Department of Computer Science and Information Technology

CT-499 Final Year Design Project

Proposal for the Final Year Design Project

Title	Development of an Interactive Online Application for Real-Time Audience Engagement and Smart Assessment

Domain	Front End Development	Back End Development	Real-Time Data Processing and management	Cloud Deployment

1. Nature of Project [Tick all that applicable]

☒ New Project OR ☐ Extension of Existing Project	☒ Industrial Collaboration	☐ Funded
☐ Other Department Collaboration (If yes) Department Name _____	☐ Other Academic Institution Collaboration (If yes) Institution Name _____	

2. Brief Outline (*Problem Identification and Significance*)

Smart assessment tools like Mentimeter and Kahoot provide interactive elements for audience engagement and smart analysis in educational settings, corporate environments, and public events. However, they lack the capability to individually assess and analyze a person's responses in larger gatherings. These tools generally offer an overall assessment of the audience but do not provide individual level insights and they cannot be directly integrated with platforms like Google Classroom, which is commonly used in our university. This limits teachers to using basic tools like Google Forms, which, while functional, lack engagement and have many flaws.

Another concern is the price of these solutions is quite expensive although websites like Mentimeter and Kahoot provides very interactive and engaging solutions for better class and learning environment they provides very limited number of participants for free or low prices which can roughly cover only up to 50 students. The limited number of participants in the free or low priced versions of these tools can be a hindrance for larger classes or institutions with more students and not all educators or institutions with limited budgets may find it feasible to purchase the premium versions of these interactive tools.

To address these issues, we are developing a solution, a web-based platform designed to develop our own smart assessment tools that can be used for assessment of the classroom as well as for a large audience, also integrating it with the Google Classroom so the faculty member can get their results and analysis directly to their Google Classroom to share their assessment and do other

analysis directly without going to multiple websites, allowing faculty to have a progress of every student as well as for class, allowing them to make more custom assignments based on overall class understanding and engagement of students. This integration will streamline the assessment process for educators and provide valuable insights into student performance. By leveraging technology in this way, we aim to enhance the teaching and learning experience for both educators and students. This project aims to streamline the assessment process for educators by providing a user-friendly interface that seamlessly integrates with Google Classroom. This integration not only saves time for teachers but also allows for more personalized and effective instruction based on real time data analysis.

3. Objectives

Build a Smart Assessment Platform:
- Create an online tool that changes how quizzes and audience interactions are done, using real-time data and engaging features.

Effortless Google Classroom Link:
- Make sure the tool connects easily with Google Classroom, so teachers can sync and review assessments without extra steps.

Personalized Feedback:
- Design the tool to give detailed, personalized feedback to each student or participant, improving the learning experience.

Instant Data and Feedback:
- Use fast, real-time analytics to provide immediate feedback, helping even large groups get quick, useful insights.

Engaging and Interactive:
- Add fun features like live quizzes and polls, turning learning into a more interactive and exciting activity.

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4. Scope

Its scope is to provide a reliable online assessment tool that works well with Google Classroom, a popular teaching resource at our university. With its ability to overcome the shortcomings of current tools such as Mentimeter and Kahoot, which are not only costly but also unable to offer personalized analysis and seamless connection with Google Classroom, this platform will revolutionize the way evaluations are carried out in large classroom environments. Educators will benefit from this project by providing them with a user-friendly, interactive platform for conducting surveys, polls, and other engagement activities. Additionally, This project will provide real time data analytics, allowing for customized instructional strategies and personalized feedback.

Target Users

1. **Educators:** Enhance classroom engagement with interactive lectures and assessments.
2. **For corporate trainers:** Elevate corporate training sessions with interactive simulations, role playing exercises, personalized feedback, and immersive multimedia presentations.
3. **For event organizers:** Increase participation and engagement in public events or seminars.

Platforms

Web-Based Application: Accessible via web browsers on desktops, laptops, tablets, and smartphones. It ensures optimal performance on all devices.

Usage Scenarios

1. **Educational Settings:** Use in classrooms for interactive lectures, quizzes, and feedback sessions.
2. **For corporate environments:** Enhance training programs for faculty with instant feedback mechanisms, and evaluate performance through real time assessments.
3. **For public events:** Engage large audiences at conferences, seminars, and workshops with dynamic live polls, interactive Q&A sessions, and hands-on engagement activities.

Scalability

1. **Support for Large Audiences:** The system will be designed to handle small to large scale events with thousands of participants simultaneously.
2. **Real time feedback:** Guarantee instantaneous processing and feedback for all participants, ensuring seamless interactions without any delays.

5. Proposed Methodology

The proposed approach for this project encompasses a comprehensive approach to ensure the development of a high-quality, user-friendly, and scalable application. This approach is structured to cover all critical aspects of the development process, from understanding user requirements to the final deployment and launch. Each stage is designed to address specific objectives, ensuring that the platform meets the needs of educators and other users while maintaining high standards of performance, usability, and security.

Requirement Analysis

Gather user requirements from educational institutions through discussions and surveys. Analyze existing online audience engagement and assessment tools to identify gaps and opportunities for improvement.

UI/UX Design

The objective is to create a user-friendly, visually appealing interface using Figma tools, involving wireframing, prototyping, usability testing, and collaboration with front-end developers to enhance the overall user experience.

Frontend Development

The objective is to create a user-friendly, interactive interface using Next.js and Bootstrap, ensuring seamless interaction and cross browser compatibility.

Backend Development

Develop a robust server side application using Node.js, Express.js, Django, web sockets, AI features, and APIs for real time data processing and user management. The project will be set up in Google Console, and Google APIs for Google Classroom will be used to verify users when they sign in with their Google IDs.

Database Management

The project involves designing a scalable database solution using MongoDB for data storage, retrieval, management, and ensuring data security.

Cloud Deployment

The objective is to deploy an application on a cloud platform, utilizing tools like AWS or Azure, and monitor its performance for cost and efficiency optimization.

Testing and Quality Assurance

The objective is to ensure the application is bug free and performs well under various conditions using various testing tools and activities.

Application Review and Launch Plan

The objective is to review the application with stakeholders, incorporate feedback, and prepare for the final launch, resulting in a polished, functional application ready for audience use.

6. Resources Involved

Full Stack Development Tools

UI/UX: Figma: For creating wireframes, prototypes, final UI designs and including interaction design.

Frontend: Next.js, Bootstrap, HTML5, CSS3, JavaScript.

Backend: Node.js, Express.js, Django, WebSockets.

Database: MongoDB.

Cloud Services: AWS or Azure for deployment, Docker for containerization.

Real Time Data Processing Frameworks

WebSockets: For real time communication between clients and servers.

Socket.io: For handling real time event based communication.

Testing Tools

Jest: For unit testing JavaScript code.

Cypress: For automated testing of the user interface.

Postman: For API testing

Jmeter: For performance and load testing.

Additional Resources

Design Tools: Figma for UI/UX design and Wireframing.

Project Management: Jira or Trello for task management and collaboration.

Collaboration Tools: GitHub for version control and team collaboration.

7. Industrial Support (If any)

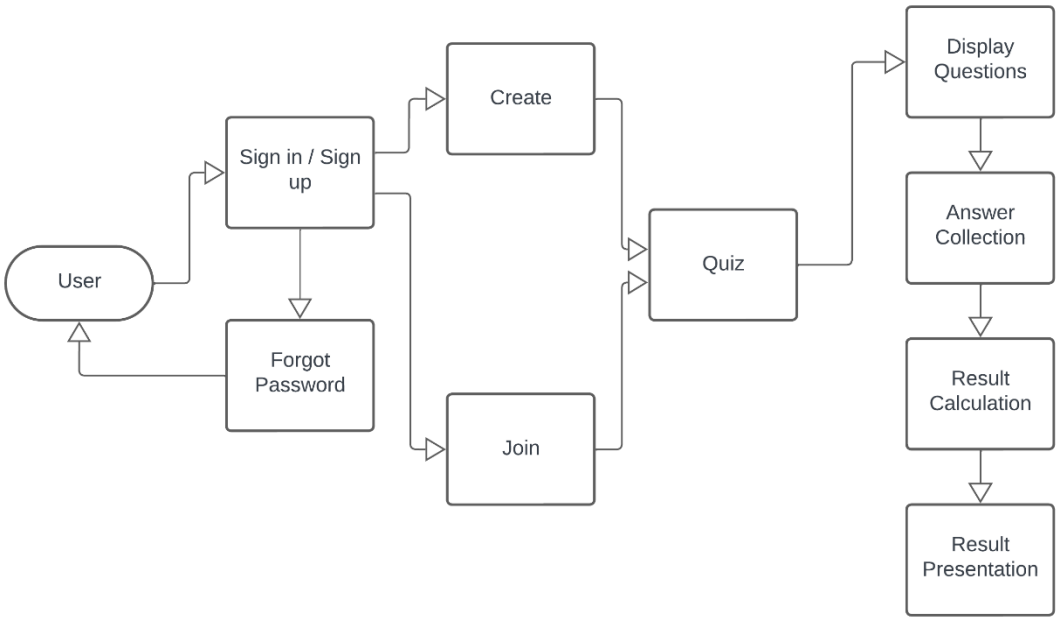
Gaditek

8. SDGs (If Applicable)

☐ No Poverty	☐ Zero Hunger
☐ Good Health and Well-Being	☒Quality Education
☐ Gender Equality	☐ Clean water and Sanitation
☐ Affordable and Clean Energy	☐ Decent Work and Economic growth
☒ Industry, Innovations and Infrastructure	☐ Reduced Inequalities
☐ Sustainable Cities and Communities	☐ Responsible Consumption and Production
☐ Climate action	☐ Life Below Water
☐ Life on Land	☐ Peace, Justice and Strong Institutions
☐ Partnerships	

9. Gantt Chart

10.Work flow Diagram



11.Details of Project Team

i. Students

No.	Name	Seat No.	Signature (s)
1	Muhammad Affan	CT-21027	
2	Syed Mudassir Hussain	CT-21022	
3	Junaid Hussain	CT-21028	
4	Pir Salman Shah	CT-21036	

ii. Supervisors / Advisors

	Name	Designation & Department	Address & Contact	Signature(s)
Supervisor	Dr. Muhammad Mubashir	Chairman BCIT Department	Department of Computer Science & Information Technology NEDUET main campus 02199261261	
Co-Supervisor (If any)	Ms.Saadia Arshad	Assistant Professor BCIT Department	Department of Computer Science & Information Technology NEDUET main saadia@cloud.neduet.edu.pk campus 9221-99261261	
Industrial Advisor (If any)				

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Project Serial No.: _____ Dated: _____	Signature Convener Steering Committee	Signature FYP Coordinator

☐ Proposal Approved	☐ Not Approved	☐ Returned for Clarification / Modification
Comments: (if any)		

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(Signature of Chairperson)

Date: _____