

## Walchand College of Engineering, Sangli

#### (An Autonomous Institute)

**Department of Computer Science and Engineering**

TY CSE Mini Project 1

Report on

Uttar. Ai: AI-based question-solving and quiz-setting portal

***Submitted by***

***Viraj Shrikant Patil (21510097)***

***Datta Naresh Gangji (21510027)***

***Jyotiraditya Bajirao Patil (21510087)***

***Under the Guidance of***

## Prof. Siddharaj Pujari

Department of Computer Science and Engineering,

Walchand College of Engineering, Sangli

**2023 - 2024**



**Walchand College of Engineering, Sangli**

(An Autonomous Institute)

**Department of Computer Science and Engineering**

### CERTIFICATE

This is to certify that the Project Report entitled, **“Uttar.Ai”** submitted by Mr. Viraj Patil, Mr. Datta Gangji and Mr. Jyotiraditya Patil to Walchand College of Engineering Sangli, India, is a record of bonafide project work of course **Mini Project I** **(6CS341)**carried out by them under our supervision and guidance and is worthy of consideration for the award of the degree of Bachelor of Technology in Computer Science & Engineering of the Institute.

|  |  |  |
| --- | --- | --- |
| Prof. Siddharaj Pujari |  | **Dr. M. A. Shah** |
| **Guide** | **External examiner** | **Head Of Department** |
| Department of Computer Science and Engineering, |  | Department of Computer Science and Engineering, |
| Walchand College of Engineering, Sangli |  | Walchand College of Engineering, Sangli |

# Acknowledgement

This Project would not have been possible without the kind support and help of many individuals and organizations. We would like to extend our sincere thanks to all of them.

We are highly indebted to Prof. Siddharaj Pujari for his guidance and constant supervision throughout the project. His valuable insights, expertise, and unwavering support were pivotal in shaping the project and overcoming challenges. Additionally, we appreciate his generosity in providing necessary information crucial for the successful completion of the project.

Our heartfelt gratitude goes to the faculty members of the Computer Science and Engineering department at WCE, Sangli, for their kind cooperation and encouragement. Their constructive feedback and support played a crucial role in navigating the complexities of the project and contributed significantly to its successful execution.

We would also like to express our appreciation to all individuals and organizations who, directly or indirectly, contributed to the realization of this project. Your collective efforts have been instrumental, and e are truly thankful for the collaborative spirit that made this endeavor possible.

Thank you to everyone who played a role in this project, as your support has been invaluable.

# Declaration

I hereby declare that work presented in this project report titled **“Uttar.AI”** submitted by me in the partial fulfillment of the requirement of the award of the degree of **Bachelor of Technology (B. Tech)** in the **Department of Computer Science & Engineering, Walchand College of Engineering, Sangli** is an authentic record of my project work carried out under the guidance of Prof. Siddharaj Pujari.

Date: 11/12/2023

Place: Sangli

**Viraj Patil  
(21510097)**

**Datta Gangji**

**(21510027)**

**Jyotiraditya Patil**

**(21510087)**

## Table of Contents

[Abstract](#_bookmark1) 6

1. [Introduction and](#_bookmark2) Related work 7
2. [Problem statement](#_bookmark3) 7
3. Objectives 7
4. [Methodology](#_bookmark4) 7
5. [Project Diagrams (UML diagrams, Flow chart etc.)](#_bookmark6) 11
6. Testing (Unit, System, Integration etc.) 13
7. Results and Conclusion 15
8. [References](#_bookmark11) 16

#### 

#### Abstract

In an era characterized by the increasing integration of artificial intelligence into our daily lives, there exists a compelling opportunity to harness this transformative technology for educational and informational purposes. The project presented in this abstract introduces a pioneering web-based platform designed to streamline and enhance the way questions are extracted from images, answered accurately, categorized effectively, and ultimately utilized to create quizzes.

The core challenges this project seeks to address is the automation of question recognition and answer generation from images, a task that holds significant potential in various domains, including education, content creation, and knowledge management. Current methods often rely on manual processes, limiting efficiency and scalability. Our project endeavors to bridge this gap by harnessing cutting-edge artificial intelligence techniques and image processing algorithms.

Key components of this project include:

1. Image Processing for Question Extraction
2. AI-Based Question Answering
3. Categorization and Tagging
4. Quiz Generation

#### 

#### Introduction and Related work

In the modern age of technology, artificial intelligence (AI) has emerged as a transformative force, permeating various aspects of our lives. One area where AI holds immense potential is in the automation and augmentation of educational content creation and access. The project presented in this synopsis represents a pioneering step towards realizing this potential by seamlessly integrating AI into the process of recognizing and answering questions from images. This introduction sets the stage by providing context, motivation, and a clear understanding of the project's objectives.

The Context of AI in Education and Content Creation:

Education and knowledge dissemination have seen a remarkable shift towards digital platforms and technology-driven solutions. Online learning, e-books, and digital course materials are becoming increasingly prevalent. However, these advancements often lack the automation necessary to efficiently handle questions and answers within these contexts. Herein lies the opportunity for AI to play a transformative role.

Artificial intelligence is not just a buzzword; it is a technology with tangible capabilities. Machine learning, deep learning, and natural language processing have empowered AI systems to comprehend and respond to human language with remarkable accuracy. These capabilities are poised to revolutionize the way we interact with educational content, make learning more accessible, and facilitate content creation.

The Motivation:

The motivation behind this project stems from the recognition of the challenges and limitations associated with current methods of handling questions extracted from images. Manual transcription and categorization of questions are labor-intensive processes prone to errors. Additionally, there is a pressing need for more interactive and engaging educational content, which can be achieved through automated quiz generation.

The project's fundamental motivation is to automate these processes, making educational content creation more efficient and accessible. By harnessing AI's capabilities, we aim to empower educators, content creators, and learners alike with a tool that can transform images into valuable learning resources.

Significance of the Project:

The significance of this project extends beyond its technical components. It addresses a critical need in the educational and content creation sectors. It promotes accessibility, efficiency, and interactivity in learning materials. Furthermore, it aligns with the global trend of harnessing AI for education, providing a solution that can potentially benefit educators, students, and content creators worldwide.

#### Problem statement

The project addresses the challenge of automating question recognition and answer generation from images, particularly in educational and informational contexts. Current methods need more efficiency and automation in processing questions extracted from images.

#### Objectives

1. To use an image processing algorithm for accurate question extraction and implement an AI-based system for generating answers to extracted questions.
2. To create a robust categorization system to classify questions into relevant tags and topics and enable the generation of quizzes based on categorized questions.
3. To design a user-friendly interface to upload images and access the system's functionalities.

#### Methodology

#### Utilizing image processing techniques to extract questions from uploaded images.

#### Implementing NLP algorithms for generating answers.

#### Categorizing question based on relevant topic tags.

#### Developing a web-based user interface for seamless interaction.

#### Project diagrams

#### Question Answer Flowchart and Quiz Generation Flowchart

#### 

#### 

#### UML Diagram

**Testing (Unit, Integration and System)**

|  |  |  |
| --- | --- | --- |
| Testcase | Execution | Result |
| User Login | Click on the login button for authentication | PASS |
| User Signup | Click on the signup button for authorization | PASS |
| Sending Question | Type the question |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

#### Results and Conclusion

#### Evaluation of Question Recognition and Answer Generation:

#### Results from the evaluation of question recognition and answer generation highlight the accuracy and efficiency of the AI-based system, comparing it with manual methods and other existing approaches.

#### Analysis of Categorization and Tagging Accuracy:

#### The categorization and tagging accuracy are assessed based on the relevance and consistency of assigned categories and tags, providing insights into the effectiveness of the organizational system.

#### Effectiveness of Quiz Generation Algorithm:

#### The effectiveness of the quiz generation algorithm is evaluated in terms of quiz diversity, relevance to content, and adaptability to different educational contexts.

#### Limitations and Future Enhancements:

#### The report acknowledges any limitations encountered during the project and proposes potential avenues for future enhancements, whether in terms of algorithm refinement, additional features, or expanded functionality.

#### 

#### The overall conclusion summarizes the project's achievements, emphasizing its contribution to addressing challenges in question extraction from images, its impact on educational content creation, and its alignment with broader trends in AI for education.

#### References

1. Mostafazadeh, N., Lee, D., & Grauman, K. (2015). Learning to ask: Generating natural language questions from images. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 5125-5134.
2. Narendra, V., & Kulkarni, S. (2013). Automatic question generation from images. In Proceedings of the International Conference on Intelligent Text Processing and Computational Linguistics (CICLing), 323-334.
3. Bajaj, P., Sharma, V., & Sharma, A. (2020). A hybrid approach for generating natural language questions from images. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), 103-111.