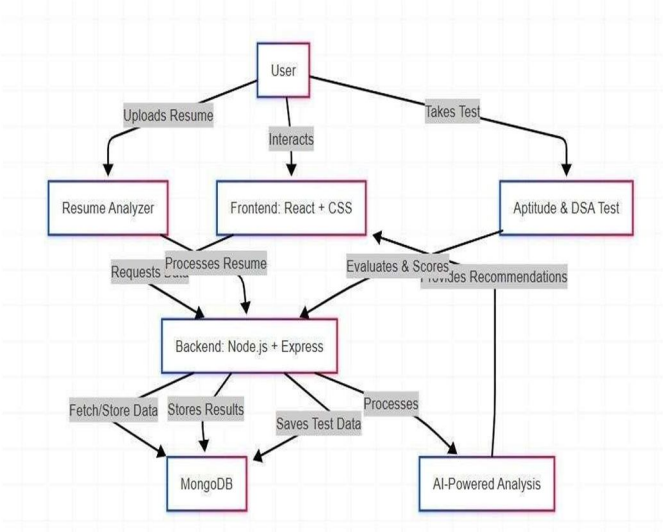
From the literature, it is evident that existing systems focus on individual aspects such as:

- Interview experience sharing
- AI-based mock interviews
- Resume screening for recruiters
- However, there is a lack of an integrated platform that combines:
- Skill assessment (Aptitude & DSA)
- Resume optimization
- AI-driven interview simulation

The proposed system addresses this gap by providing a comprehensive, multimodal AI framework that enhances overall interview readiness through personalized feedback and continuous evaluation.

III. SYSTEM ARCHITECTURE





IV. RESULTS

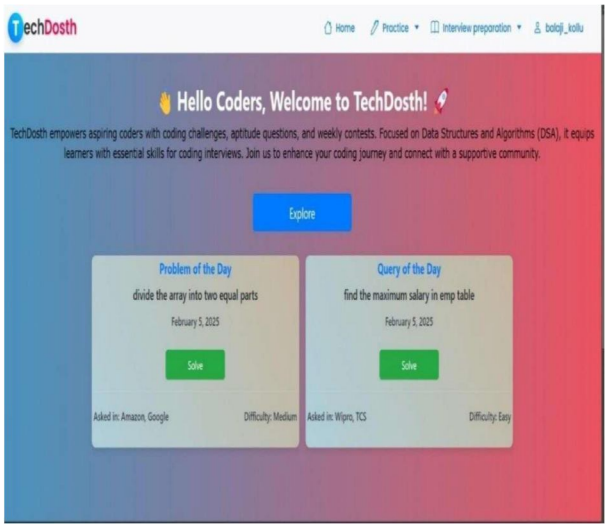


Fig. 1: Home Page

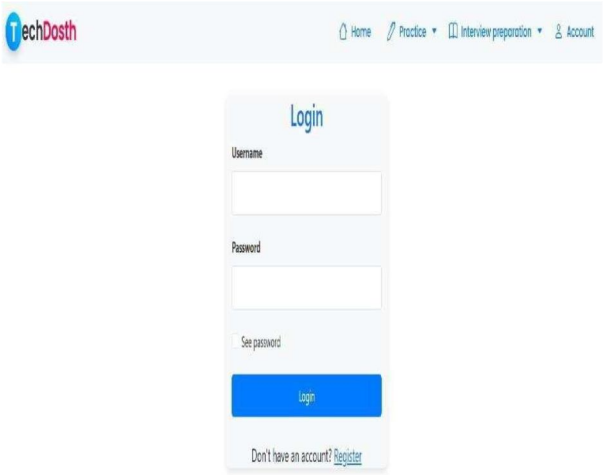


Fig.2: Login Module

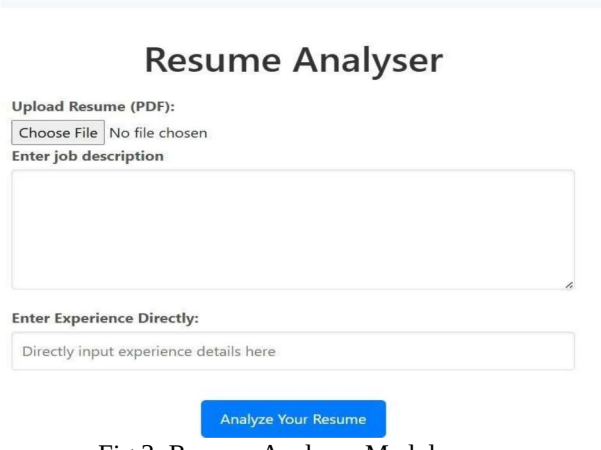


Fig.3: Resume Analyzer Module

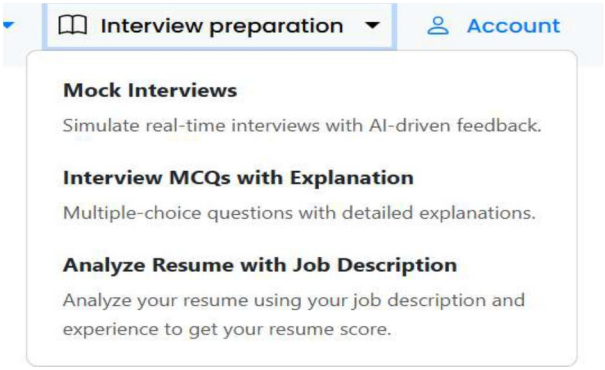


Fig.4: Interview Preparation Module

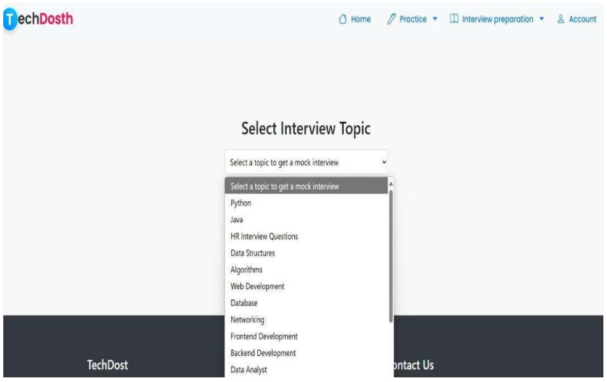


Fig .5: Interview Topic Selection Module

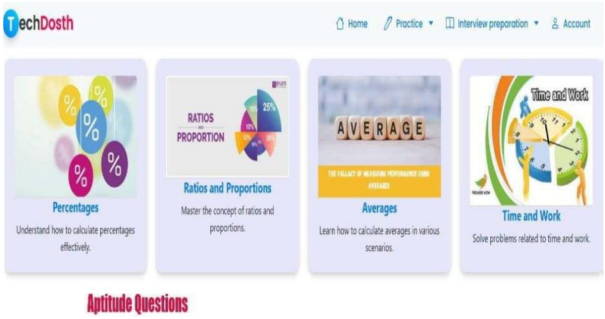


Fig.6: Aptitude Module

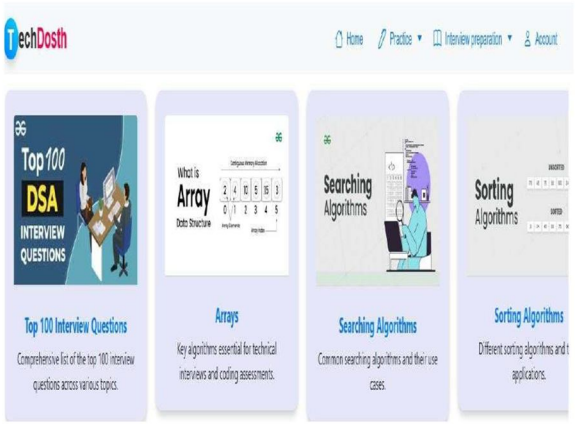


Fig.7: DSA MODULE

V. CONCLUSION

The Adaptive multimodal Artificial Intelligence Framework for the Interview Readiness Prediction and Skills Enhancement offer an innovative and efficient solution for candidates preparing for interviews. By leveraging Machine Learning and Artificial Intelligence, the platform provides personalized learning, real-time feedback, and adaptive assessments to enhance users' skills. The MERN stack (MongoDB, Express.js, React.js, Node.js) ensures a scalable, responsive, and high-performance application, making it accessible across devices. With AI-driven insights, automated evaluations, and an interactive user experience, this system empowers users to improve their problem-solving abilities and succeed in technical and behavioral interviews. In summary, this project bridges the gap between candidates and recruiters, offering a smart, data-driven approach to interview preparation while utilizing modern web technologies for an optimized user experience.

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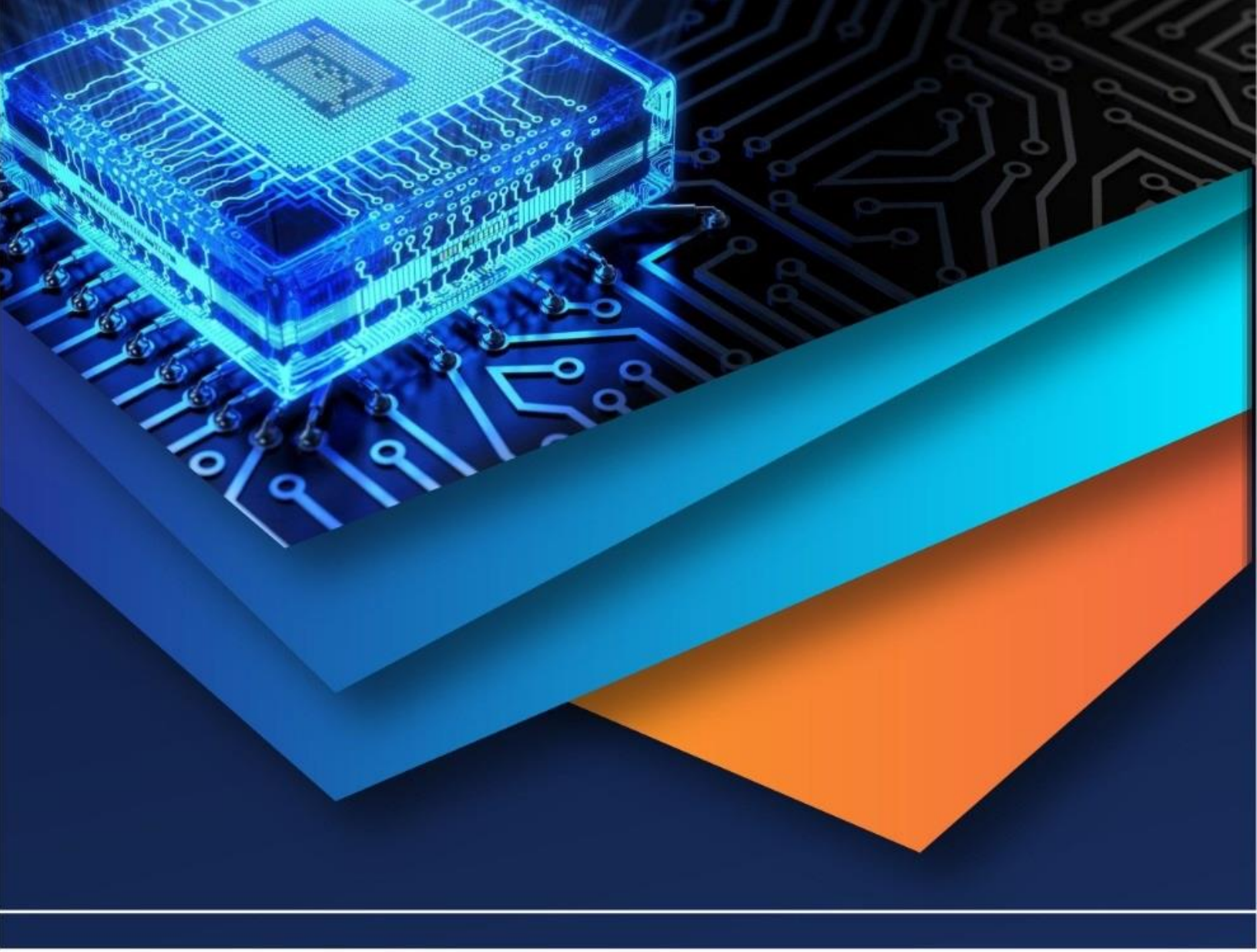


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