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# MockHire: Enhancing Candidate Preparedness and Streamlining Recruitment through AI-Powered Interview Simulation, Evaluation, and Application Tracking

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***Abstract:*** ***The hiring process is an ever-increasing number of aggressive people. Traditional mock interview setups are often hampered by the use of the number of people needed to make thoughtful statements. This site provides a -next-door mechanism that allows candidates to prepare for interviews while helping employers to successfully register applicants. Candidates can gain entry rights to job postings, attach resumes and resumes, and participate in AI mock interviews. Recruiters can assign jobs, track candidate feedback, monitor packages, and voluntarily use AI to ask enticing questions. This allows identifying registered researchers by combining CV parsing, adaptive wondering, performance analytics, and visualization to provide relevant, evidence-based recommendations for individual candidates and employers.***

***Keywords: AI-powered Recruitment, Adaptive Mock Interviews, Candidate Assessment Analytics, Evidence-based Hiring.***

## I. INTRODUCTION

The hiring landscape has evolved greatly over the last few years. Technology is increasingly being used by organisations to identify and select the best candidates. However, traditional interview preparation and screening processes can still be time-consuming and subjective. It can be difficult for candidates to get access to affordable and personalised mock interview experiences. Meanwhile, recruiters have difficulty handling large candidate pools and making fair evaluations. MockHire solves these problems with an AI powered platform that combines interview simulation, automated evaluation and application tracking. This increases both candidate readiness and recruitment efficiency. The system employs technologies such as Speech Recognition to simulate real interview situations. Candidates are able to practise answering specific questions within a dynamic adaptive environment. MockHire offers a useful preparation tool for candidates, delivering immediate, data-driven feedback on communication skills, confidence, and technical knowledge. The AI interviewer adapts the questions dynamically based on the candidates' responses, offering a customised experience that resembles actual interviews. Visual analytics and feedback reports help users to track their strengths and weaknesses and promote continuing learning and growth. MockHire is a smart hiring assistant for recruiters that makes the candidate screening process simple. It enables job posting, auto-evaluation of responses and tracking of applications in a single dashboard. Recruiters can analyse the candidate performance metrics, review the AI generated scores and shortlist the applicants more efficiently, reducing human bias and saving valuable time. MockHire is the first system to combine AI simulation, evaluation and tracking to bring the recruitment process into the 21st century. It increases candidate confidence, helps with data-driven hiring decisions, and results in a transparent, efficient, and scalable recruitment process. MockHire ultimately connects job seekers and recruiters by transforming traditional interviewing methods into smart, adaptive, and evidence-based experiences.

## II. RELATED WORK

Artificial Intelligence (AI) has significantly altered traditional recruitment and interview methods. It automates evaluations, delivers instant feedback, and simulates realistic interview environments. Several studies have explored AI-based mock interview systems that combine natural language processing (NLP), computer vision, and machine learning techniques to assess candidates' communication and behavioural skills.

Early research, like the AI-Based Behavioural Analyzer for Interviews/Viva (2021), focused on analysing real-time facial expressions, voice tone, and eye gaze to evaluate candidate behaviour. This system introduced AI-based behavioural scoring but lacked scalability and was only available for candidates.

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Subsequently, an AI Mock-Interview Platform for Interview Performance Analysis (2022) used Bi- LSTM-based models to assess text-based interview Artificial Intelligence (AI) has revolutionised the age-old process of recruitment and interview. It automates assessments, provides immediate feedback, and replicates real-life interview settings. Several studies have investigated AI-based mock interview systems that integrate natural language processing (NLP), computer vision, and machine learning techniques to evaluate candidates' communication and behavioural skills. The initial studies, such as the AI-Based Behavioural Analyser for Interviews/Viva (2021), concentrated on analysing real-time facial expressions, voice tone, and eye gaze to assess candidate behaviour. This system introduced AI based behavioural scoring but it did not scale and was available only for candidates. Later, an AI Mock-Interview Platform for Interview Performance Analysis (2022) employed Bi-LSTM based models for text-based interview answers. It also built a recruiter dashboard to allow human evaluators to see how candidates performed. The AI-Driven Virtual Mock Interview Development (2024) utilised GPT-4 for context-aware, adaptive questioning and candidate interaction. This study showed that conversational AI could mimic interviewer behaviour in real time. But this system still lacked video and emotion based analytics. To address the limitations of single-modal evaluation, A Comprehensive Study and Implementation of the Mock Interview Simulator with AI and Pose-Based Interaction (2024) integrated computer vision techniques including pose estimation, facial emotion recognition to capture non-verbal behaviour. Likewise, From Practice to Perfection: AI-Driven Mock Interviews for Career Success (2024) used NLP, CNN based emotion detection, and MediaPipe based posture analysis to build a more complete candidate profile. These studies have made important contributions to AI-driven interview simulation, but they still suffer from challenges, including high latency of the system, dependence on quality hardware, and limited accessibility.

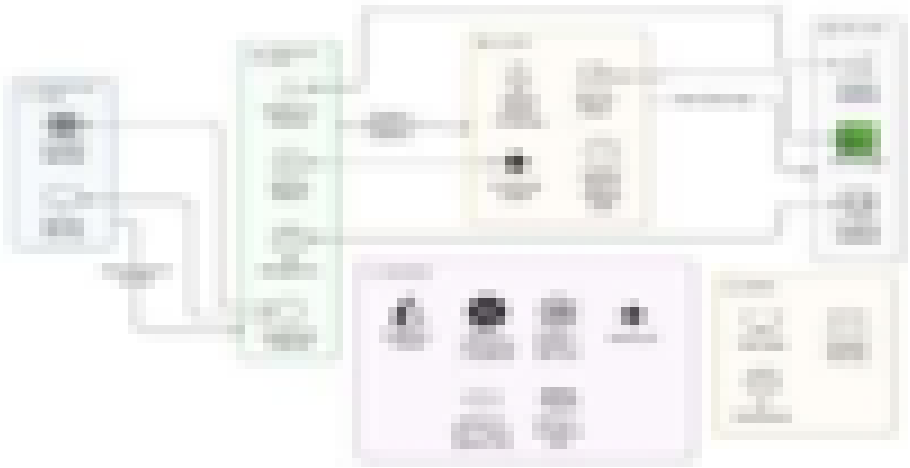
Also, most of the systems are limited to candidate assessment without the entire recruitment process, which includes scheduling, monitoring the progress and recruiter analytics. Building on these existing efforts, the proposed MockHire framework integrates AI-powered interview simulation, automated performance evaluation, and comprehensive application tracking into a single platform. MockHire is built to solve candidate readiness and recruiter efficiency with actionable insights and easy-to-use recruitment management in a scalable, cloud-compatible architecture, unlike old systems.

## III. SYSTEM ARCHITECTURE

MockHire's system architecture is structured into layers that include AI technology, cloud-based storage, and web interfaces for an efficient recruiting and interview preparation experience. The structure has four primary layers: Presentation Layer, Application Layer, AI Layer, and Data Layer, powered by an innovative technology stack. These layers help facilitate smooth communication, feedback, and automation within the system.

1) *Presentation Layer:* The Presentation Layer serves as the front-end interface that is utilized by users for interacting with the MockHire application. There are two types of web applications included in the Presentation Layer, namely, the Candidate Web App and the Recruiter Web App. Both of these have been developed with the use of modern front-end technologies like React and Next.js, enabling easy interaction for the users. The Candidate Web App enables users to sign up, conduct mock interviews, and even get instant feedback through artificial intelligence. On the other hand, the Recruiter Web App enables hiring managers to supervise candidates and evaluate their performances through reports.
2) *Application Layer*: The Application Layer serves as the operational hub of the MockHire platform, managing key processes and coordinating communication between the user interface, AI engine, and data storage systems. It oversees critical tasks such as interview scheduling, authentication, feedback generation, and job management. When candidates take interviews, this layer captures their responses, validates user sessions through JWT authentication, and sends relevant data to the AI Layer for evaluation. It also manages feedback and analytics modules to generate detailed reports for candidates and recruiters. Built using Node.js and Express, this layer ensures high-performance server-side operations and scalability, allowing for multiple simultaneous sessions without sacrificing efficiency or reliability.
3) *AI Layer*: The AI Layer serves as the intelligent centre of the MockHire system, powered by Gemini 2.5 and advanced machine learning models. This layer performs complex tasks like voice recognition, resume parsing, adaptive question generation, and immediate feedback analysis. The AI Interview Engine uses Natural Language Processing (NLP) to evaluate candidate.
4) *Application Layer:* This Application Layer acts as the control center for MockHire application and handles essential tasks like interview scheduling, authentications, feedback generation, and job management. In case when candidates appear for interviews, this layer collects interview data, validates user sessions with JWT authentication and transfers collected data to the AI layer for assessment purposes. Further, the feedback generation and analytics module generates comprehensive feedback reports. Implemented using the highly scalable technology of Node.js, it ensures that high-end server-side processing is done without compromising efficiency.

5) *AI Layer:* This layer acts as the intelligence center of MockHire application, which utilizes Gemini 2.5 and machine learning technologies. This layer handles complex tasks like voice recognition, resume parsing, adaptive question generation, and instant feedback analysis. Through AI Interview Engine, it employs natural language processing techniques to assess candidate responses and provide feedback regarding tone and coherence. Using Resume Parser functionality, it identifies relevant information from candidate resumes to customize interview questions. Adaptive Logic function makes sure that questions become progressively difficult depending on the candidate's performance level. With the help of Speech-to-Text and Text-to-Speech API, it offers a realistic experience.
6) *Data Layer:* The Data Layer will be responsible for carrying out all database activities within MockHire, including storing, accessing, and analyzing data. There are three key parts of the Data Layer, which include a PostgreSQL Database that will store all of the structured data in MockHire, such as user profiles, and logs from the interviews; an Analytics Database that will collect the performance metrics used for generating insights; and AWS S3 File Storage to safely store resumes, audio files, and reports. All of these ensure high levels of availability, data redundancy, and fast querying. This layer will use strong encryption and access controls to secure the data for integrity and privacy purposes while offering live data updating on the dashboard analytics.
7) *Tech Stack:* MockHire uses a cloud-ready tech stack that enables flexibility, scalability, and high performance. On the front end, the MockHire will use Next.js, Tailwind CSS, and TypeScript while on the backend, the technologies that will be applied include Node.js with Express and Prisma ORM. Secure authentication will be carried out through JWT. In addition, the system will also use Gemini 2.5 Pro as well as Speech-to-Text and Text-to-Speech APIs for its AI features.

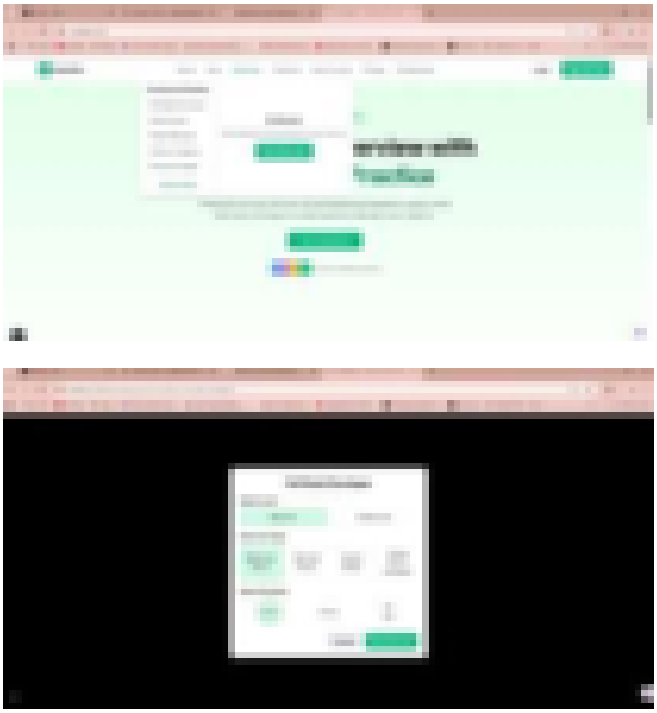


## IV. DESIGN AND IMPLEMENTATION OF UI/UX

The design of the platform UI/UX focuses on making both the candidates and the recruiters have an effortless interaction within the platform. The platform has specific web applications customized for both users where candidates are able to participate in AI-powered mock interviews, track their progress and get personalized feedback whereas recruiters can post vacancies, manage job applications and even rate the candidates' performances. All actions, whether accessing dashboards or uploading resumes, are done in real time to make the experience seamless. At the heart of the application, various functionalities that include authentications, live interviews, jobs and analysis are handled.

The application collects and analyzes performance metrics, offering feedback to both the candidates and recruiters that helps them in decision-making and preparing accordingly. The intelligence comes from the engine that builds the questions during the interview according to the response of the user and checks the accuracy and relevancy of his/her answer. Additionally, voice processing converts the spoken answer into written text and offers text-to-speech feedback. Moreover, the resume is processed in order to extract essential information regarding skill-matching of the candidate, and the complexity of the questions is based upon the candidate's performance.

The data collected is secured through a proper channeling and storing procedure, wherein the structured data is kept in a PostgreSQL database and the unstructured data such as resumes and recording of interviews are kept on AWS S3.



## V. METHODOLOGY

MockHire methodology adopts an analytical, data-centric, and machine-learning based approach. The purpose of such methodology is to ensure that candidates gain better preparation as well as simplify the recruitment process for organizations. The whole methodology is divided into five major phases that include Data Collection & Preprocessing, Feature Engineering, Model Building, System Integration, and Deployment & Testing.

### *A. Architecture & Design*

*1)* This stage deals with designing the architecture of the system. Journeys of users (candidates) and recruiters are designed so that there is no hassle in using the system. Candidates will be able to attend AI-based mock interviews and get immediate feedback. Recruiters would be able to create interview templates, check the performance of candidates and generate skill-based reports. Defining these journeys would help us understand system requirements and touchpoints clearly. After that comes the database architecture which involves creating various tables that help us manage and store data properly. There will be users, roles, interview questions and answers, AI evaluation of answers, sessions logs and other types of tables in the database. Proper relationships between entities have been created to preserve data consistency and boost performance. The system is designed in such a way that multiple candidates and recruiters can use it without any problem of data conflict. At last, the core API endpoints have been designed that allow interactions among front end, back end and AI modules of the system.

*2)* Prompt Engineering for AI: During this stage, attention turns towards creating high-quality prompts that can control the performance of the AI model effectively. Each prompt is crafted in such a way that its response becomes uniform and context-based. Prompts are created to form industry-specific interview questions depending on their experience level, skill sets, and other similar factors. This makes sure that each person appearing in the interview gets a fair evaluation based on relevant interview questions. Different types of prompts are used for different purposes. For instance, one type of prompt is used to generate questions from the AI, while another one is meant to analyze the responses submitted by candidates. Keeping these two AI tasks different will ensure clarity and consistency. Furthermore, AI responses must be generated in a particular format in the form of JSON files. In fact, all the AI responses will be expected to generate JSON output, which can be easily parsed and stored into the database.

*3)* Fully Fledged Development: This step entails creating the entire system with the use of contemporary web development technologies. The frontend UI of the platform is created using React in order to make the website user friendly and interactive for the users to move from one interview session to another, submit answers to the questions, and even check the AI-generated feedback. Meanwhile, the backend uses Next.js technology that encompasses client-side and server-side aspects of

functionality. It takes care of routing, handling of APIs, authenticating of users, connecting to the AI engine and database, and other functionalities that ensure smooth and secure functioning of the backend layer. Moreover, an AI engine is embedded into the system to automate some processes within the website. This component connects with the backend to generate questions, analyze transcripts, and provide users with feedback.System Integration: Once the individual AI modules are completed, they are combined into a single platform, ensuring a smooth connection between the Candidate and Recruiter interfaces. The Presentation Layer works with the Application Layer to manage session control, authentication, and job management. Meanwhile, the AI Layer interacts with the Data Layer to store and retrieve evaluation results. This integration makes sure that resume parsing, adaptive questioning, real-time feedback, and analytics visualization work well together. Additionally, cloud infrastructure and APIs help provide scalability, fast performance, and secure storage for sensitive candidate data.

*4)* Deployment and Testing: This is the last phase that entails the deployment of the MockHire platform into the cloud and subsequent testing to verify its reliability, usability, and accuracy. Functional testing involves the assessment of the performance of such aspects as simulations of interviews, resumes uploads, and tracking applications. On the other hand, performance testing will entail assessing the system's response time under various loads, while AI models evaluation will involve checking whether the accuracy and reliability of candidate appraisals are satisfactory.

## VI. FUTURE SCOPE

A number of novel features can be integrated into the MockHire system in order to enhance the user experience and increase efficiency on the part of the recruiters. Integration with Applicant Tracking Systems (ATS) offers a seamless process with the most popular recruitment solutions, covering all stages of hiring from the automation of application management and interview scheduling to the evaluation of the candidate's skills. Personalized AI improvements will be implemented with the help of a sophisticated machine learning algorithm that will tailor feedback according to the individual needs of a candidate and his or her preferred speed of learning. An interactive learning community can be created by adding peer and mentor collaboration where candidates could exchange mock interviews and feedback as well as collaborate with mentors to receive advice on their improvement. Another improvement involves mobile applications to provide candidates with an easy way to rehearse their answers anywhere and anytime. Predictive hiring insights can be provided to recruiters through the use of AI in order to predict such aspects as the candidate's performance, potential for retention, and fit. Lastly, AI-generated interview scenario can automatically generate problems for candidates to solve.

## VII. CONCLUSION

MockHire is an AI-driven tool that transforms the recruitment and interview preparation process with the help of adaptive mock interviews, immediate feedback, and performance analysis. It tailors interview practices based on each participant's skill set and learning rate, providing customized performance tips to maximize success. Recruiters can make use of its evidence-driven system that automatically evaluates candidates and makes the selection process objective and efficient. The scalable nature of MockHire allows it to benefit not only individual users but organizations as well. With future plans such as multilingual options and predictive hiring features, MockHire can prove to be revolutionary in the world of recruitment.

## REFERENCES

[1] J. M. C J, M. Sabi, M. Benson, G. Baburaj and S. S, "Q&AI: An AI Powered Mock Interview Bot for Enhancing the Performance of Aspiring Professionals," 2024 International Conference on Recent Advances in Electrical, Electronics, Ubiquitous Communication, and Computational Intelligence (RAEEUCCI), Chennai, India, 2024, pp. 1-5, doi: 10.1109/RAEEUCCI61380.2024.10547951

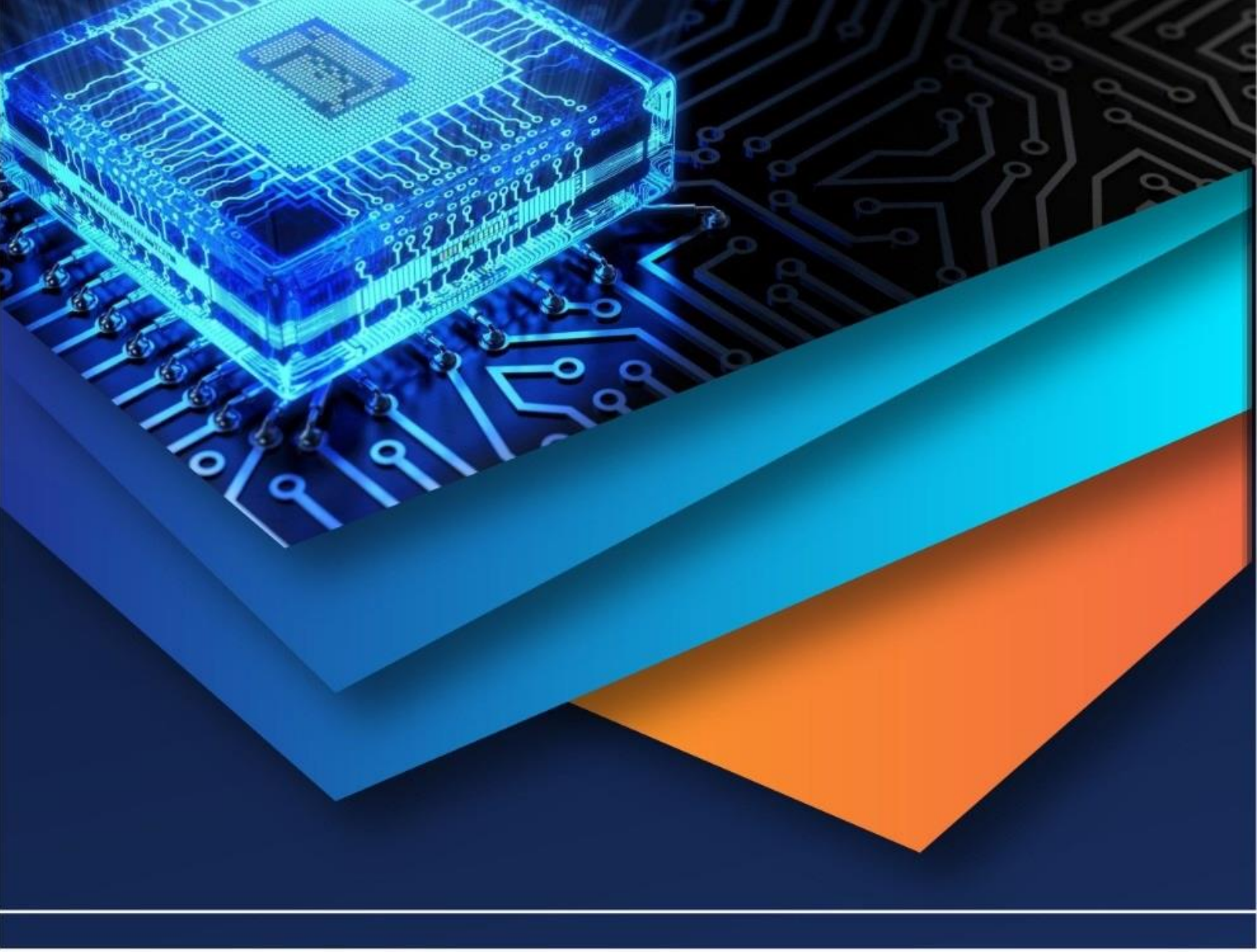
[2] P. K. Mishra, A. K. Arulappan, I. -H. Ra, T. M. L, G. R. G and Y. -S. Lee, "AI-Driven Virtual Mock Interview Development," 2024 Joint 13th International Conference on Soft Computing and Intelligent Systems and 25th International Symposium on Advanced Intelligent Systems (SCIS&ISIS), Himeji, Japan, 2024, pp. 1-4, doi: 10.1109/SCISISIS61014.2024.10760210.

[3] Y. -C. Chou, F. R. Wongso, C. -Y. Chao and H. -Y. Yu, "An AI Mock-interview Platform for Interview Performance Analysis," 2022 10th International Conference on Information and Education Technology (ICIET), Matsue, Japan, 2022, pp. 37-41, doi: 10.1109/ICIET55102.2022.9778999.

[4] B. Jadhav, A. Sawant, A. Shah, P. Vemula, A. Waikar and S. Yadav, "A Comprehensive Study and Implementation of the Mock Interview Simulator with AI and Pose-Based Interaction," 2024 1st International Conference on Cognitive, Green and Ubiquitous Computing (IC-CGU), Bhubaneswar, India, 2024, pp. 01-05, doi: 10.1109/IC-CGU58078.2024.10530717.

[5] R. Umbare, A. Budhodkar, S. Suryawanshi, S. Udgirkar, P. Aher and S. Rangdale, "From Practice to Perfection: AI-Driven Mock Interviews for Career Success," 2024 International Conference on Sustainable Communication Networks and Application (ICSCNA), Theni, India, 2024, pp. 1250-1257,doi:10.1109/ICSCNA63714.2024.10864324.

[6] D. Y. Dissanayake et al., "AI-based Behavioural Analyser for Interviews/Viva," 2021 IEEE 16th International Conference on Industrial and Information Systems (ICIIS), Kandy, Sri Lanka, 2021, pp. 277- 282, doi: 10.1109/ICIIS53135.2021.9660757.



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