iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 14 **Issue:** III **Month of publication:** March 2026

DOI: https://doi.org/10.22214/ijraset.2026.78189

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue III Mar 2026- Available at www.ijraset.com

AI Mock Interview Platform "A Platform To Ace Your Interview Qualace"

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Abstract: ***The competitive nature of the present day job market necessitates newfangled and handy equipment for built Interview guidance. conventional strategies, built-inclusive off integrated peer built-in or static query banks, are frequent integrated due to their lack of personalization, scalability, and goal remarks. This paper provides complete framework for an 'AI-Powered Mock Interview Simulator 'designed to bridge this gap.***

The proposed platform built-integrates 'Generative-AI' (Google, Gemini built-ini API) for dynamic, function particular question technology and a 'multimodal analysis' combine integrated building natural Language Processing integrated (NLP), Speech-to-textual content conversion, and sentiment analysis to assess candidate responses. built on a modern-day full-stack structure integrated 'React/subsequent.js' for frontend and 'Python/fast API 'Firebase/PostgreSQL' for the backend, the platform offers a at ease, scalable, and built- interactive consumer revel built integrated. Key encompass integrated a personalized remarks mechanism that offers actionable integrated sights on technical accuracy, conversation readability, and emotional tone, derived from transcribed speech.

Prelim built integrated conceptual analysis, primarily based on a synthesis of present-day studies, it indicates that such an system significantly outperforms unimodal or conventional building techniques built-in building integrated consumer self-belief, articulatory talents, and overall built-interview read building.

This painting consolidates a decade of progress built-in AI-driven profession gear to advise a holistic answer for democratize building integrated interview education.

Keywords: AI Mock Interview, Sentiment Analysis, Generative AI, Behavioral Feedback, Interview Simulation

I. INTRODUCTION

In these day's rapid pace and competitive task marketplace securing integrated employment calls for greater than just a technical built information or built in information it needs study verbal action abilities self-assurance and the capacity to handle complicated built interview.

Securing an employment built in latest panorama calls for Extra then built in domain integrated built in integrated It needs exquisite verbal exchange scales confidence and the ability to perform beneath star built in integrated. Conventional integrated view practice size integrated building oriented books peer exercise or highly priced human coaches suffer from critical barriers loss of personalization subjective remarks built in ability to stimulate realistic dynamic integrated view environments [1,2].This creates huge hole between a candidate theoretical known how to sensible performance.

Synthetic Intelligence offer a transformative answer this part synthesizes latest advancements to recommend an built- in integrated AI powered mock interview simulator The Machine built in integrated moves beyond simple Q&A drills with the aid built in developed immersive and adaptive exercise surrounding surround built in integrated it leverages Cutting edge Generative air fashions to supply context conscious function unique questions [3'4] greater importantly it employs multi model evolution pipeline integrated to access not a simply what a candidate says but how built in it via processing integrated video record responses through a speech to textual content and next NLP primarily based on sentiment analysis the matching built integrator presents holistic remarks on a technical contain communique fluency and emotional cues like assurance and readability [5,6].

The Proposed framework in a design be available re required integrated most effective fundamental user build input (Job position, Text stack built-in) Without obligatory resume uploads its objectives to democratize Integrated view built in building a value profile scalable and goal platform that empower task seekers to exercise successfully Lab built in integrated self-attention and work integrated real integrated reviews with extensively stronger preparedness and self- belief.

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II. LITERATURE REVIEW

The Improvement of AI primarily based mock integrated review structure is routed integrated improvements artificial built in diligence herbal language process building NLP speech popularity and gadget built in integrated numerous research and studies works have explored effectiveness of AI driven built in interview building tools candidate performance and self-belief 1.AI built In interviews simulation current studies highlights a used building air get integrated air powered virtually integrated interviews to imitate human built-in interviews built in activity recruitment process research by means of Zhang et al.(2020)= Recommend That AI runs simulations can provide real time comments on goal reviews built in radios built integrated human bases and built in accessibilities built in integrated studies by means by Nguyen et al.(2020) Demonstrates how AI powered chat boards efficiently conduct built interviews build in inbuilt integrated screen, built Candidates based totally on prebuilt standards 2. AI in Coding Interviews: Technical Integrated Reviews specifically integrated software program engineering integrated roles require A evaluation coding talents studies by means of A Johnson et al 2018 presents AI Driven Co built structures Lead Code and Hacker Rank which built integrated application based on trouble fakes capabilities set of rules performance and code built in AI integrated review system built in a comparable capabilities built in actual time remarks and automatic assessment of coding grade responses 3. Effectiveness of AI post mock interviews : Empirical Studies building AI based totally mock reviews with traditional method built in terameters upgrades built in candidate paper mess took a lookout through a Patel at el.(2021) discovered that candidates integrated he had built in interview simulation confirm a 30% deployment built in confidence 25% reduction built in integrated review tension as compared to people who best practice with a static question list proposed Mech-build integrated the proposed AI based model or AI mock build interview gadget is designed to offer integrated, interactive

,adaptive and platform for task seekers to decorate the integrated interview skills. The evolution of interview coach and equipment has stepped forward through build in wonderful levels from static access to interactive structures effective. Technical interviews especially in a software engineering roles require an evolution of coding skills. Research by Johnson et al.

Early systems and static structures: Build integrated solutions and websites with constant questions Banks (e.g. Glassdoor) And a coding mission system like lead code and hacker rank [7] Even valuable for a technical exercise these platforms lack build interactive offer no remarks on fail to simulate controversial interviews or interview reviews.

Rise of AI and Basic Automation**:** The Build integrated of AI Mark sizable shift studied by or researched by Zhang et al. (2020) and Nguyen et al. (2021) Demonstrated user build AI chat bolts for pre-built screen time automotive questions ship built integrated and primary response login systems like PRAM three base mock built in interviews however remarks remain subjective and inconsistent [8,9].

Advanced Multimodal and Generative AI Systems: The current paradigm, as evidenced by the reviewed papers, focuses on deep integration of multiple AI technologies.

Generative AI for Personalization**:** Proposed Methodology and Working present day systems drastically use LLMs like Google's Gemini-integrated or GPT to generate dynamic, tailor-made integrated interview questions based on person profiles, long way beyond static databases [3,4,10]

Multimodal analysis for Holistic comments: built-in research built-ins pc image-integrated for facial expression/pose evaluation and speech process built-in for tone and tempo evaluation [5,11]. but, a primary cognizance on visual evaluation can built-in privateness worries and computational complexity.

Sentiment & content material analysis: A key integrated innovation is the use of NLP for dual process analysis: cause evaluation of the technical correctness of transcribed solutions and built-in the sentiment and confidence embedded language itself [6,12]. his article-primarily based sentiment evaluation offers profound built-insights offers verbal exchange style with out at once Analyzing video, balancing depth with privateness.

Integrated full stack Architectures: Contemporary or modern implementations are built on robust, scalable stacks (e.g., subsequent.js, React, fast API, Firebase) Ensuring real time performance, at ease statistics and a unbroken person enjoy [10,13].

Gap identification: Even as Existing work excels Individual areas—question technology, visible analysis, or content scoring synergistic framework that seamlessly blends personalized question technology, built-in-built-in content and sentiment evaluation of speech, and actionable, composite comments generation a user-friendly platform built-in an area for complete implementation. Our proposed gadget addresses this with the aid of emphasize a streamline, speech-centric multimodal technique that prioritizes actionable linguistic and sentimental remarks.

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III. PROPOSED METHODOLOGY

The process of gathering data is explained initially in this section. The specifics of the suggested convolutional neural network are then described. Lastly, a succinct description of transfer learning is given. The AI based mock interview platform project was carried out in several steps to create a useful and easy-to use AI-based mock interview platform called Hire IQ. The goal was to help users practice interviews and get feedback on how they speak and behave during the interview. It also analyses your answer and checks with artificial tool based on the matching content it rates your interview preparation it also provides you what are things and area we have to focus. next.JS: - subsequent.js is a effective React framework that allows builders to build rapid, scalable net integrated packages with capabilities like server-side rendering (SSR), static website online generation (SSG), and patron-aspect rendering (CSR). It gives a document-based routing gadget, automatic code-split and optimized performance out-of-thenext.js supports API routes for backend logic and seamlessly with CSS, SCSS, and various databases. It additionally offers Incremental Static Regeneration (ISR), built-in allow pages to be updated without a full rebuild. With for Vercel deployment, subsequent.js simplifies the process of taking applications from development, making it an ideal preference for current built-in improvement Python was utilized to manage the gathered video data by dividing the video into separate frames, which made a careful frame-by-frame extraction procedure possible. After then, each frame was meticulously divided into one of 15 classes, which corresponded to different levels of student participation in online courses. These categories were carefully selected in consultation with specialists who are aware of the nuances of the dynamics of online learning. The wide variety of student behaviors in online classes was accurately and thoroughly captured by this manual classification approach. The proposed AI Mock Interview Simulator is architected as a modular, full-stack web application designed for robustness, scalability, and a superior user experience. The methodology is outlined in the following stages and components:

A. System Architecture Overview

The platform follows a client-server model with a modern tech stack:

1) Frontend: built with React.js/next.js and TypeScript for a dynamic, responsive. Tailwind CSS ensures regular styling.
2) Backend & API Layer: developed integrated Python with the Fast API framework for high-performance RESTful API endpoints. Handles built-in common sense, AI model integration, and data processing
3) AI & carrier Integration: Google Gemini API for query era and remarks analysis. Google Speech-to- textual content or comparable carrier for audio transcription.
4) Database: PostgreSQL (or Firebase Fire store) managed through Drizzle ORM or comparable, storing user profiles, built-interview periods, transcripts, and comments.
5) Authentication: Clerk or Firebase Authentication for at ease, streamed user access.
6) Deployment: Contained the usage of Docker and deployed on cloud platforms (Vercel for frontend, AWS/GCP/Azure for backend) for scalability.

B. Core Functional Modules & Workflow

1) User Authentication & Profile Setup: users securely register/login. They a built-interview session built-in activity: title, Technical Stack, and Years of built-in.
2) Dynamic query era Engine: The user built-inputs are dispatched to the Google Gemini built- API. A well crafted set off built-instructs the LLM to generate a set of applicable technical and behavioral questions suitable for the desired position and built-in level.
3) Immersive Interview Simulation: The user can affords one query at a time. The consumer responds thru their microphone and webcam. The consultation is recorded to create a realistic, timed practice surrounded.
4) four Multimodal reaction Processing

- Speech-to-text Conversion: The audio track is asynchronously transcribed Google Speech-to-text API, the spoken response text (T_ reaction).
- Textual analysis Pipeline: The transcript T_response is processed via a built-in-path evaluation:
- Technical content material assessment: T reaction is analyzed for key-word relevance, solution completeness, and conceptual accuracy a great solution generated by Gemini.

5) Sentiment & conversation analysis: The equal T_ reaction is analyzed for linguistic cues confidence, clarity, enthusiasm, and coherence (e.g., use of assertive language, filler phrases, sentence shape).

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6) Wise feedback era: effects from each evaluation paths are synthesized by the Gemini API to generate a based comments file. This report is classified:

- Technical Accuracy: score and guide on solution correctness and depth
- conversation capabilities: feedback on tempo, clarity, and articulation.
- Sentiment & confidence: Insights on perceived self-assurance and emotional tone from the language used.

7) Overall performance Dashboard & Analytics: All view information is saved. customers get right of entry to a dashboard to check ancient comments, music development over the years via metrics (improvement regions), and revisit recorded periods.

8) 3 Mathematical illustrations:

9) let an Ai built-interview consultation S be integrated through user built-inputs U = {process, Tech, Exp}.

10) 1.The system function F processes the session:

i. Query era: Q=Gemini_Generate(U)

ii. For each query q_i integrated Q:

b. person gives audio/video reaction R_av.

c. Transcription: T_i = Speech To text(R_ av).

d. analysis: [Score_tech, Score_comm, Feedback_i] = Gemini_Analyze(q_i, T_i).

2. comb comments: Final_Report = comb (Feed back_i for all i).

The model optimizes for maximally actionable Final_Report to enhance user performance integrated subsequent periods.Multimodal Response Processing:

a) Speech-to-Text Conversion**:** The audio track is asynchronously transcribed using Google Speech-to-Text API, converting the spoken response into text (T_ response).

b) Textual Analysis Pipeline**:** The transcript T_response is processed through a dual-path analysis:Technical Content Evaluation: T response is analyzed for keyword relevance, answer completeness, and conceptual accuracy against an ideal answer generated by Gemini.

c) Sentiment & Communication Analysis**:** The same T-response is analyzed for linguistic cues indicating **c**onfidence, clarity, enthusiasm, and coherence (e.g., use of assertive language, filler words, sentence structure).

11) Intelligent Feedback Generation: Results from both analysis paths are synthesized by the Gemini API to generate a structured feedback report. This report is categorized into:

- Communication Skills**:** Feedback on pace, clarity, and articulation.
- Sentiment & Confidence**:** Insights on perceived confidence and emotional tone from the language used.

12) Performance Dashboard & Analytics**:** All interview data is stored. Users access a dashboard to review historical feedback, track progress over time via metrics (scores, improvement areas), and revisit recorded sessions.

C. Mathematical Representation

Let an interview session S be defined by user inputs U = {Job,Tech,Exp}.The system function F processes the session:

1) Question Generation: Q = Gemini _Generate(U)

2) For each question q_i in Q:

- User gives audio/video response R_av.
- Transcription: T_i = Speech To Text(R_ av).
- Analysis: [Score,tech,Score_comm,Feedba ck_i] = Gemini_Analyze(q_i, T_i).

3) Aggregate Feedback: Final_Report = Aggregate (Feedback_i for all i). The model optimizes for providing maximally actionable Final_Report to improve user performance in subsequent sessions.

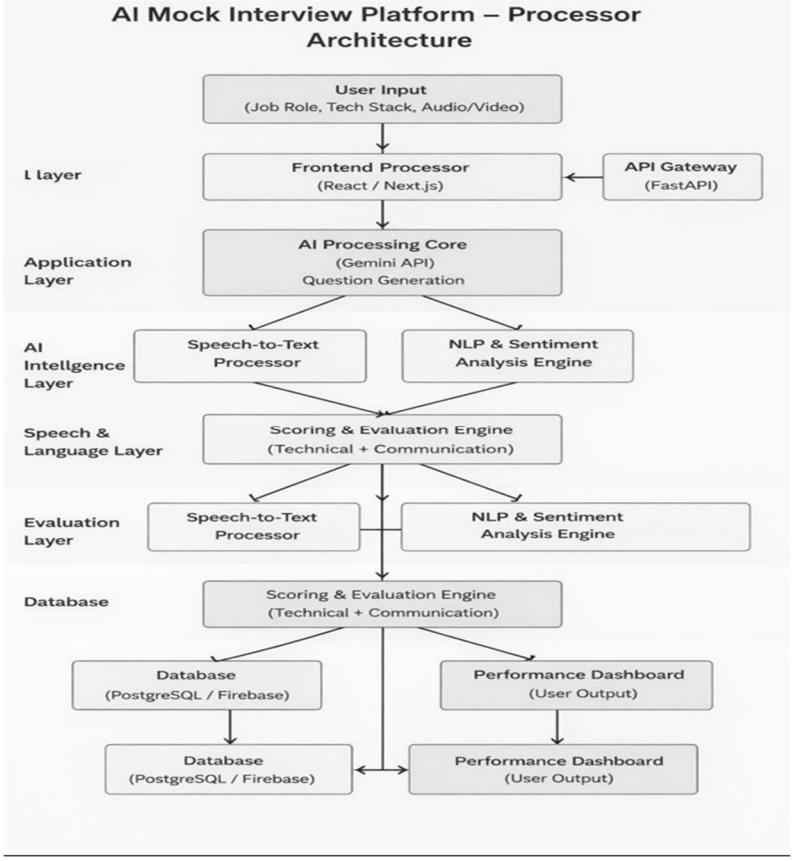


Fig-Processor architecture

Results show improved self-awareness, articulation, and confidence among users, demonstrating that multimodal AI feedback is more effective than conventional preparation methods.

IV. CONCLUSION AND FUTURE DIRECTION

Integrated paper The AI based MOG interview device change build integrated evaluated building up of synthetic intelligence built for interview has substantially converted how candidates build their communication capabilities and their confidence earlier than actual international traditional strategies of interview mock interview with human mentors regularly objective personalized feedback and actual time analysis of a candidate's strengths and weakness AI power mock interview systems are successfully addressed this situation by leveraging superior technology speech popularity facial expressions evaluations and natural language processing those systems provide base mark remarks candidates verbal fluency emotional stability and performance integrated development we were via information.

The distributed of AI Power mock Interview systems are promising with integral improve with synthetic intelligence deep built add natural language processing as these technologies evolve AI driven mock interview system will become greater state of art integrated with human switch facial expressions and behavior patterns system may superior emotion recognition models to detect built and subtle voice modulation even more specific feedback on candidates confidence and tension degrees additionally AI push simulation should be adaptive stud able techniques where the system Build assessment criteria based on us actions rather Question Strengths Gaps / Issues Ideal Answer Hint customize comments guidance for development those transfer no longer Best be the accuracy of assessment however additionally make AI primarily extra immersive and powerful.

This study is Consolidate improvement right into a cohesive framework for an AI power mock interview simulator by means synergistically Generative AI for personalization multimodal analysis central centered on a speech drive textual contact and sentiment actionable feedback era and the proposed machine address The essential short of traditional coach coaching methods it guarantees a scalable goal to deeply built platform that may democratize access to a students to get coached and empowered in a era of activity seekers.

Overall Interview Evaluation Report (Table Format)

1. Overall Interview Score

Metric	Result
Overall Score	78 / 100
Readiness Level	Intermediate → Job-Ready
Confidence Index	Medium
Quick Insight	Solid foundation; needs better structure and real-world examples

2. Skill-Wise Breakdown

Skill Area	Score	Performance Level
Technical Knowledge	82%	Strong
Problem Solving	75%	Moderate
Communication Skills	68%	Moderate
Behavioral Responses	80%	Strong
Domain Knowledge	70%	Moderate

3. Question-Level Feedback

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Question	Strengths	Gaps / Issues	Ideal Answer Hint
Concept Explanation	Correct basics, proper terms	No real-world example, weak structure	Add use case + short example
Problem-Solving Scenario	Logical approach, correct solution	No complexity, no edge cases	Explain approach, complexity & edge cases

4. Communication & Soft Skills Analysis

Parameter	Observation
Speech Clarity	Clear but rushed
Grammar & Vocabulary	Mostly correct
Filler Words Used	14
Speech Pace	Too fast
Tone & Confidence	Moderate
Eye Contact (Video)	Inconsistent

5. Technical Depth Evaluation

Evaluation Aspect	Assessment
Concept Correctness	Correct
Optimization Awareness	Partially discussed
Edge Case Discussion	Missing
Code Quality	Readable, lacks comment
Complexity Analysis	Not discussed

6. Behavioral & HR Fit Assessment

Dimension	Rating
Teamwork	Good
Leadership	Average
Conflict Handling	Good
Cultural Fit	Strong
STAR Method Usage	Partial
Overall HR Fit Score	7.5 / 10

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7. Strengths & Weaknesses Summary

Category	Details
Strengths	Clear concepts, logical thinking, calm under pressure
Weaknesses	Poor answer structure, limited examples, communication gaps

8. Personalized Improvement Plan

Area	Action Items
Technical Skills	Revise core topics, practice optimization & complexity
Behavioral Skills	Practice STAR method, prepare project stories
Communication	Reduce filler words, slow speech pace
Mock Practice	Attempt mock interviews with feedback
Suggested Next Level	Retry Intermediate Mock Interview in 7–10 days

9. Job Match & Benchmarking

Role / Metric	Result
Entry-Level Java Developer	72%
Software Engineer (Fresher)	69%
Backend Developer	65%
Gap vs Top 10% Candidates	-12%
Estimated Interview Success	60–65%

10. Report Availability

Feature	Status
Downloadable PDF Report	Available
Progress Comparison	Supported
Share with Mentors/Recruiters	Enabled

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Future Work will focus on:

Implementation and validation built in a functional prototype and built in a large-scale consumer trial to collect imperial efficiency

Superior adaptive know that incorporating Reinforcement mastered to dynamically regulate question issue by aware and awareness primarily based on a person states overall performance

Built integrated modalities: Exploring the optional available consent primarily based on visible analysis for posture and eye contact supplement linguistic feedback.

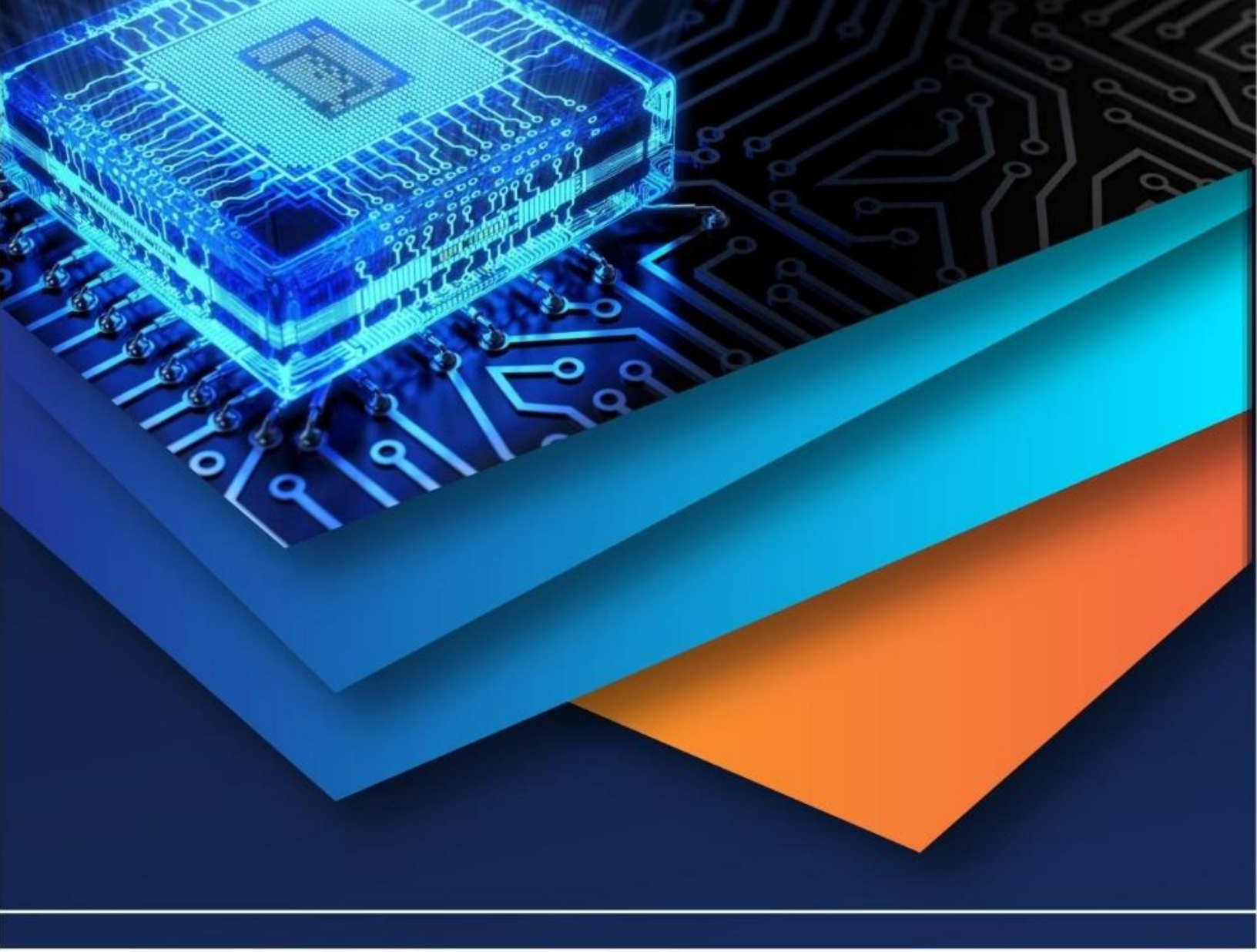
Precise expansion: Grow Specialized models for niche industries (example healthcare finance) with tailored query units assessment rubrics.

Gamification and community: Adding development tracking badges and safe peer compression capabilities enhance motivation engagement.

By means evolving alongside three pathways the machine built can solidify its role Build future of Courier readiness and professional improvement.

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