

## INTRODUCTION

In the current digital landscape, e-learning has emerged as a prevailing avenue for knowledge acquisition, offering flexibility and accessibility. Nonetheless, visually impaired students encounter obstacles within online learning due to its predominantly visual format. To tackle this disparity, our research centers on the creation of "Edu Sense," a mobile application designed with an inclusive access mode. "Edu Sense" aims to empower visually impaired learners by incorporating features such as text-to-speech, voice-guided navigation, and tactile feedback. This project aspires to foster an environment of equitable e-learning, ensuring that all students can engage in education fully and without limitations.

## BACKGROUND

The rise of e-learning has transformed education, offering flexibility and accessibility. However, visually impaired students encounter barriers due to the visual nature of online learning. Current platforms often lack inclusivity, hindering their participation. To bridge this gap, we introduce "Edu Sense," a mobile app with an inclusive access mode. Our aim is to empower visually impaired learners by providing tailored features, ensuring equitable e-learning experiences. Through this project, we seek to promote inclusivity and unlock the full potential of all students in the digital education landscape.

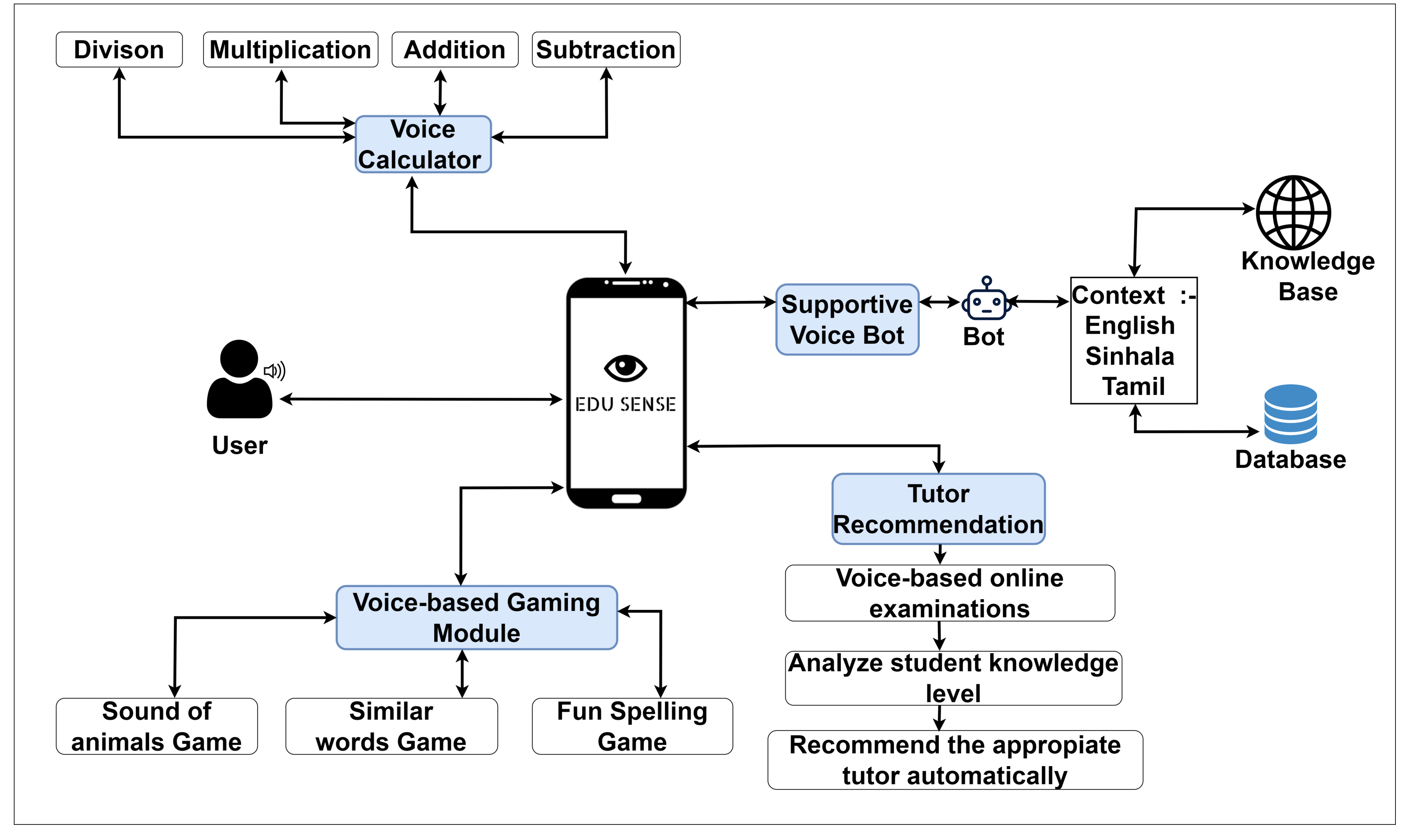
## RESEARCH PROBLEM

The research aims to address the challenge of improving online learning and educational accessibility for visually impaired primary school children in the context of e-learning platforms. Despite the proliferation of online learning, visually impaired students face significant barriers in accessing educational content and resources. This research problem seeks to develop a comprehensive solution that combines innovative assistive technologies, user-centered design, and effective support mechanisms to ensure equitable learning opportunities and effective educational outcomes for visually impaired learners.

## OBJECTIVES

The main objectives of this study are to enhance the online learning experience for visually impaired elementary school children by creating a supportive voice bot for multilingual learning, developing an e-learning platform with a voice-based simple calculator, evaluating the effectiveness of learning activities through a gaming module, and establishing a platform to recommend tutors based on learners' knowledge and disability levels. These objectives collectively seek to address the unique challenges faced by visually impaired students and provide them with accessible, interactive, and personalized educational opportunities.

## SYSTEM DIAGRAM



## RESULTS AND DISCUSSION

The survey conducted at Ratmalana School for the Blind with 10 visually impaired primary students highlighted the e-learning system's positive reception, feasibility, and accessibility, with 80% finding it effective. The interactive features, like the voice-based calculator and gaming modules, increased engagement (70% indicated enhanced motivation), and 90% felt empowered and independent. The platform's success in addressing unique needs and fostering a positive learning environment was evident. While acknowledging limitations, such as a small sample size and age-group focus, the study suggests future research should expand and assess effectiveness across different educational levels. Overall, the e-learning system showcased its potential in promoting accessibility, engagement, and empowerment for visually impaired learners.

## Acknowledgments

This significant study work was thoroughly reviewed, and it provided the team with an extensive knowledge-based gathered from our research supervisor and the Computing for Inclusive and Equitable Society (CIES) evaluation panel. Thank you to everyone for your patience, hard effort, and devotion in completing this research project successfully.

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