ISSN: 2582 - 6379
IJISEA Publications
International Journal for Interdisciplinary Sciences and Engineering Applications
IJISEA - An International Peer- Reviewed Journal
2026, Volume 7 Issue 2
www.ijisea.org

Smart Coding Interview Preparation Portal with Live Code Execution

[1]B Nandana Kumar, [2]T. Lakshmi Prasanna, [3]M. Madhu Babu, [4]Y. Jhansi, [5]Y. Jishnu Phani Varma
[1]HOD Dept of CSE, D.N.R. COLLEGE OF ENGINEERING & TECHNOLOGY, Balusumudi, Bhimavaram - 534 202 W. G. Dist., A.P., India.,
[2,3,4,5]Student, D.N.R. COLLEGE OF ENGINEERING & TECHNOLOGY, Balusumudi, Bhimavaram - 534 202 W. G. Dist., A.P., India.,
DOI:- 10.5281/zenodo.19690020

ABSTARCT

Our project, Smart Coding Interview Preparation Portal with Live Code Execution, is developed to address the limitations of traditional interview preparation platforms. Existing systems mainly provide static coding questions without integrated real-time code execution, forcing users to switch to external IDEs for compilation and testing, which reduces practice efficiency. They also follow a one- size-fits-all approach without personalized learning paths, support only limited programming languages, and provide minimal progress tracking or performance analytics. These limitations result in inefficient preparation, lack of adaptability, and poor simulation of real interview environments. To overcome these issues, our proposed system integrates real-time code execution using JDoodle API, allowing users to write and run code instantly within the platform. It employs an AI-driven personalized learning engine that adapts question difficulty based on user performance, supports 20+ programming languages to ensure flexibility, and includes an intelligent analytics dashboard to track progress, accuracy, and interview readiness. The system follows a modular Spring Boot architecture with JWT-based secure authentication and MySQL database management, ensuring scalability, security, and high performance. Overall, our portal improves preparation efficiency, personalization, and user engagement compared to existing platforms.

Key words: Smart Coding Interview Portal, Real-Time Code Execution, JDoodle API, Artificial Intelligence, Personalized Learning, Adaptive Questioning, Multi-Language Support, Performance Analytics, Spring Boot Architecture, JWT Authentication, MySQL, Secure Authentication, Coding Practice Platform

I. INTRODUCTION

1.1 Brief Information

In the modern digital era, the recruitment process for technical roles has evolved significantly, placing strong emphasis on problem-solving ability, logical reasoning, and hands on programming skills. Technical interviews are no longer limited to theoretical questioning; instead, they extensively evaluate a candidate's capability to design algorithms, write optimized code, debug errors, and think critically under time constraints. As a result, interview preparation has become a structured and continuous process rather than a short-term activity. With the rapid growth of the software industry and increasing competition among job aspirants, there is a growing demand for intelligent, efficient, and personalized interview preparation platforms. Traditional preparation methods such as classroom coaching, printed materials, and static online resources often fail to provide practical exposure and personalized learning experiences. These approaches typically lack real-time feedback, adaptive learning paths, and integrated coding environments, which are essential for mastering technical interviews. To overcome these challenges, technology-driven learning

ISSN: 2582 - 6379
IJISEA Publications
International Journal for Interdisciplinary Sciences and Engineering Applications
IJISEA - An International Peer- Reviewed Journal
2026, Volume 7 Issue 2
www.ijisea.org

solutions powered by Artificial Intelligence (AI) and cloud-based services have emerged as a promising alternative. AI enables systems to analyze user behaviour, track performance, and provide personalized recommendations, while cloudbased APIs allow seamless integration of advanced features such as real-time code execution. These innovations have transformed conventional learning systems into smart, interactive, and user-centric platforms.

1.2 Purpose

The purpose of this project is to develop an AI-powered interview preparation portal that provides a structured and efficient approach to learning for students and job seekers. The system is designed to integrate personalized question recommendations, real-time coding practice, and instant feedback within a single platform. By leveraging AI and code execution technologies, it aims to enhance users' problem-solving abilities, improve coding skills, and make the overall interview preparation process more effective, accessible, and user-friendly.

1.3motivation

The motivation behind this project stems from the common challenges faced by candidates during interview preparation, such as lack of proper guidance, unstructured resources, and limited access to real-time practice environments. Many learners struggle to identify their weak areas and often depend on multiple platforms, which can be inefficient and confusing. This project is motivated by the need to create a centralized, intelligent system that offers personalized learning, continuous feedback, and a seamless preparation experience, helping users build confidence and perform better in interviews.

1.4 Problem Statement

The current interview preparation process poses several challenges for candidates due to lack of structured learning, limited practical exposure, and absence of personalized guidance. Traditional preparation methods are often time-consuming, fragmented, and inefficient, making it difficult for candidates to effectively improve their skills and track their progress.

The major problems include:

- Lack of a centralized platform for both theoretical and practical preparation
- Limited opportunities for real-time coding practice and execution
- Absence of personalized feedback and performance analysis
- Difficulty in identifying strengths and weaknesses
- Time-consuming and unorganized preparation methods

This project aims to address these challenges by developing a Smart Interview Preparation Portal with Integrated AI and Live Code Execution. The application provides structured learning resources, real-time coding practice, and AI-based recommendations to guide users effectively. It ensures efficient, personalized, and interactive preparation, thereby improving coding skills, boosting confidence, and enhancing overall interview readiness in a single user-friendly platform.

II. LITERATURE SURVEY

2.1 Introduction

The rapid advancement of Artificial Intelligence (AI), conversational agents, and intelligent software systems has significantly transformed the landscape of digital learning, human–computer interaction, and software development practices. Interview preparation platforms, in particular, have benefited from these advancements by integrating AI-driven personalization, real-time feedback mechanisms, and automated code

ISSN: 2582 - 6379
IJISEA Publications
International Journal for Interdisciplinary Sciences and Engineering Applications
IJISEA - An International Peer- Reviewed Journal
2026, Volume 7 Issue 2
www.ijisea.org

execution environments. This chapter presents a comprehensive review of existing literature related to AI-based systems, chatbots, human-like interaction, code generation tools, integrated development environments, and intelligent evaluation mechanisms that form the foundation of the proposed **Smart Interview Preparation Portal with Integrated AI and Live Code Execution**.

The reviewed studies provide insights into the evolution of AI interaction quality, empathic systems, conversational agents in educational environments, and modern AI-assisted coding tools. The literature also highlights the challenges, limitations, and opportunities associated with integrating AI technologies into learning and software development platforms**.**

Human-Like Interaction and Acceptance of AI Systems

One of the key aspects of AI-powered platforms is user acceptance, which largely depends on interaction quality and perceived human-like behavior. Pelau et al. [1] investigated the role of empathy, interaction quality, and psychological anthropomorphic characteristics in enhancing user acceptance of AI systems in service industries. Their findings emphasize that AI systems perceived as human-like are more likely to be trusted and adopted by users. This research is particularly relevant to interview preparation platforms, where sustained user engagement is critical. By incorporating interactive and responsive AI features, systems can simulate mentor-like behavior, thereby improving learning motivation and continuity. Similarly, Adiwardana et al. [5] explored the development of human-like open-domain chatbots capable of generating natural and contextually appropriate responses. Their work demonstrates how large-scale neural language models can enhance conversational flow, which is essential for AI-driven learning assistants.

Chatbots in Educational and Campus Environments

The application of chatbots in educational environments has gained significant attention. Dibitonto et al. [2] designed “LiSA,” a virtual assistant deployed in a university campus to assist students with academic and administrative tasks. The study highlights how conversational agents can improve accessibility to information and enhance the overall student experience. Falala-Séchet et al. [4] introduced “Owlie,” a chatbot designed to provide emotional support to users facing psychological challenges. Although focused on mental health, the study demonstrates the importance of empathy and adaptive responses in AI systems. These principles are transferable to interview preparation platforms, where candidates often experience stress and anxiety. Arteaga et al. [3] proposed an information system architecture for recommending tourist sites using a chatbot interface. Their work emphasizes modular system design and recommendation logic, which aligns with the architectural requirements of scalable interview preparation systems.

Evolution of Conversational AI and Generative Models

Recent advancements in generative AI have significantly influenced how users interact with intelligent systems. Taecharungroj [7] analyzed early public reactions to ChatGPT, identifying its strengths in natural language understanding, contextual awareness, and content generation. The study highlights the growing reliance on AI chatbots for problem-solving and learning tasks. Mollick [9] described ChatGPT as a tipping point in AI evolution, emphasizing its potential to disrupt education, software development, and knowledge work. Loh [8] further discussed the opportunities and challenges of generative AI in professional domains, including ethical considerations and system reliability. Schaaff et al. [6] evaluated ChatGPT’s empathic abilities, revealing its potential to simulate supportive and context-aware interactions. These findings support the feasibility of integrating AIbased assistance in interview preparation portals to guide users through learning paths.

ISSN: 2582 - 6379
IJISEA Publications
International Journal for Interdisciplinary Sciences and Engineering Applications
IJISEA - An International Peer- Reviewed Journal
2026, Volume 7 Issue 2
www.ijisea.org

AI-Assisted Coding and Code Generation Tools

AI-assisted code generation has emerged as a transformative technology in software development. Chen et al. [16] evaluated large language models trained on code, demonstrating their ability to generate syntactically correct and contextually relevant programs. This study laid the foundation for modern AI coding assistants. Liu et al. [15] conducted a rigorous evaluation of ChatGPT-generated code and identified issues related to correctness, edge cases, and logical completeness. Their findings highlight the importance of validation and execution-based feedback mechanisms when using AIgenerated code. Yetistiren et al. [17] compared the code quality of AI-assisted tools such as GitHub Copilot, Amazon CodeWhisperer, and ChatGPT. The study concluded that while AI tools improve productivity, they require careful integration with testing and validation systems.

Zhang et al. [14] examined developer practices and challenges when using GitHub Copilot. Their results indicate that developers benefit from AI suggestions but still rely on human judgment for correctness and optimization.

Integrated Development Environments and Real-Time Feedback

Modern Integrated Development Environments (IDEs) play a critical role in enhancing developer productivity. Alizadehsani et al. [10] discussed the evolution of IDEs and their integration with intelligent tools. The study highlights the importance of real-time feedback, debugging support, and automation in learning and development environments. Real-time code execution APIs, such as JDoodle, extend these IDE capabilities to web-based platforms. Although not explicitly covered in the reviewed literature, the principles of execution-based evaluation and instant feedback align with findings from software engineering studies emphasizing hands-on learning.

Software Effort Estimation and Evaluation Challenges

Several studies have focused on software effort estimation and evaluation methodologies. Kaur et al. [11] presented a comprehensive study on the evolution of software development cost estimation techniques using automated text mining. Their findings highlight the complexity of evaluating software systems and the need for automated approaches. Bluemke and Malanowska [12] conducted a systematic literature review on software testing effort estimation, emphasizing the challenges of scalability and accuracy. Butt et al. [13] proposed cost estimation methods for agile software development, reinforcing the importance of modular and adaptable system architectures. These studies collectively underline the importance of automated evaluation mechanisms, which directly support the need for real-time code execution and automated feedback in interview preparation platforms.

Large Language Models and Open-Source AI Frameworks

The development of large language models has accelerated AI research and applications. Wang and Komatsuzaki [18] introduced GPT-J-6B, an open-source autoregressive language model that demonstrated competitive performance with proprietary models. OpenAI's GPT-4 Technical Report [20] provided insights into model capabilities, safety considerations, and evaluation methodologies. Luo et al. [22] proposed WizardCoder, a code focused large language model enhanced through evolutionary instruction tuning, significantly improving code generation accuracy. Phind [21] presented a code-optimized language model designed for developer assistance. These studies collectively demonstrate the growing maturity of AI models capable of supporting complex programming tasks.

Research Gaps Identified from Literature

Based on the reviewed literature, several research gaps are identified:

ISSN: 2582 - 6379
IJISEA Publications
International Journal for Interdisciplinary Sciences and Engineering Applications
IJISEA - An International Peer- Reviewed Journal
2026, Volume 7 Issue 2
www.ijisea.org

- Limited integration of AI personalization with real-time code execution
- Lack of unified platforms combining learning, practice, and evaluation
- Insufficient focus on interview-specific preparation systems
- Need for scalable, secure, and modular architectures
- Requirement for execution-based validation of AI-assisted coding

These gaps highlight the necessity for a comprehensive interview preparation portal that integrates AI-driven guidance with live coding environments.

Relevance of Literature to the Proposed System

The proposed Smart Interview Preparation Portal with Integrated AI and Live Code Execution builds upon existing research by:

- Applying human-like AI interaction principles [1], [5]
- Leveraging chatbot-based assistance models [2], [4]
- Incorporating generative AI insights [7], [9]
- Integrating AI-assisted coding evaluation [15], [16], [17]
- Utilizing real-time execution concepts aligned with modern IDEs [10]

By synthesizing these research contributions, the proposed system offers a novel and practical solution to modern interview preparation challenges.

This literature review examined a wide range of studies related to AI interaction, conversational agents, generative models, AI-assisted coding tools, and software evaluation methodologies. The reviewed research demonstrates the growing impact of AI on education and software development while highlighting existing limitations in current systems. The insights gained from this literature form a strong foundation for the design and implementation of the proposed interview preparation portal. By addressing identified research gaps, the project contributes to the development of intelligent, interactive, and scalable learning platforms tailored for technical interview prepation portal.

III. PROPOSED SYSTEM

The proposed system introduces a Smart Interview Preparation Portal with Integrated AI and Live Code Execution to improve the existing interview preparation process. This system reduces dependency on multiple platforms by providing a single, user-friendly solution for learning, practice, and evaluation. It enhances efficiency and builds user confidence by offering real-time coding practice and instant feedback without the need for external tools. The system utilizes Artificial Intelligence techniques, real-time code execution through the JDoodle API, and performance analysis mechanisms to create an interactive and personalized learning environment. AI-driven components analyze user behavior and recommend suitable preparation paths, while the integrated coding environment ensures practical exposure. This approach makes the preparation process more structured, adaptive, and effective, ultimately improving interview readiness and skill development

Advantages of Proposed System

- Real-time code execution
- Instant feedback
- AI-based personalized learning
- Smart question recommendation

ISSN: 2582 - 6379
IJISEA Publications
International Journal for Interdisciplinary Sciences and Engineering Applications
IJISEA - An International Peer- Reviewed Journal
2026, Volume 7 Issue 2
www.ijisea.org

3.1 SYSTEM ARCHITECTURE



Fig 1: System Architecture

3.2 Use case Diagram

A use case diagram in the Unified Modeling Language (UML) is a behavioral diagram that provides a high-level representation of the functionalities of a system by illustrating the interaction between users (actors) and the system's features (use cases). In the AI Interview Preparation System, the primary actor is the user, who interacts with various functionalities such as registration, login, practicing interview questions, executing code, and viewing performance history. The main purpose of this diagram is to clearly show which system functions are performed for the user and how different features are connected. It helps in capturing and organizing system requirements in a simple and understandable way during the analysis phase. Each use case is named appropriately to represent a specific functionality, making the system design easier to understand and implement. Overall, the use case diagram provides a clear visualization of how the user interacts with the system and how the system fulfills user requirements.

ISSN: 2582 - 6379
IJISEA Publications
International Journal for Interdisciplinary Sciences and Engineering Applications
IJISEA - An International Peer- Reviewed Journal
2026, Volume 7 Issue 2
www.ijisea.org

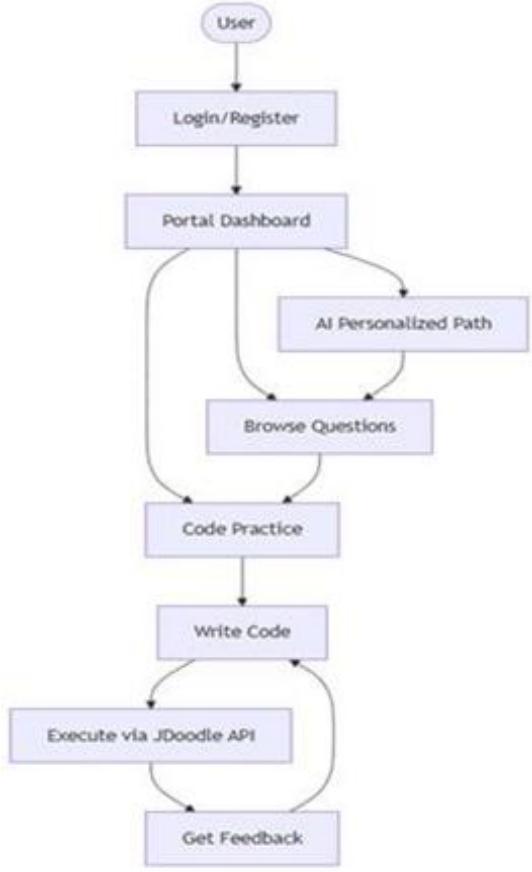


Fig 2: Use Case Diagram

3.3 Class Diagram

A class diagram in the Unified Modeling Language (UML) is a type of structural diagram that represents the static structure of a system by showing its classes, attributes, methods, and the relationships between them. In the AI Interview Preparation System, the class diagram illustrates key classes such as User, Question, and Attempt, along with their properties and functionalities. It defines how data is structured and how different classes interact with each other through relationships like association. For example, a User can attempt multiple Questions, and each Attempt stores details such as the user's answer, score, and feedback. The class diagram helps in understanding the overall system design, ensuring proper organization of data and smooth interaction between components. It serves as a blueprint for developers to implement the system effectively and maintain consistency throughout the development process.

ISSN: 2582 - 6379
IJISEA Publications
International Journal for Interdisciplinary Sciences and Engineering Applications
IJISEA - An International Peer- Reviewed Journal
2026, Volume 7 Issue 2
www.ijisea.org

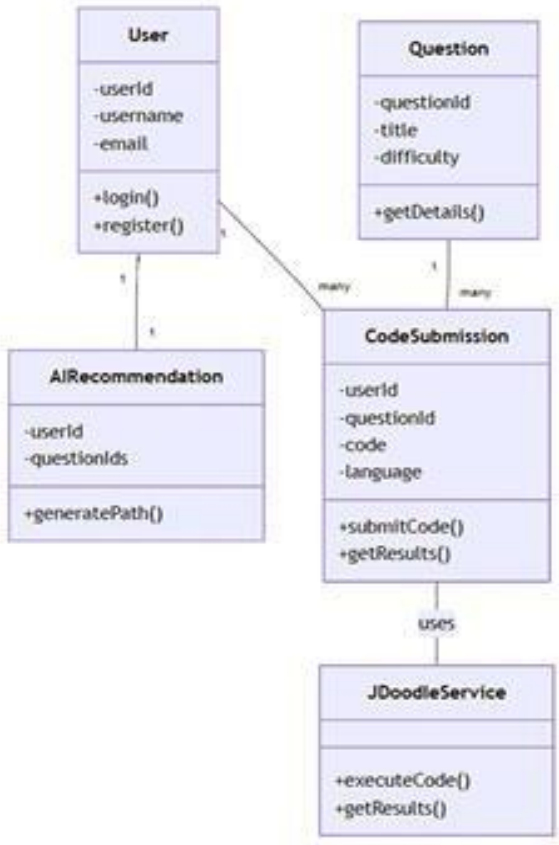


Fig 3: Class Diagram

IV. RESULTS

Home Page

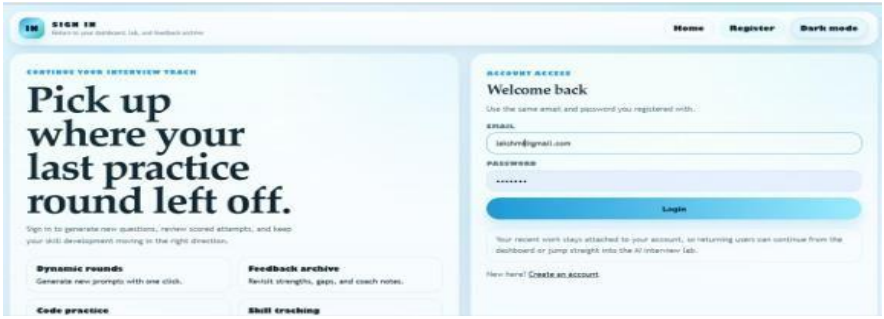


Registeration

ISSN: 2582 - 6379
IJISEA Publications
International Journal for Interdisciplinary Sciences and Engineering Applications
IJISEA - An International Peer- Reviewed Journal
2026, Volume 7 Issue 2
www.ijisea.org



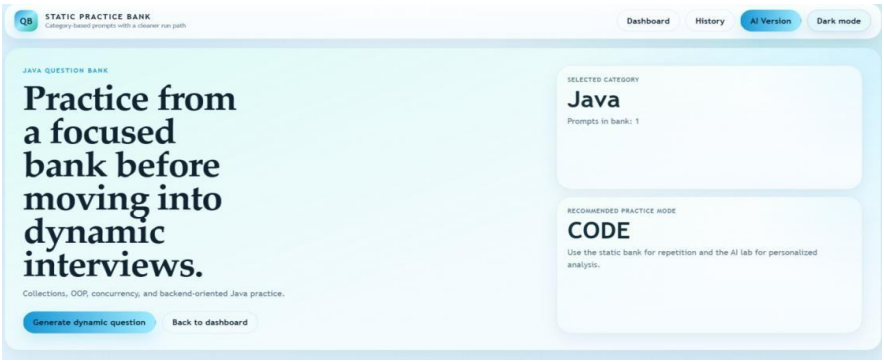
Login



User Dashboard

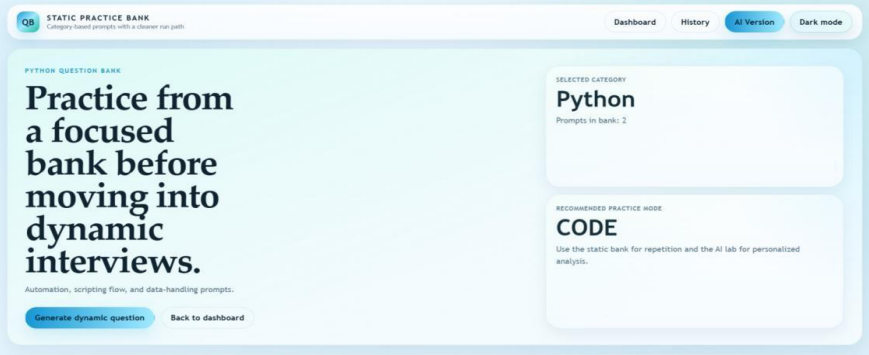


Java Programming Question Bank



ISSN: 2582 - 6379
IJISEA Publications
International Journal for Interdisciplinary Sciences and Engineering Applications
IJISEA - An International Peer- Reviewed Journal
2026, Volume 7 Issue 2
www.ijisea.org

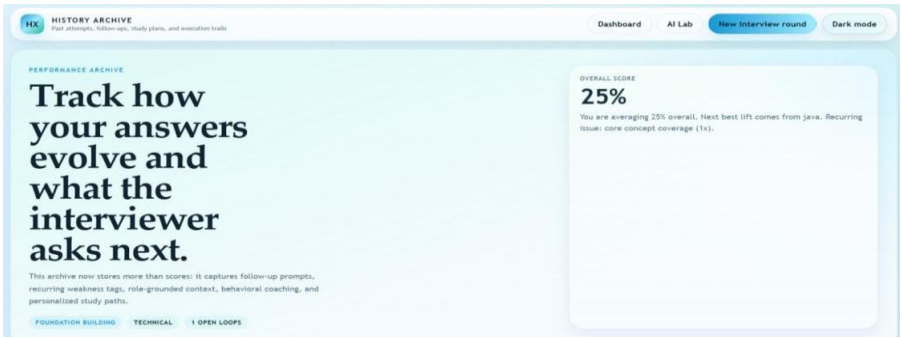
Python Programming Question Bank



C Programming Question Bank



Submission History



The primary objective of this project was to design and develop a Smart Interview Preparation Portal with Integrated AI and Live Code Execution that addresses the shortcomings of traditional interview preparation methods. With the increasing competitiveness of technical recruitment processes, candidates require platforms that not only provide theoretical knowledge but also offer practical coding experience, personalized guidance, and real-time feedback. This project successfully fulfills these requirements by integrating modern web technologies, Artificial Intelligence concepts, and third-party code execution services into a unified system.

V. FUTURE SCOPE

The feature scope of the Smart Interview Preparation Portal with Integrated AI and Live Code Execution defines the functional boundaries, system capabilities, and future extensibility of the application. This chapter outlines the features implemented in the current version, along with potential extensions that can be

incorporated in future iterations. The scope is designed to ensure clarity regarding what the system delivers and how it can evolve to meet advanced interview preparation requirements.

- Add support for more programming languages and advanced coding problems
- Implement AI-based mock interviews with real-time feedback
- Enhance personalized recommendations using advanced machine learning algorithms
- Integrate video tutorials and detailed solution explanations
- Develop a mobile application for better accessibility
- Add discussion forums for peer learning and doubt clarification
- Include performance analytics dashboards for tracking progress
- Introduce company-specific interview preparation modules
- Improve UI/UX for a more interactive user experience
- Enable real-time collaboration or coding contests

REFERENCES:

[1] Pelau, C.; Dabija, D.C.; Ene, I. What Makes an AI Device Human-like? The Role of Interaction Quality, Empathy and Perceived Psychological Anthropomorphic Characteristics in the Acceptance of Artificial Intelligence in the Service Industry. Comput. Hum. Behav. 2021, 122, 106855. [CrossRef]

[2] Dibitonto, M.; Leszczynska, K.; Tazzi, F.; Medaglia, C.M. Chatbot in a Campus Environment: Design of LiSA, a Virtual Assistant to Help Students in Their University Life. In Proceedings of the Human Computer Interaction; Interaction Technologies; Kurosu, M., Ed.; Springer: Cham, Switzerland, 2018; pp. 103–116.

[3] Arteaga, D.; Arenas, J.J.; Paz, F.; Tupia, M.; Bruzza, M. Design of Information System Architecture for the Recommendation of Tourist Sites in the City of Manta, Ecuador through a Chatbot. In Proceedings of the 2019 14th Iberian Conference on Information Systems and Technologies (CISTI), Coimbra, Portugal, 19–22 June 2019; pp. 1–6.

[4] Falala-Séchet, C.; Antoine, L.; Thiriez, I.; Bungener, C. Owlie: A Chatbot that Provides Emotional Support for Coping with Psychological Difficulties. In Proceedings of the 19th ACM International Conference on Intelligent Virtual Agents, Paris, France, 2–5 July 2019.

[5] Adiwardana, D.; Luong, M.T.; So, D.R.; Hall, J.; Fiedel, N.; Thoppilan, R.; Yang, Z.; Kulshreshtha, A.; Nemade, G.; Lu, Y.; et al.

[6] Towards a Human-like Open-Domain Chatbot. arXiv 2020, arXiv:2001.09977.

[7] Schaaff, K.; Reinig, C.; Schlippe, T. Exploring ChatGPT's Empathic Abilities. arXiv 2023, arXiv:2308.03527.

[8] Taecharungroj, V. "What Can ChatGPT Do?" Analyzing Early Reactions to the Innovative AI Chatbot on Twitter. Big Data Cogn. Comput. 2023, 7, 35. [CrossRef]

[9] Loh, E. ChatGPT and Generative AI Chatbots: Challenges and Opportunities for Science, Medicine and Medical Leaders. BMJ Lead. 2023. [CrossRef]

[10] Mollick, E. ChatGPT Is a Tipping Point for AI. Harvard Business Review, 14 December 2022.

[11] Alizadehsani, Z.; Gomez, E.G.; Ghaemi, H.; González, S.R.; Jordan, J.; Fernández, A.; PérezLancho, B. Modern Integrated Development Environment (IDEs). In Proceedings of the Sustainable Smart Cities and Territories, Doha, Qatar, 27–29 April 2021; Corchado, J.M., Trabelsi, S., Eds.; Springer: Cham, Switzerland, 2022; pp. 274–288.

[12] Kaur, A.; Jadhav, A.; Kaur, M.; Akter, F. Evolution of Software Development Effort and Cost Estimation Techniques: Five Decades Study Using Automated Text Mining Approach. Math. Probl. Eng. 2022, 2022, 5782587. [CrossRef]

ISSN: 2582 - 6379
IJISEA Publications
International Journal for Interdisciplinary Sciences and Engineering Applications
IJISEA - An International Peer- Reviewed Journal
2026, Volume 7 Issue 2
www.ijisea.org

[13] Bluemke, I.; Malanowska, A. Software Testing Effort Estimation and Related Problems: A Systematic Literature Review. ACM Comput. Surv. 2021, 54, 1–38. [CrossRef]

[14] Butt, S.A.; Misra, S.; Piñeres-Espitia, G.; Ariza-Colpas, P.; Sharma, M.M. A Cost Estimating Method for Agile Software Development. In Proceedings of the Computational Science and Its Applications—ICCSA 2021, Cagliari, Italy, 13–16 September 2021; Gervasi, O., Murgante, B., Misra, S., Garau, C., Blecˇic´, I., Taniar, D., Apduhan, B.O., Rocha, A.M.A.C., Tarantino, E., Torre, C.M., Eds.; Springer: Cham, Switzerland, 2021; pp. 231–245.

[15] Zhang, B.; Liang, P.; Zhou, X.; Ahmad, A.; Waseem, M. Practices and Challenges of Using GitHub Copilot: An Empirical Study. In Proceedings of the International Conferences on Software Engineering and Knowledge Engineering, San Francisco, CA, USA, 1–10 July 2023; KSIR Virtual Conference Center, USA, 2023. [CrossRef]