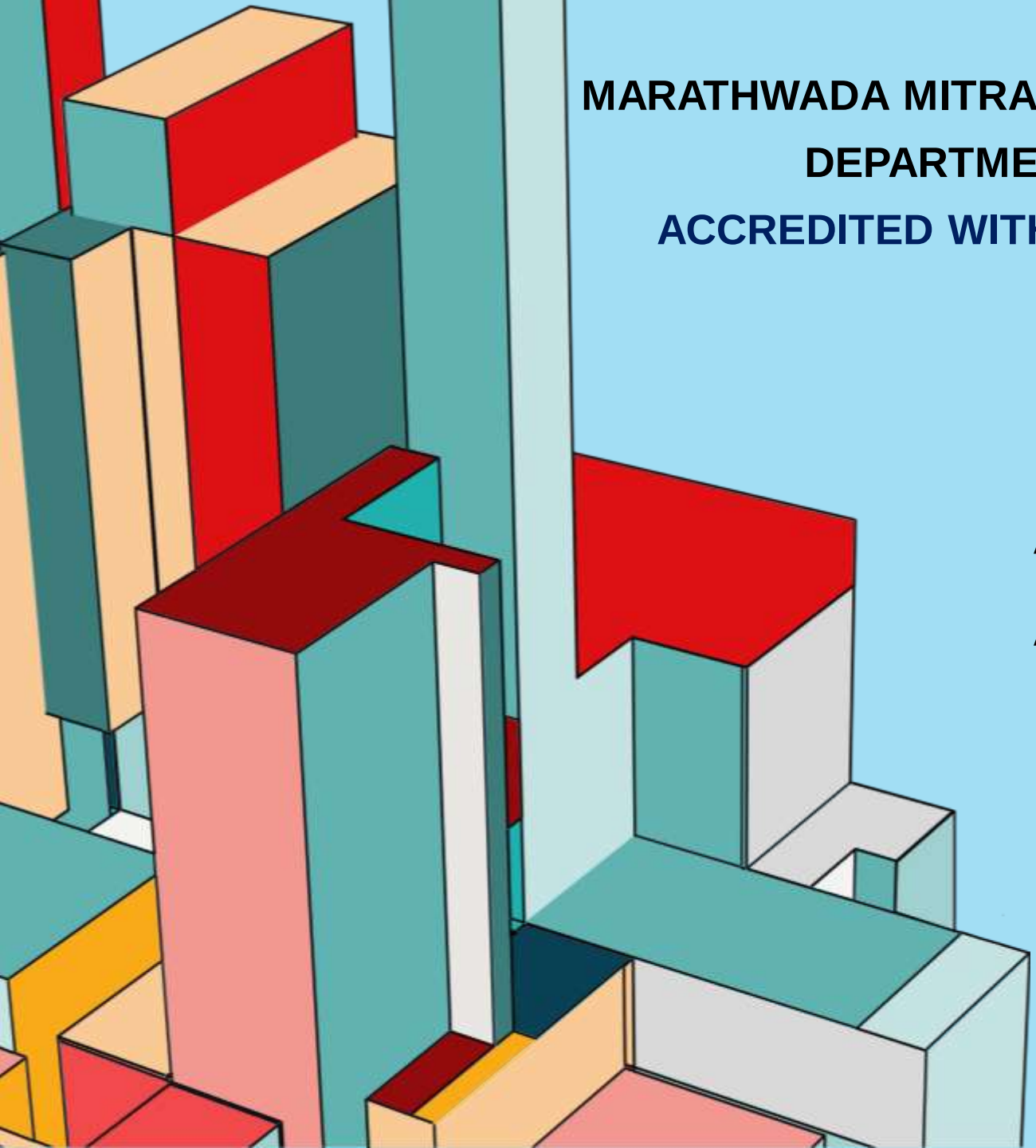


MARATHWADA MITRA MANDAL'S COLLEGE OF ENGINEERING, PUNE

DEPARTMENT OF INFORMATION TECHNOLOGY

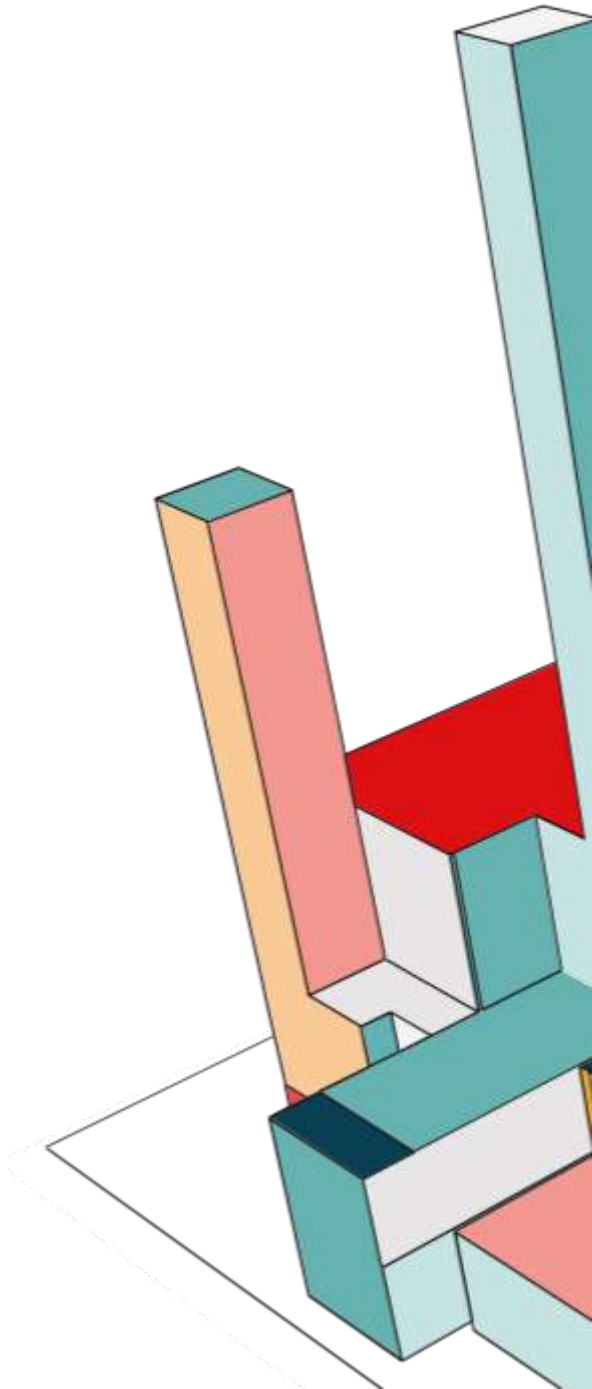
ACCREDITED WITH A++ BY NAAC AND ACCREDITED BY NBA

PROJECT REVIEW - 1

AI-POWERED EXAM ASSESSMENT

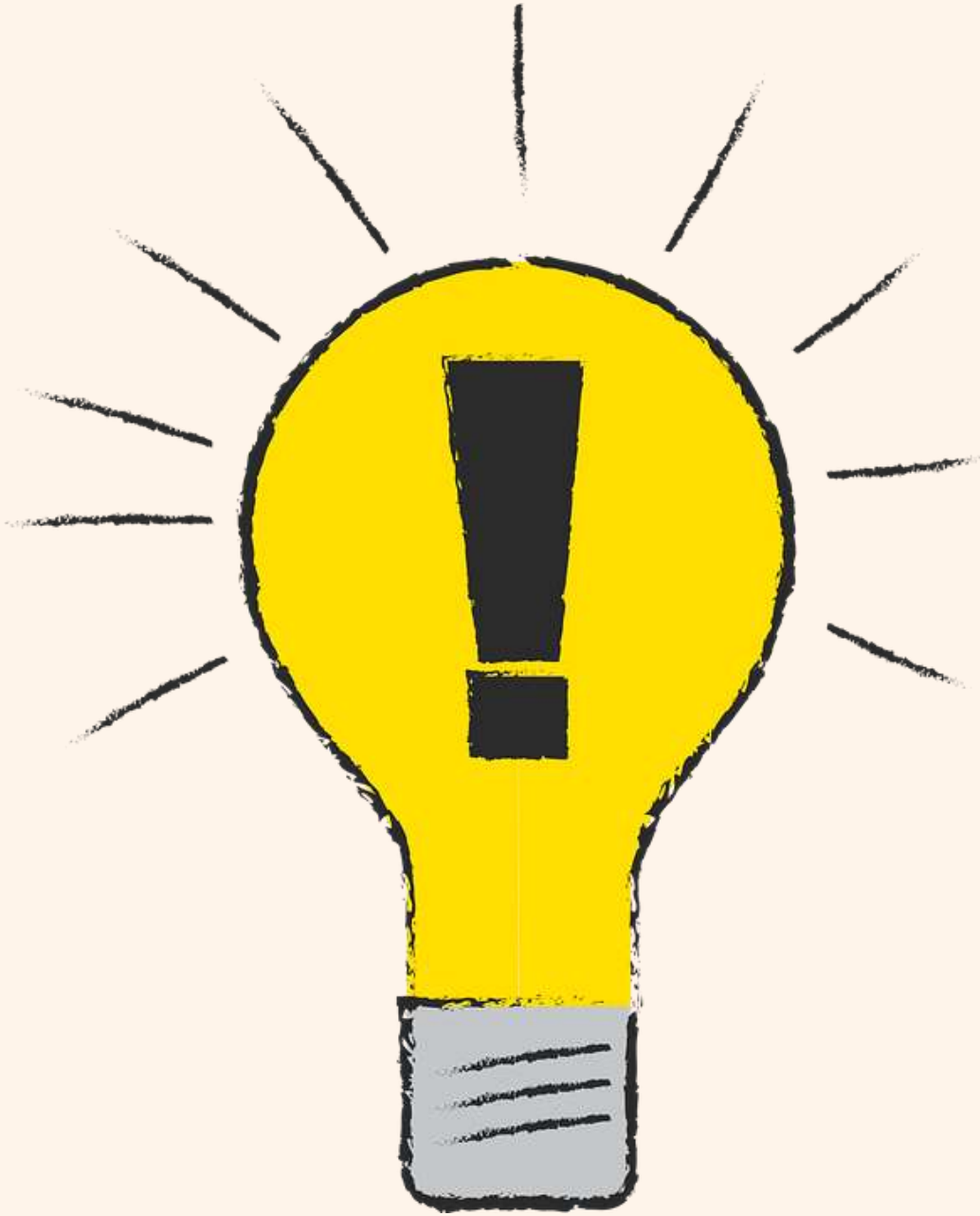
AGENDA

- Project Idea
- Introduction
- Objective
- Domain
- Background about Project
- Literature survey
- Innovation
- Project Planning
- Sponsorship



PROJECT IDEA

This project aims to design and implement an AI-powered system capable of automatically evaluating written exam responses. The scope includes developing algorithms to accurately interpret and score a variety of answer formats, from multiple-choice to essay-type questions. The system will be scalable to handle large volumes of exam papers, ensuring quick and reliable grading. Additionally, it will include features for continuous learning and improvement to adapt to diverse educational standards and requirements, making it a versatile tool for educational institutions globally.

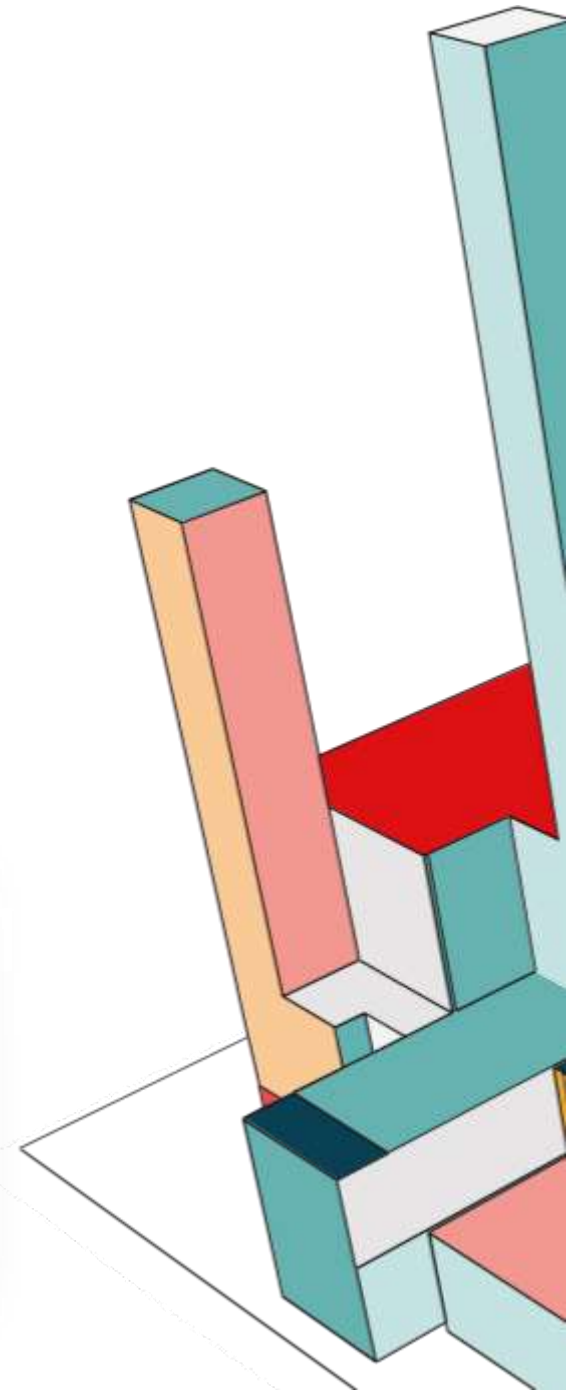


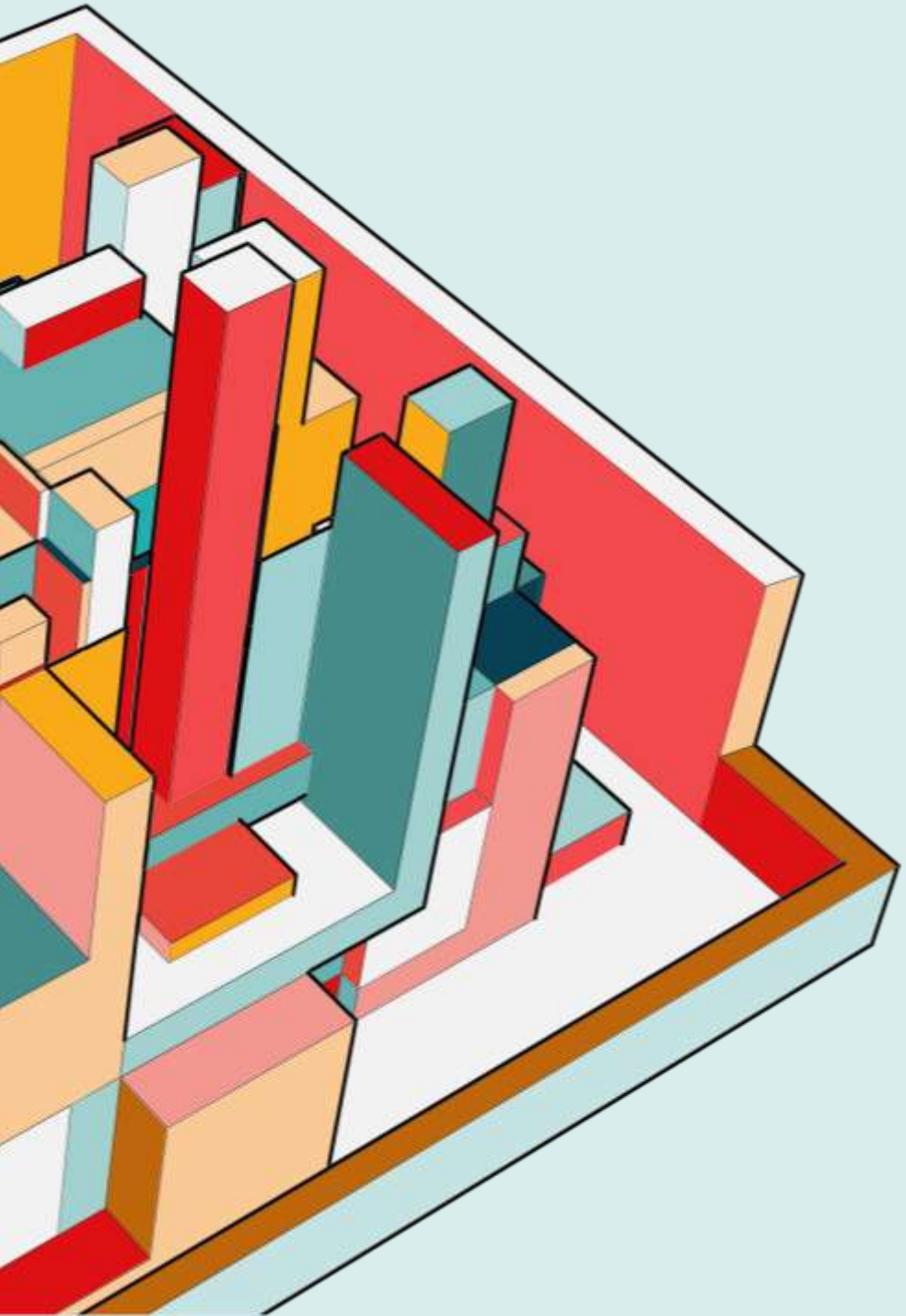
INTRODUCTION

In modern education, the evaluation of exam papers is a critical task often plagued by inefficiencies and inaccuracies inherent in manual grading systems. These traditional methods are labor-intensive and time-consuming, leading to inconsistencies and errors due to human subjectivity. This results in delayed feedback and increased operational costs. Addressing these issues is essential to ensure fair, reliable, and timely assessments of student performance. Our project, the "AI-Powered Exam Assessment," aims to transform this landscape by providing an automated, consistent, and cost-effective solution, leveraging advanced AI technologies to enhance the educational experience.

OBJECTIVES

- To Automate Grading Process
- To Evaluate Diagrams and Visual Content
- To Leverage Multimodal Capabilities of LLMs
- To Generate accurate assessment report





DOMAIN

- Gen AI
- AI/ML/DL
- Web Dev

BACKGROUND ABOUT PROJECT

- Identified the need to automate and improve the accuracy of handwritten student answer sheet evaluations.
- Manual grading processes are time-consuming, prone to bias, and inconsistent across different evaluators.
- Leveraged advancements in AI and LLMs to create a solution that offers unbiased, efficient, and consistent assessment results.
- Developed a unique methodology to optimize LLM performance, ensuring accurate and efficient processing of both text and images.
- The project aims to revolutionize the educational assessment process, benefiting teachers, students, and institutions by streamlining evaluations.

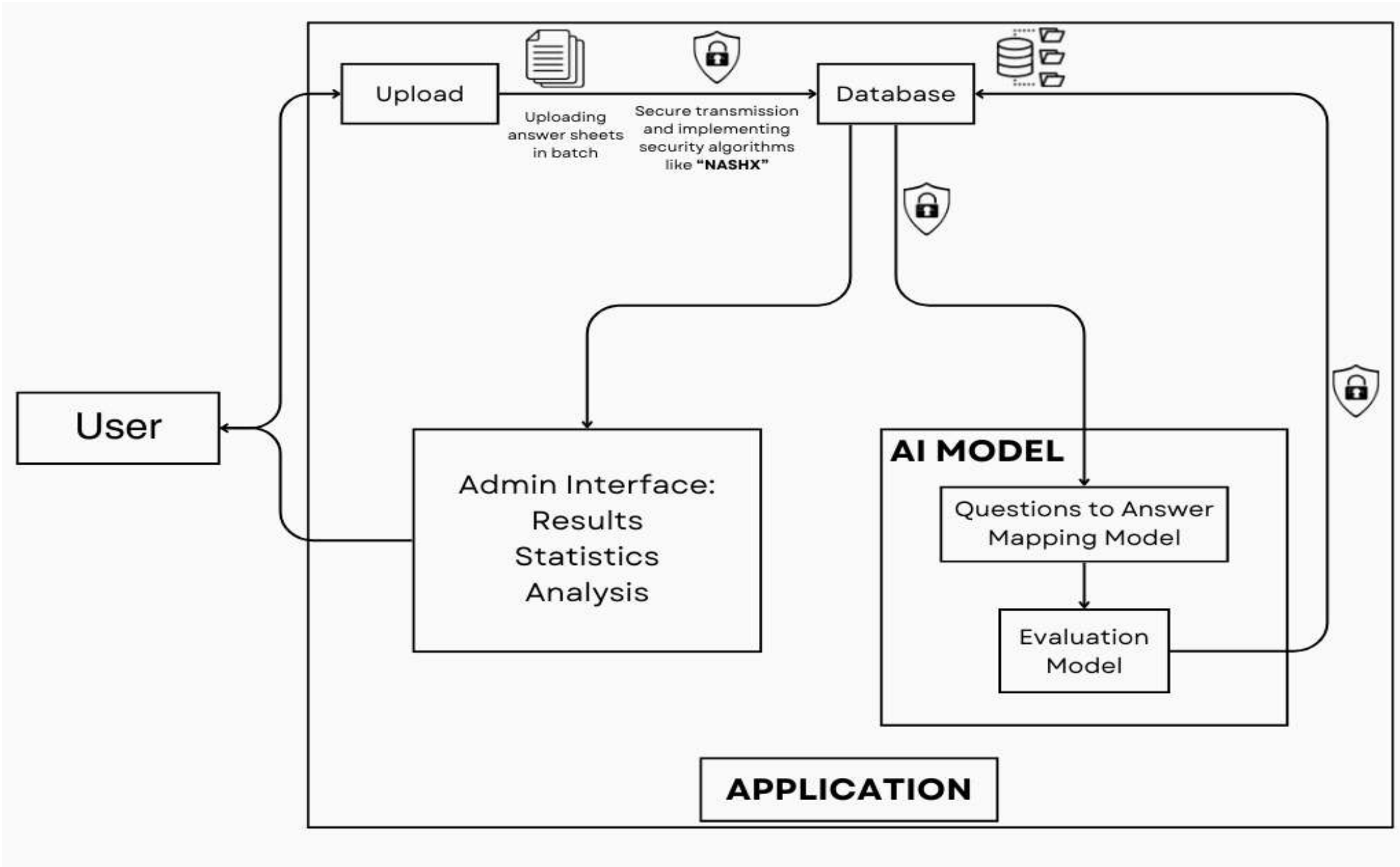
LITERATURE SURVEY

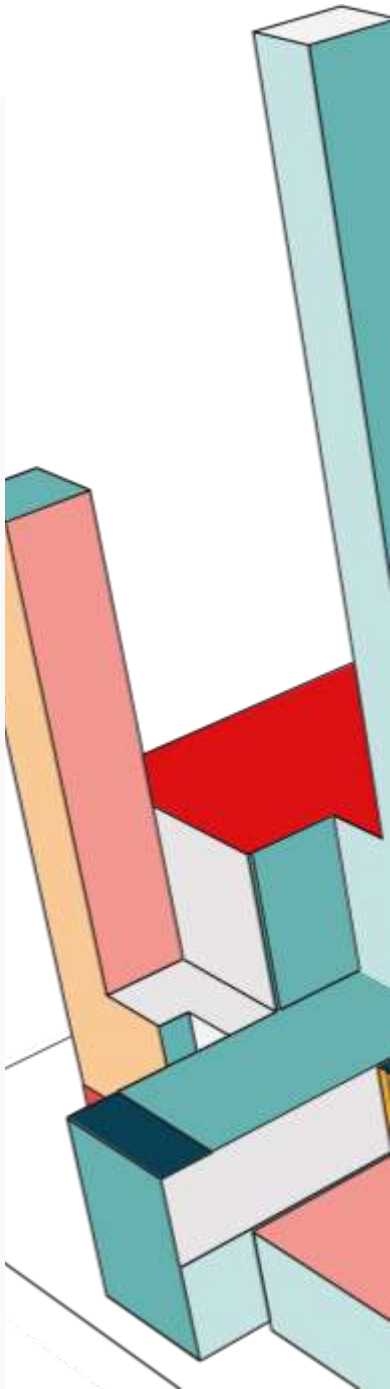
Sr. No.	Literature Name	Year	Summary
1	Evaluating students' descriptive answers using NLP and ANN (IJCRT)	Dec 2017	The paper discusses using AI to score descriptive answers, employing ML and NLP to match human-level evaluation accuracy, automating word segmentation, stop word removal, and stemming.
2	Evaluation of descriptive answer sheet using Artificial Intelligence (IJESRT)	April 2019	This study uses ANN and NLP to automatically evaluate students' descriptive answers, focusing on keyword matching, grammar checking, and comparing results with faculty evaluations
3	AI-based Test Automation: A Grey Literature Analysis	May 2021	This paper surveys over 1,200 grey literature sources on AI in test automation, identifying 136 relevant documents. Manual code development is the top problem, and automated test generation is the top solution.
4	AI Based automatic subjective evaluation system (ZKG International)	April 2024	This research proposes a system combining grammar and spelling checks with keyword matching to score answers. The system uses ML and NLP to achieve accurate, efficient evaluations

INNOVATION

We are revolutionizing traditional grading with AI-powered assessment through a patented methodology designed to optimize LLM performance. By utilizing large language models (LLMs) with multimodal capabilities, we enable both text and visual evaluation. Our automated question detection model achieves an accuracy of 83.7%, significantly enhancing the grading process. We overcome the limitations of conventional OCR by integrating advanced NLP and visual analysis techniques, ensuring precise and consistent grading across diverse handwriting styles. Our system allows for customizable evaluation parameters, enabling tailored assessments that enhance accuracy and fairness while reducing grading time and costs. Additionally, our scalable system incorporates data augmentation to improve AI training. We are committed to ethical and secure data management, ensuring both privacy and integrity throughout the grading process.

SYSTEM DIAGRAM





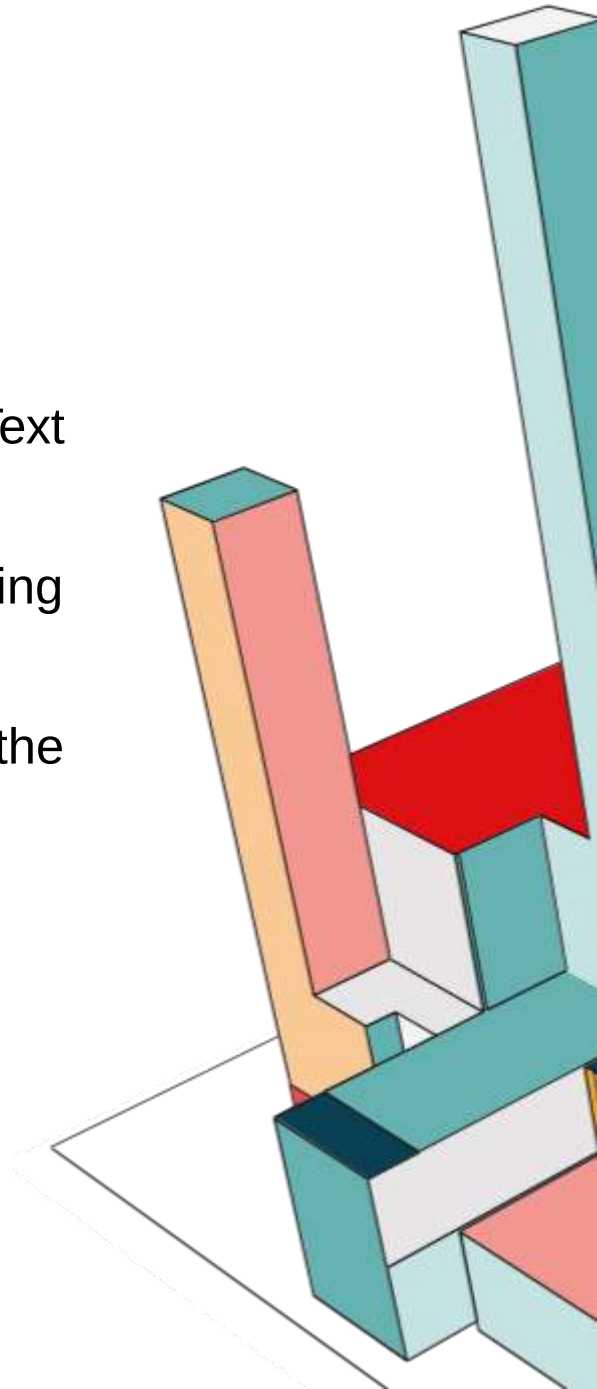
PROJECT PLANNING

Initial Research and Development

- Conducted thorough research on existing OCR tools (Google Lens, Amazon Text Extractor, Bixby Lens) to shape our system architecture.
- Iterative development to refine our LLM model, improving accuracy and reducing hallucinations.
- Developed and tested a prototype using real-world UT papers, refining the model to meet our goals.

Data Collection and Training

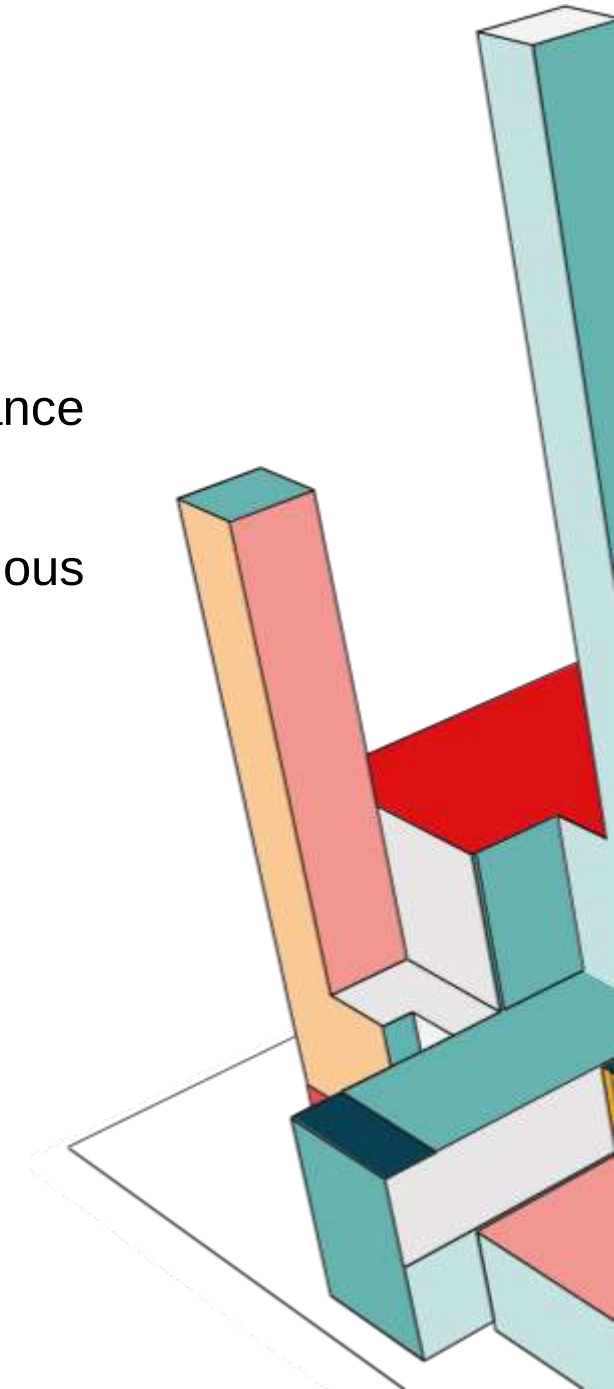
- Consistently collect and annotate answer pages.
- Pre-process the data and train a model to map questions to answers.
- Leverage this model to automate the entire answer sheet evaluation process.



PROJECT PLANNING

Future Steps

- Fine-tune the evaluation model and develop a RAG architecture to enhance accuracy and reliability.
- Deploy the product on a Cloud Service and monitor performance for continuous improvements.



SPONSORSHIP

Our project sponsors, AyanWorks, are supporting us through mentorship to guide us throughout the project's development. They are also facilitating connections with various schools, institutes, and organizations to help us acquire essential resources, such as datasets. Additionally, they are providing monetary support, enabling us to test various LLMs to enhance our accuracy.

THANK YOU