

ITA CHATBOT

Group 54

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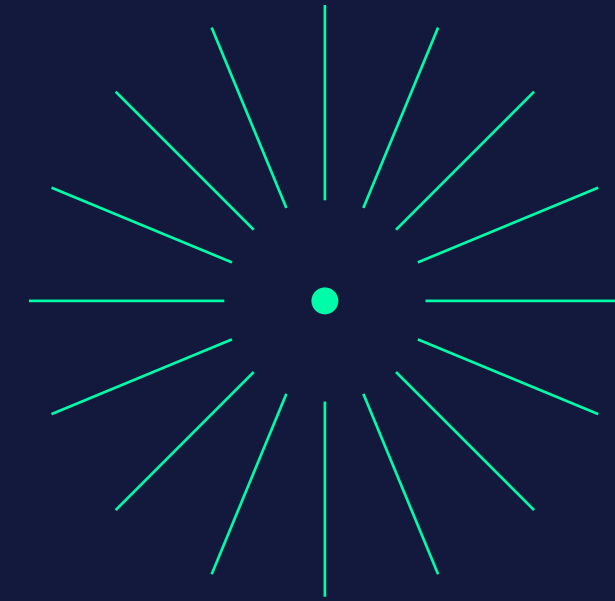
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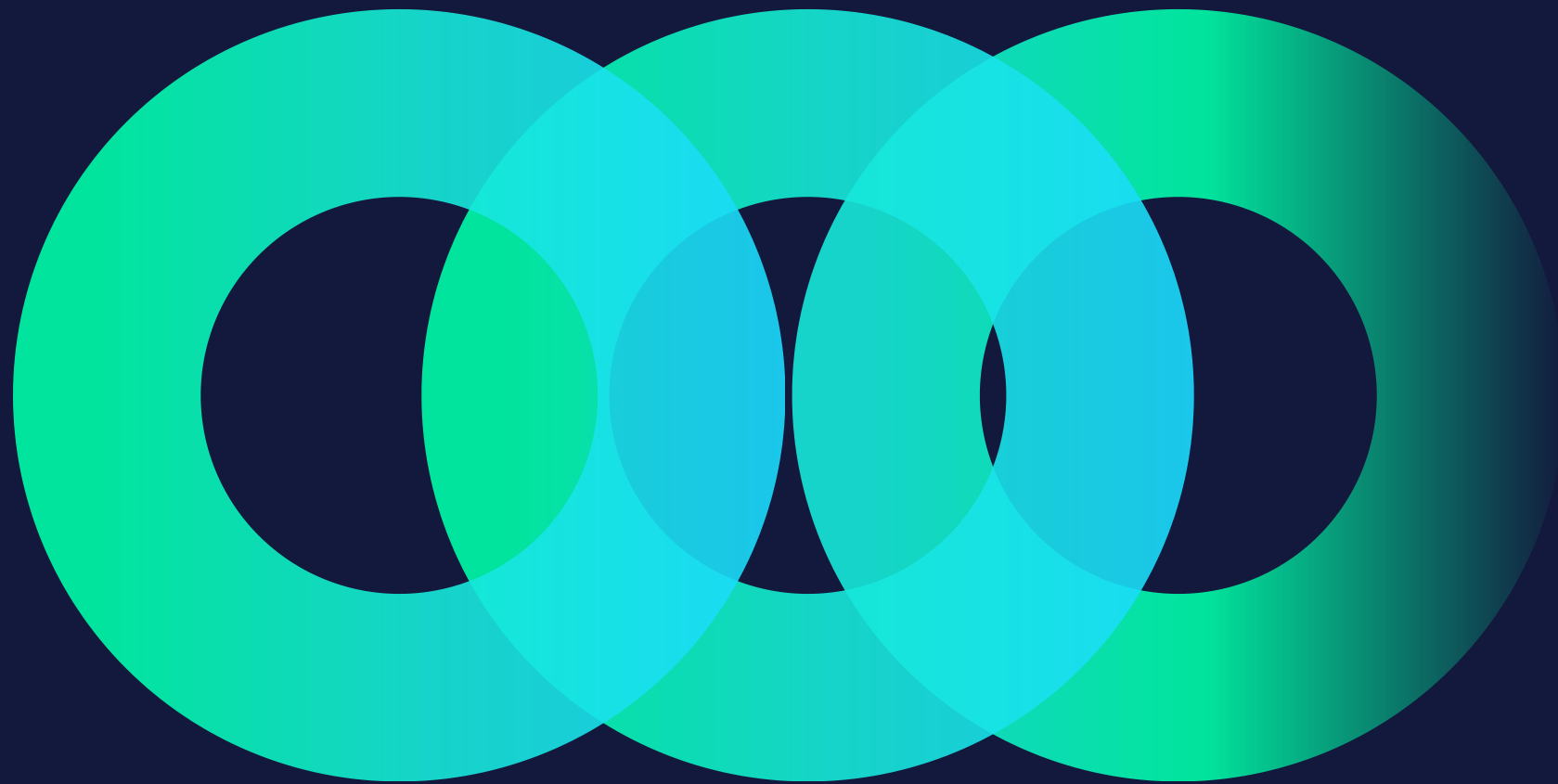




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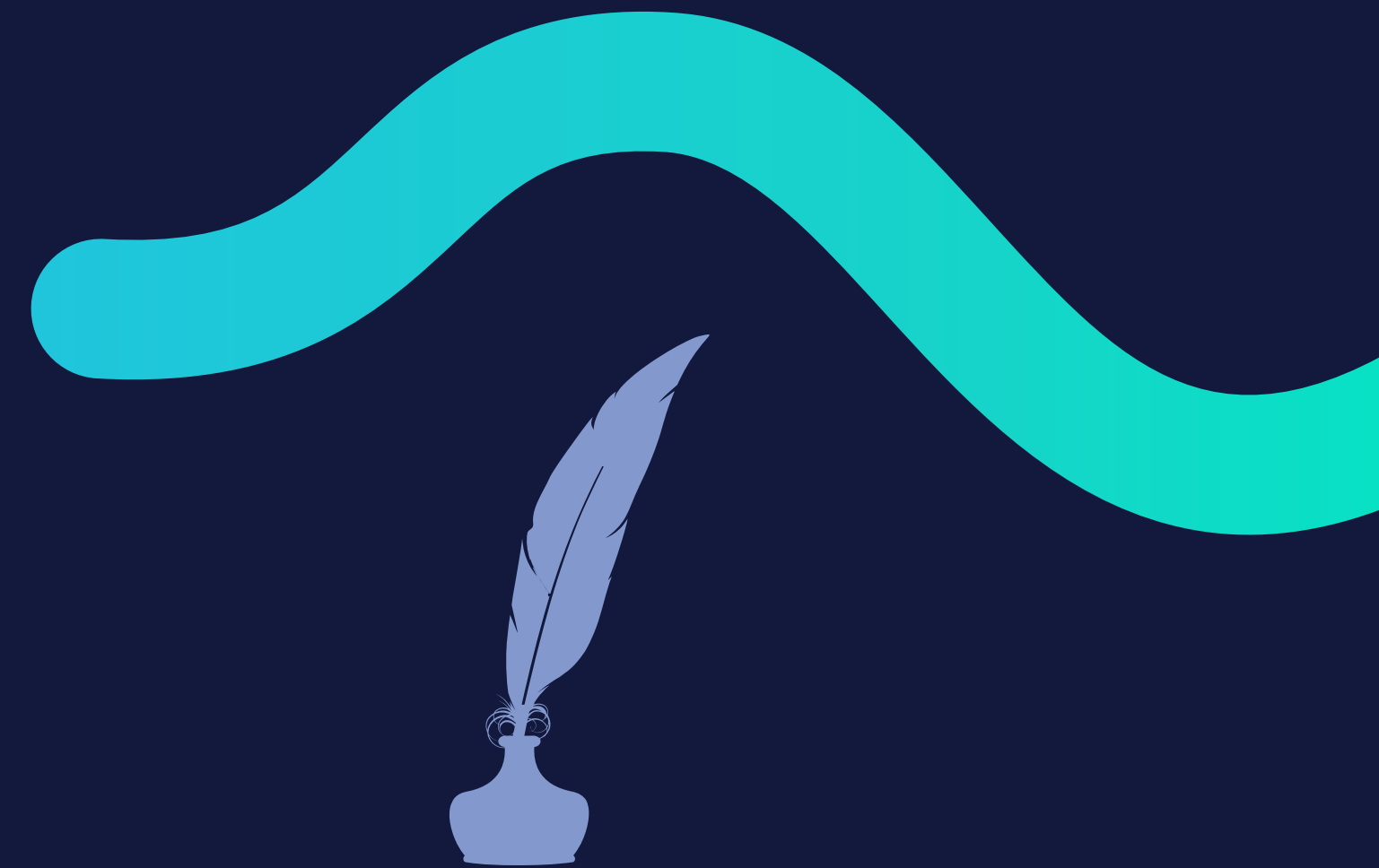


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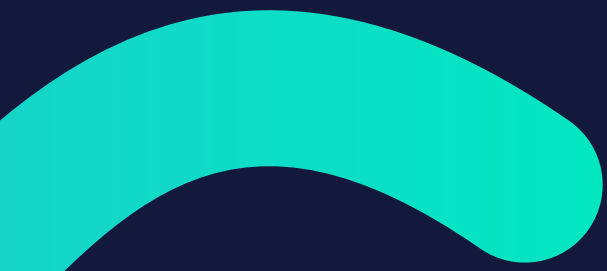
INTRODUCTION

Our project introduces an AI-driven chatbot tailored to enhance learning experiences for students and educators. By offering personalized assistance and leveraging advanced technology, the ITA chatbot aims to transform traditional education and empower learners to succeed in the digital age.



PROBLEM STATEMENT

The traditional education system faces scalability, personalized learning, and efficient administrative support challenges. Sometimes, educators find it time-consuming to perform administrative tasks. The need for a solution that bridges these gaps and enhances the educational experience has become evident.



MOTIVATION



Enhancing Learning Experiences

Our project aims to create a chatbot that enriches student learning, making education engaging, effective, and tailored to individuals.



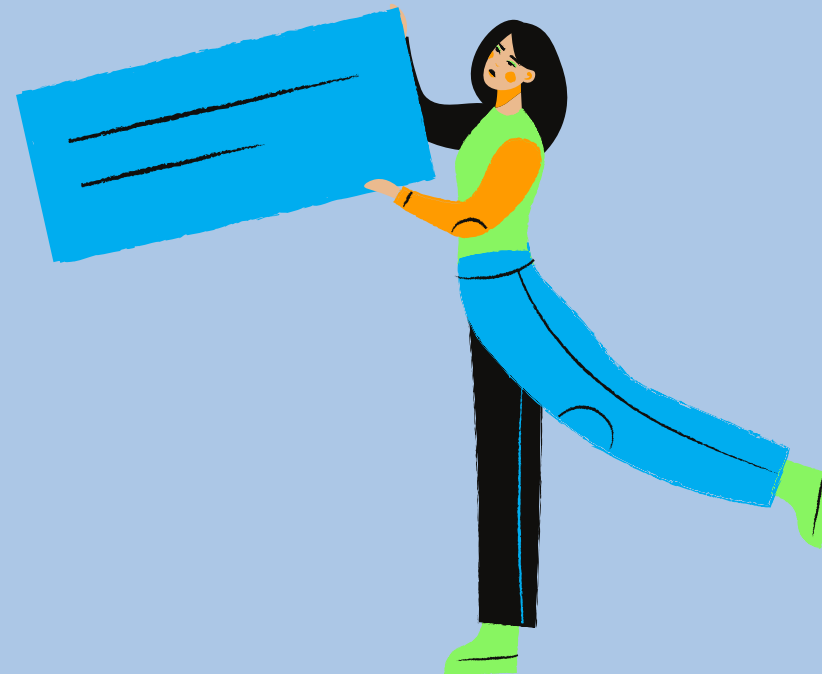
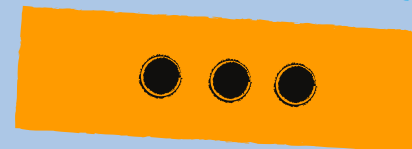
Improving Educational Access

Dedicated to AI for equal education access, ensuring all students have opportunities for learning and success.



Supporting Educator Efficiency

We wish to automate admin tasks, provide tools for educator efficiency, enabling focus on teaching and mentoring.



Addressing Evolving Educational Needs

Motivated to address evolving education needs, providing innovative solutions for students and educators in digital age.



Empowering Student Success

Driven to empower students for academic and personal success by providing resources, support, and personalized assistance.



Making a Positive Impact

Motivated by the belief that our project can positively impact students, educators, and the global educational community.



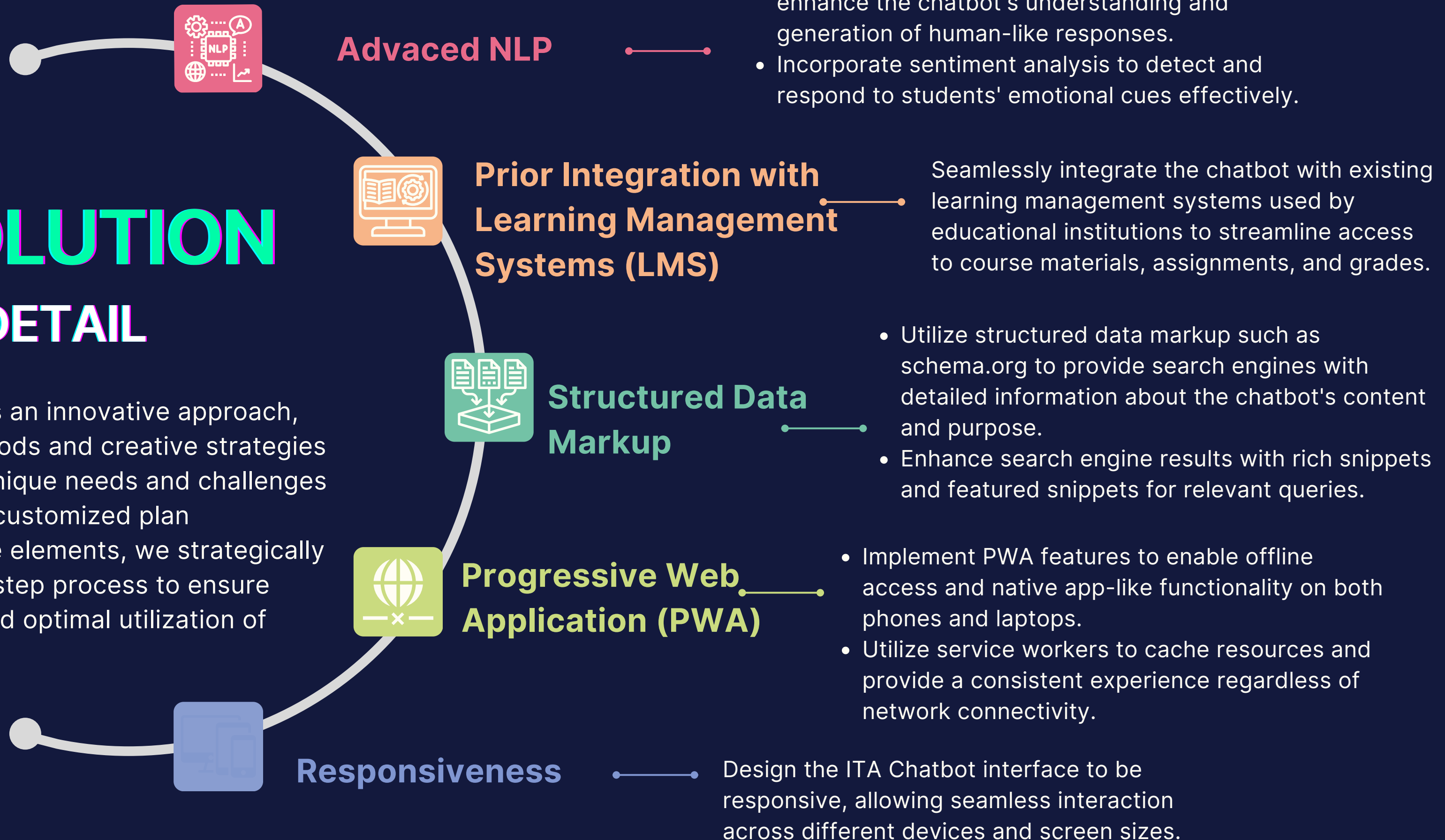
LITERATURE REVIEW

- **Advantages of Chatbots in Education:** Studies by [1] and [2] have demonstrated the benefits of chatbots in providing personalized learning experiences and facilitating student-teacher interactions.
- **Challenges and Limitations:** While chatbots offer significant potential, challenges such as limited natural language understanding and ethical considerations have been identified [3].
- **Pedagogical Roles of Chatbots:** Research by [4] emphasizes the importance of chatbots in various pedagogical roles, including tutoring, mentoring, and assessment.
- **Design Principles:** Studies by [5] have explored design principles for educational chatbots, highlighting the importance of user-centered design and adaptive learning pathways.

OUR SOLUTION

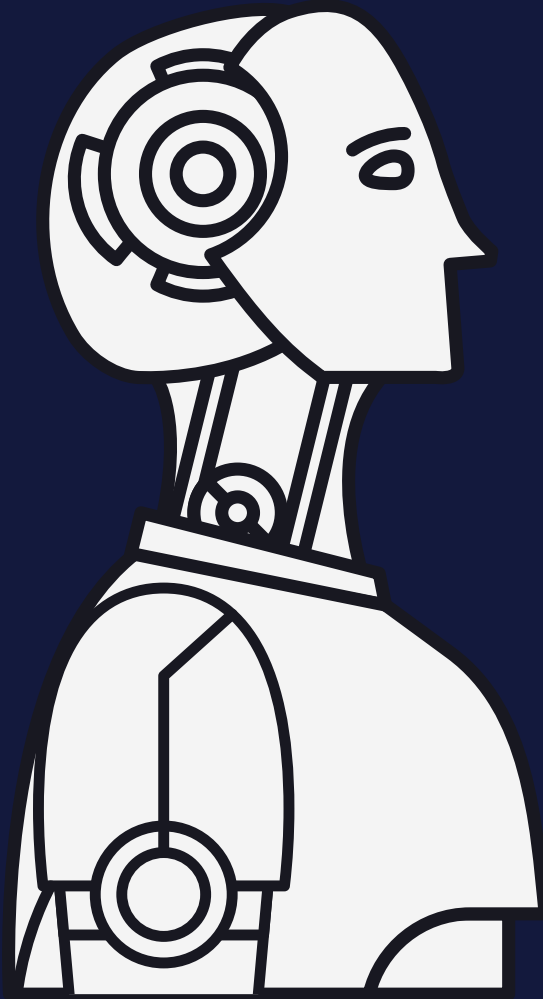
STEPS IN DETAIL

Our solution embodies an innovative approach, combining novel methods and creative strategies tailored to meet the unique needs and challenges of the project. With a customized plan incorporating bespoke elements, we strategically implement a step-by-step process to ensure effective execution and optimal utilization of resources.



INNOVATIVE ADDITIONS

for an Enriched Learning Experience



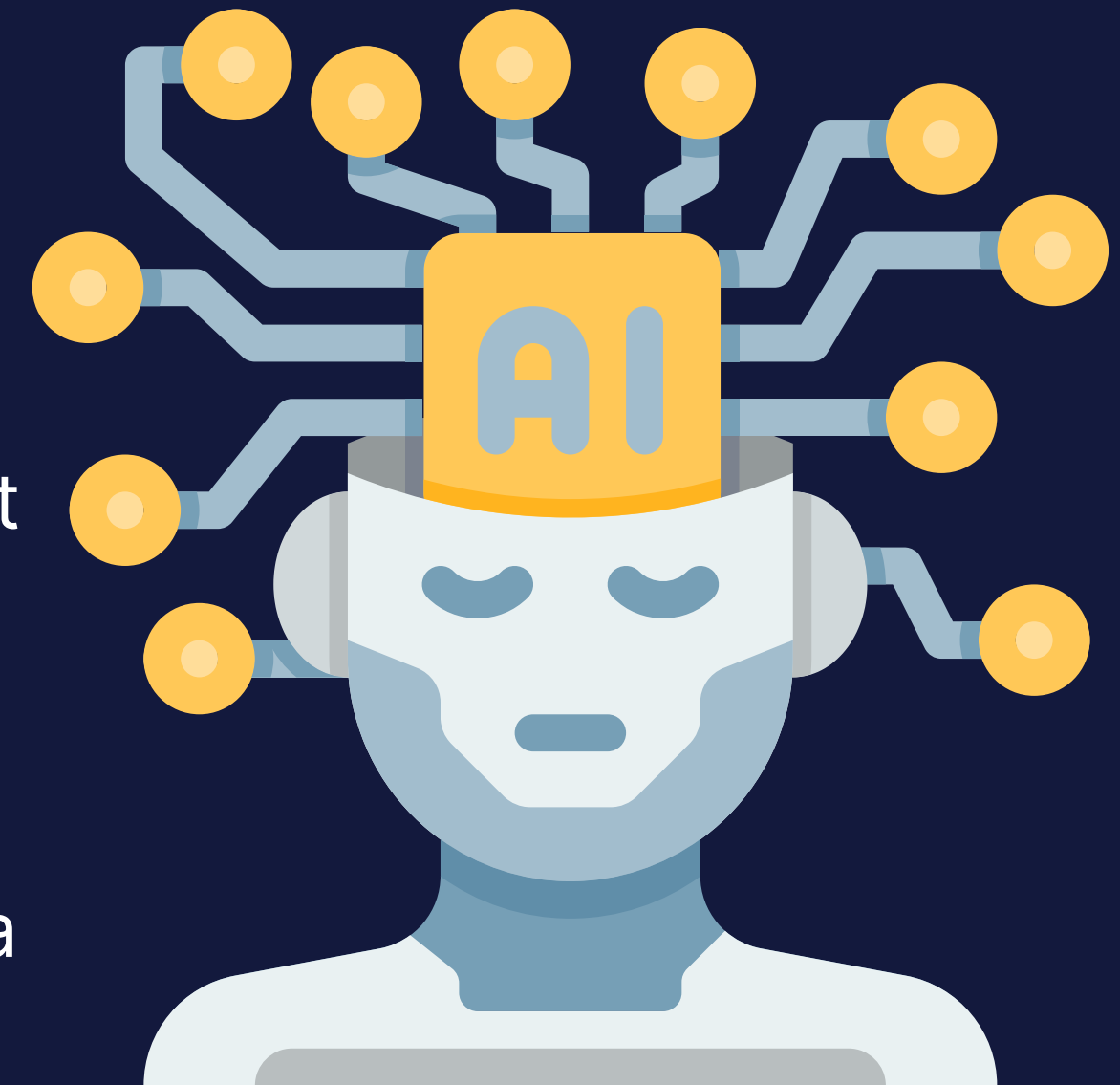
Utilizing advanced analysis, our chatbot assesses user performance, learning preferences, and identifies strengths and weaknesses. This data powers dynamic adjustments in learning paths, offering personalized study plans, curated resources, and tailored activities aligned with each student's unique needs and objectives.

The chatbot offers advanced voice recognition technology, allowing users to engage in natural and hands-free interactions by simply speaking their queries or commands. This innovative feature enhances accessibility and convenience, enabling users to interact with the chatbot effortlessly, especially in situations where typing may be inconvenient or impractical.



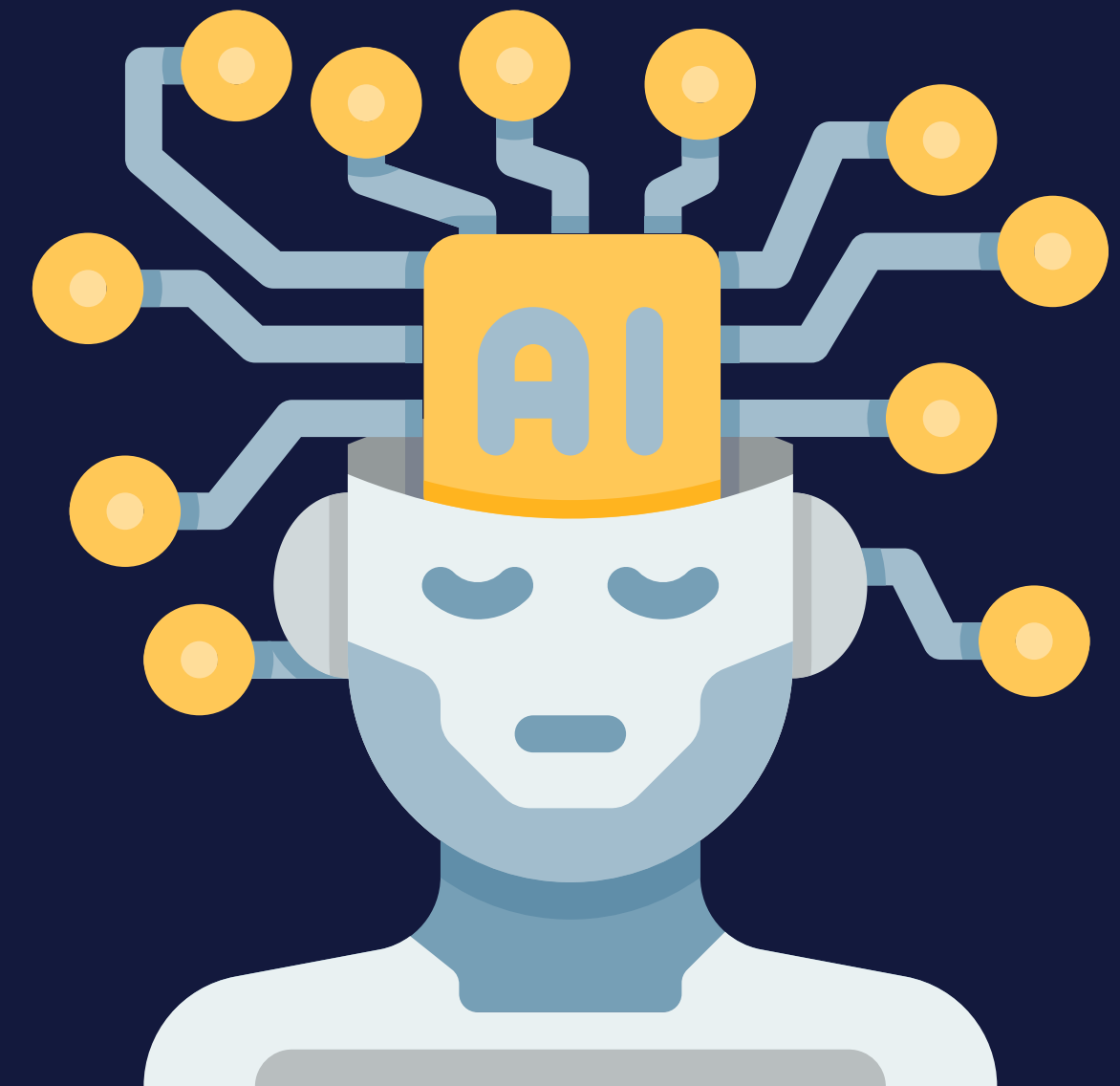
NOVELTY

By combining quantized model integration, advanced audio transcription with Whisper AI, image-based chatting using LLaVA, and PDF querying with a custom ITA model, our application offers users unprecedented flexibility in interacting with diverse media formats. Additionally, the utilization of a SQLite database for chat history management ensures continuity and convenience, further enhancing the user experience. This novel approach addresses the growing demand for intuitive and versatile AI-powered applications, setting a new standard for user interaction in the digital landscape.

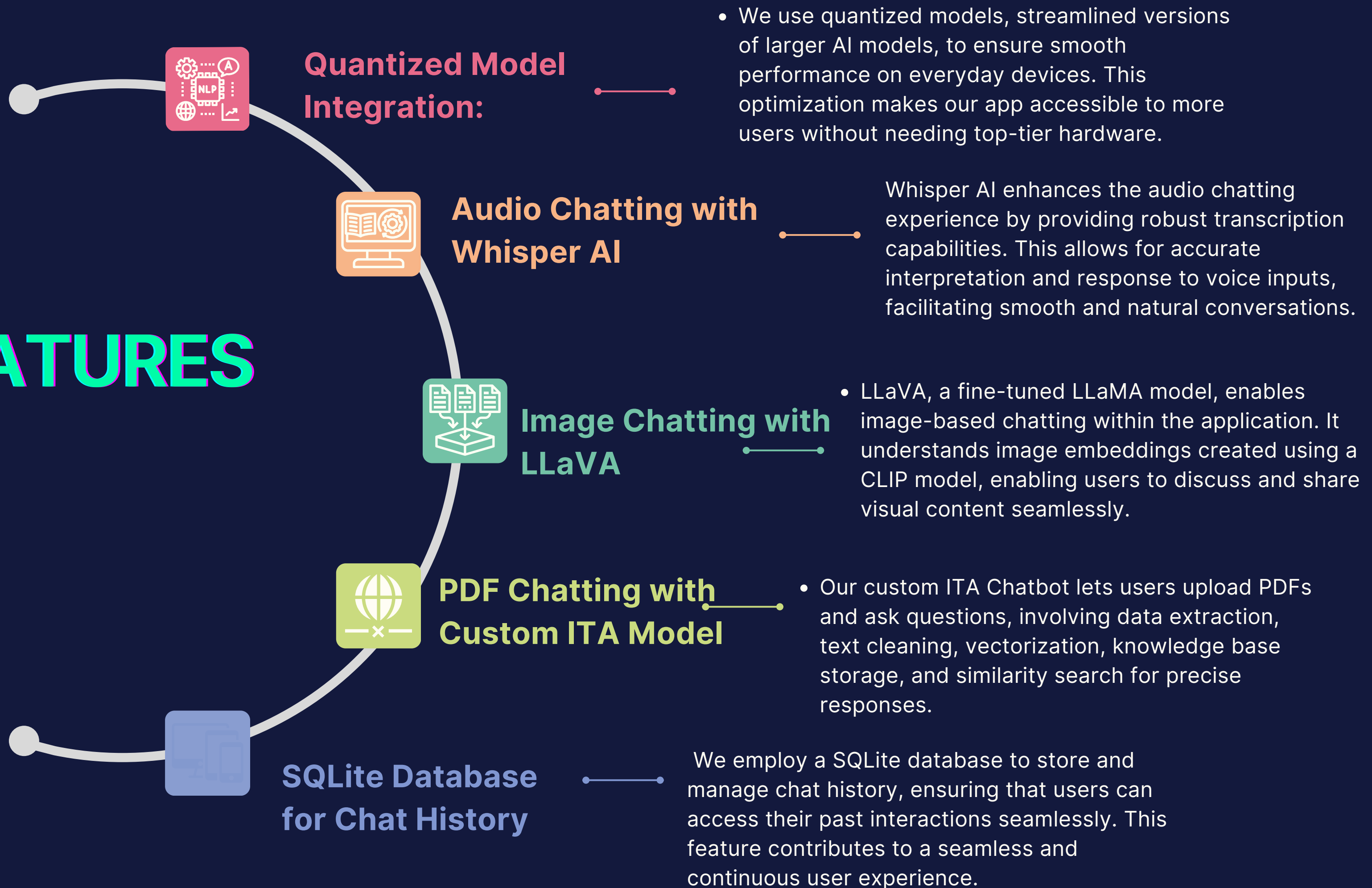


METHODOLOGY

Our groundbreaking AI-driven app is crafted to offer a flexible and intuitive experience, blending cutting-edge technologies seamlessly. By weaving together various advanced tools, we empower users to engage effortlessly with diverse media formats such as audio, images, and PDFs. Think of our app's README as your go-to guide, providing a thorough walkthrough of our approach, spotlighting standout features, and demystifying how the app operates.



KEY FEATURES IN DETAIL





HOW IT WORKS

In our application, we've combined various features to create a seamless and engaging user experience. Whether you're engaging through audio, images, or PDFs, each mode is designed to enhance your interaction. Behind the scenes, our advanced AI techniques analyze your input, ensuring accurate and relevant responses every time. Plus, our SQLite database keeps track of your chat history, so you can easily revisit past interactions without missing a beat.

Our application doesn't just stop there. We've gone the extra mile by integrating cutting-edge technologies like quantized models, Whisper AI, LLaVA, and a custom-built ITA model for PDFs. These additions cater to a wide range of interaction needs, ensuring that our users have access to the best possible experience.

With these features working together, our application isn't just functional—it's intuitive and user-friendly. So whether you're exploring new content or revisiting old conversations, you can trust that our app will be there to guide you every step of the way.

RESULTS

The chatbot's performance was evaluated on metrics like F1 score, precision, recall, and accuracy, comparing them with benchmarks to gauge its advancement. Evaluation also included testing the chatbot's capability to handle new and diverse data, ranging from simple to complex and ambiguous user queries.



Updated Metrics for singleQA.csv:

Precision : 0.9130434782608695
Recall : 0.3088235294117647
F1-score : 0.46153846153846156

Updated Metrics for MCQ.csv:

Precision : 0.95
Recall : 0.2235294117647059
F1-score : 0.3619047619047619

Updated Metrics for PaperChecking.csv:

Precision : 0.8333333333333334
Recall : 0.32894736842105265
F1-score : 0.4716981132075471

Updated Metrics for CourseMaterial.csv:

Precision : 0.8571428571428571
Recall : 0.675
F1-score : 0.7552447552447553

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Literature Review

Github

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**THANK
YOU!**

QA [120 SEC]

