

AI Virtual Classroom Assistance Using Zoom

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ABSTRACT:

This work investigates developing an AI-powered virtual classroom assistant integrated with Zoom. The system enables users to input a topic for a class and select from four AI voice lecturers: Indian male, Indian female, UK male, and UK female. Users can schedule the class once the voice is selected, which generates a link directing them to the official Zoom website. During the 15-minute session, the AI lecturer presents the topic. Post-class, the system automatically generates a PowerPoint presentation on the chosen topic and conducts a quiz to evaluate students. Students scoring low are provided with simpler quizzes. It will generate the results also. The quiz is conducted under proctoring to ensure integrity. A chatbot feature allows students to ask questions and resolve doubts. The implementation leverages Python with Flask, Selenium, and libraries like PyAutoGUI, Pyperclip, and threading for seamless functionality and interaction.

Keywords: AI virtual classroom, Zoom integration, voice assistants, automated PowerPoint generation, AI lecturer, proctored quiz, chatbot, Python Flask, Selenium, interactive learning.

I. INTRODUCTION

AI-powered virtual classroom assistant that works with Zoom to make online learning simple and interactive. Users can enter a topic for the class and choose from four AI voice lecturers: Indian male, Indian female, UK male, and UK female. This gives users the freedom to pick a voice they are comfortable with, making learning more enjoyable. After entering the topic and selecting the voice, users can schedule the class, which generates a link to join through the official Zoom website. During the class, the AI lecturer gives a 15-minute lesson on the selected topic. Once the session is complete, the system automatically creates a PowerPoint presentation based on the topic discussed in the class. To check how much students have understood, the system conducts a quiz after the session. If a student scores low, a simpler version of the quiz is provided to help them improve. It will generate the results also. The quiz is monitored to ensure fair and honest participation. There is also a chatbot feature included, where students can ask questions and clarify any doubts they have after class.

II. LITERATURE SURVEY

Early Works

[1] **Xiaodong Wei and Hongxue Jia (2021):** "A Review of the Application of Artificial Intelligence in the Virtual Learning Environment". This paper explores how AI technologies are used in virtual learning environments to improve student engagement and automate administrative tasks. The authors review various AI applications, such as intelligent tutoring systems, personalized learning pathways, automated grading, and virtual reality-based learning. They also discuss the role of AI in providing real-time feedback and facilitating interactive learning experiences.

[2] **Palak Yadav, Tushar Tugnait, Sanjay Kumar Dubey (2023)** Voice assistants enhance the user experience in virtual learning environments by facilitating navigation and enabling hands-free operations analyzed the deployment of personalized AI assistants that incorporate both Natural Language Processing (NLP) for interaction and CNNs for identity verification. These systems significantly improve engagement and operational efficiency in remote education settings.

[3] **Eleni Dimitriadou, Andreas Lanitis (2022)** Quizzes and adaptive testing have become integral to assessing comprehension in virtual classrooms. A survey outlined how AI-driven tools generate personalized learning materials and post-class assessments. These techniques enable the creation of dynamic quizzes tailored to individual learning needs, fostering better retention and concept reinforcement.

[4] **Tarik Hachad, Abdelalim Sadiq (2021)** Hybrid models combining automation and AI were explored by These methods integrate various technologies such as facial recognition for attendance, automation scripts for workflow management, and personalized feedback systems. They address challenges of scalability and system reliability while maintaining a high degree of interactivity and personalization.

III. OBJECTIVES

- **AI-Powered Topic Presentation:** Users can input a class topic and choose from four AI voice lecturers (Indian male, Indian female, UK male, UK female) to deliver a 15-minute lecture on Zoom.
- **Automated Post-Class Content Creation:** After the class, the system automatically generates a PowerPoint presentation on the topic and creates a quiz to assess student understanding, adjusting the difficulty based on performance.
- **Proctored Quizzes for Integrity:** Quizzes are proctored to ensure academic integrity and prevent cheating, ensuring fair and accurate assessments for students.
- **Interactive Chatbot for Student Queries:** The system includes a chatbot that allows students to ask questions and resolve doubts in real time during or after the lecture.
- **Seamless Integration and Automation:** The system is integrated using Python, Flask, Selenium, and PyAutoGUI, automating tasks like Zoom session scheduling, PowerPoint creation, and overall interaction for a smooth user experience.

IV. METHODOLOGY

Users access the system via a Flask-based web interface, where they input the topic for the class and choose one of the four AI voice lecturers (Indian male, Indian female, UK male, UK female). They then schedule the class through the interface, and the system generates a Zoom meeting link using automation tools like Selenium, directing users to the official Zoom platform. During the scheduled session, the AI voice lecturer presents the topic for 15 minutes using Text-to-Speech (TTS) technology to synthesize the selected voice and deliver the lecture in real-time. After the session, the system automatically generates a PowerPoint presentation summarizing the class topic using Python libraries like python-pptx. A quiz related to the topic is conducted to assess student understanding, with proctoring mechanisms ensuring the integrity of the quiz session. Students scoring low are automatically given simpler quizzes to reinforce learning. The system evaluates quiz responses and generates results, which are displayed to students, highlighting areas for improvement. A chatbot feature is integrated to address student queries, providing answers to topic-related doubts and enhancing learning engagement.

V. PROPOSED SYSTEM

The methodology for this project involves several key stages to create an AI-powered virtual classroom assistant. First, users will enter a topic for the class and select one of four AI voice lecturers: Indian male, Indian female, UK male, or UK female. After selecting the voice, users can schedule the class, and the system will generate a link that redirects them to Zoom for the session. The AI lecturer will deliver a 15-minute lesson on the chosen topic using

natural language processing to make the content easy to understand. Once the class is complete, the system will automatically generate a PowerPoint presentation summarizing the lesson. Afterward, the system will conduct a quiz to evaluate the student's understanding of the topic. If the student scores low, a simpler version of the quiz will be generated to help reinforce learning. It will generate the results also. The quiz will be monitored through proctoring features to ensure fairness during the exam. Additionally, a chatbot will be available after the class for students to ask questions and clarify any doubts. The system will use Python Flask for backend development and Selenium to automate tasks like opening Zoom links and managing other browser actions. Libraries like PyAutoGUI, Pyperclip, and threading will ensure smooth task automation. This methodology ensures an interactive, engaging, and adaptive learning experience for students.

Applications

The AI Virtual Classroom Assistance system has several applications in online education, including:

- The system automates the delivery of lessons by selecting a topic and AI voice lecturer. It provides a fully automated class session, simulating a real classroom environment, which saves time for instructors and ensures consistent teaching quality.
- The system generates a Zoom meeting link for the scheduled class and directs users to the Zoom website. This integration ensures a seamless experience for both instructors and students in attending virtual classes.
- After each session, the system automatically creates a PowerPoint presentation summarizing the class content, helping students review key points without manual effort from instructors.
- The system creates quizzes based on the class material, adapting the difficulty for students who score poorly. Proctored quizzes ensure academic integrity by monitoring students during assessments.
- The integrated chatbot provides real-time help by answering students' questions and resolving doubts during or after the class, enhancing engagement and learning support.

VI. WORKFLOW

- **User Input:**
 - The user enters a topic for the class.
 - The system provides an option to select from four AI voice lecturers: Indian male, Indian female, UK male, and UK female.
- **Class Scheduling:**
 - After selecting the voice, the user schedules the class.
 - A link to the class is generated, directing the user to the official Zoom website.
- **Zoom Session:**
 - The user joins the class through the provided Zoom link.

- The AI lecturer delivers a 15-minute lesson on the selected topic using the chosen voice.
- **Post-Class Activities:**
 - After the class, the system automatically generates a PowerPoint presentation.
- **Quiz Generation:**
 - The system generates a quiz to assess the student's understanding of the topic.
 - If a student scores low, the system adapts by providing simpler quizzes to help them improve. It will generate the results also.
 - The quiz is conducted under proctoring to ensure fairness and prevent cheating.
- **Chatbot for Doubts:**
 - Students can ask questions or resolve any doubts through the integrated chatbot feature, available after the class.
- **Technology Stack:**
 - The system is developed using Python with frameworks like Flask for web development and Selenium for automating tasks such as opening Zoom.
 - Libraries like PyAutoGUI and Pyperclip are used for additional functionalities while threading ensures smooth operation of multiple tasks simultaneously.

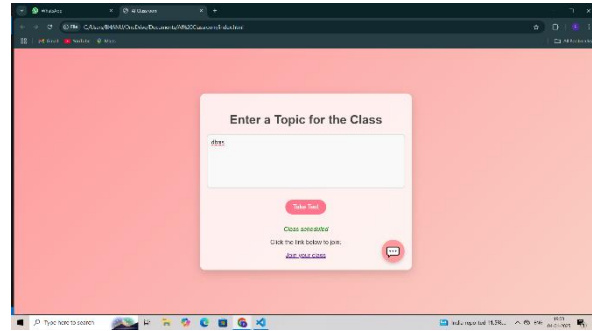


Fig 3: A "Join Your Class" link is provided.

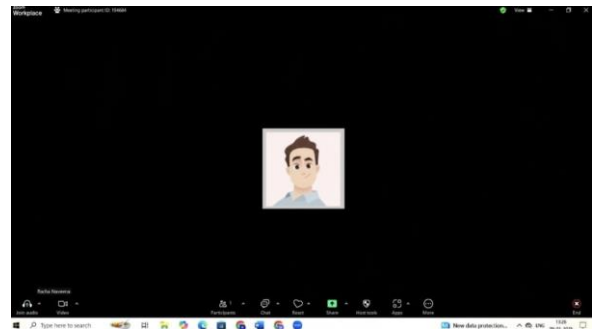


Fig 4: Clicking the link starts a Zoom-based voice-assisted class on the chosen topic

VII. RESULT

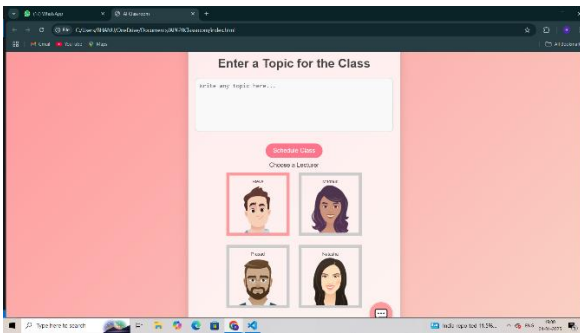


Fig 1: The website's homepage.

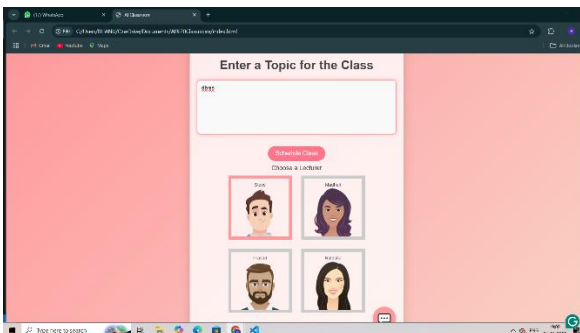


Fig 2: Users can select a topic and lecture, and then schedule a class.

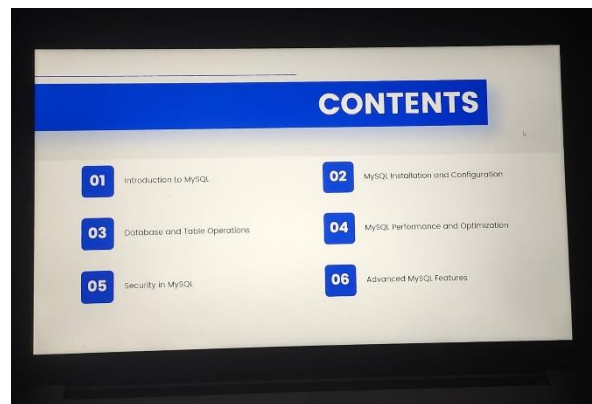


Fig 5: A PowerPoint presentation (PPT) is generated after the class.

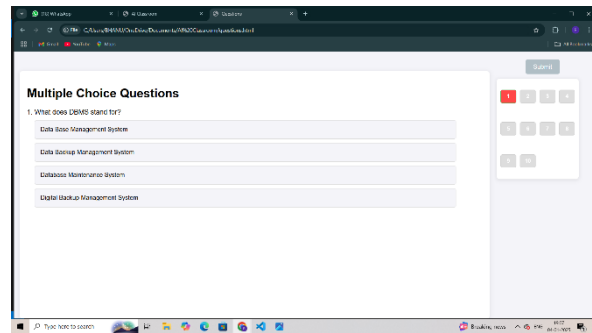


Fig 6: Students take an exam after the class on the website.

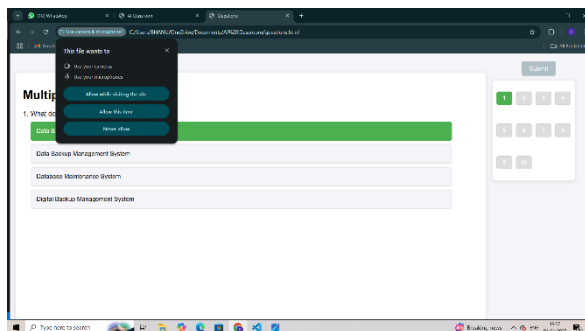


Fig 7: Students are proctored during the exam.

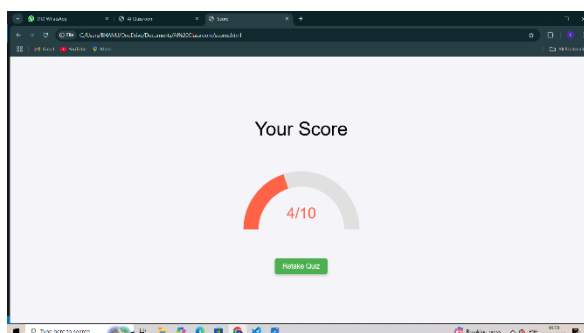


Fig 8: Exam scores are generated. Students with low scores can retake the exam.

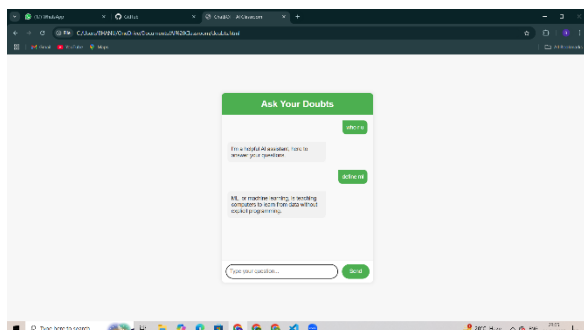


Fig 9: Students can ask questions via a chatbot on the website.

VIII. CONCLUSION

AI-powered virtual classroom assistance with Zoom to create an interactive and personalized learning experience. By allowing users to select a topic and an AI voice lecturer, schedule classes, and participate in quizzes, the system enhances the overall learning process. The automated generation of PowerPoint presentations and the adaptive quiz mechanism provide additional support for students based on their performance. It will generate the results also. The inclusion of a chatbot to resolve doubts further enhances the system's usability and accessibility. Through the use of technologies like Python, Flask, Selenium, and various

supporting libraries, the project delivers a seamless and efficient online learning experience.

IX. FUTURE ENHANCEMENT

1. **Integration with Multiple Video Conferencing Platforms** Expand the system to support other video conferencing platforms like Google Meet, Microsoft Teams, and Webex, enabling seamless integration with a broader range of tools. This will increase the system's versatility, making it accessible to diverse users across different platforms, and enhancing scalability and adaptability to various institutional needs and use cases.

2. **Multi-language Support:** To make the platform more inclusive, adding support for multiple languages can help users from different linguistic backgrounds. This would allow students to choose their preferred language for the AI lecturer and course materials.

X. REFERENCES

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