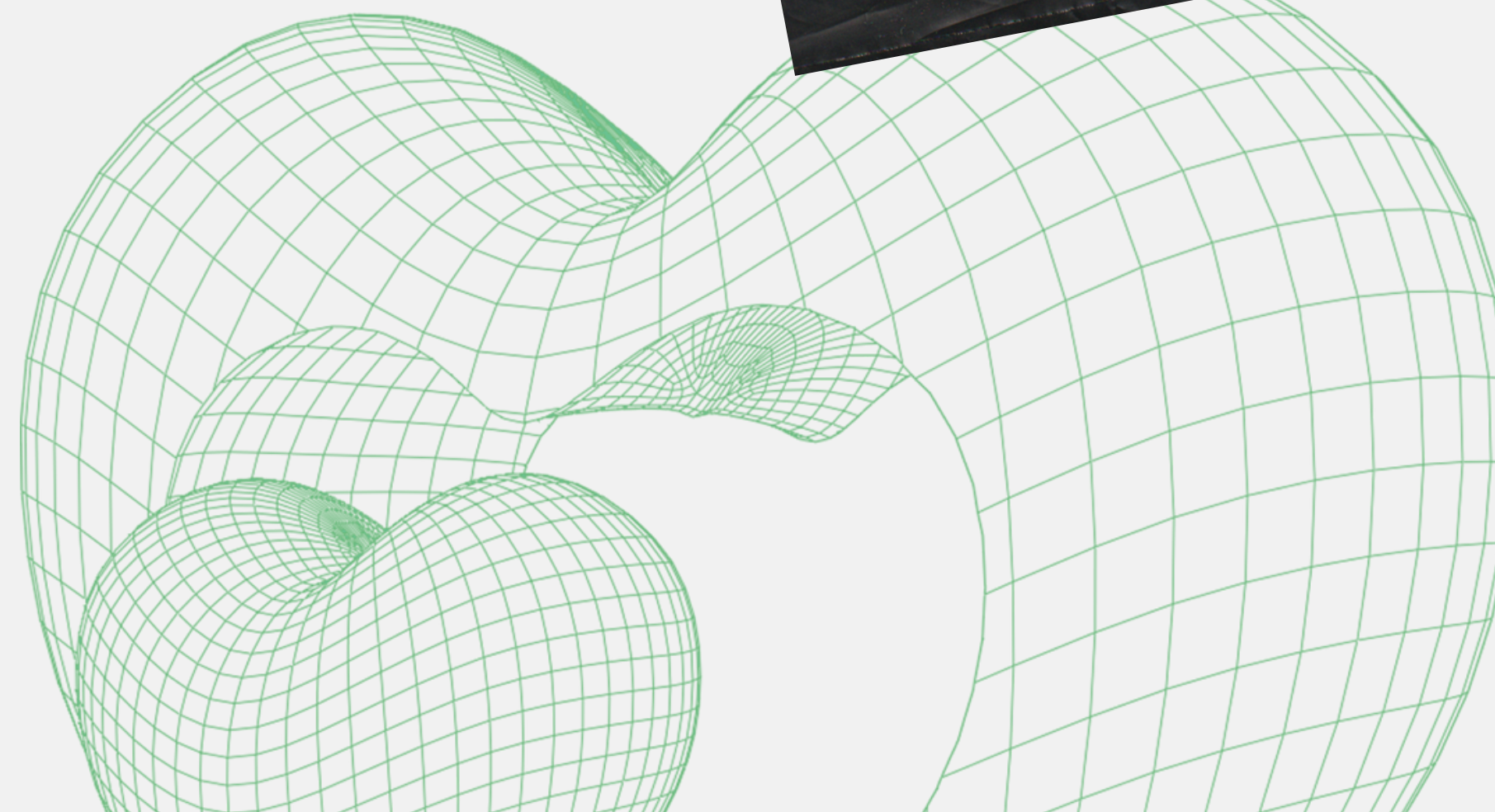


# Smart Glasses for Visually Impaired

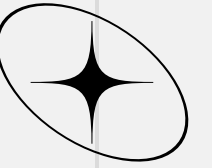


REPORT



## **Team members:**

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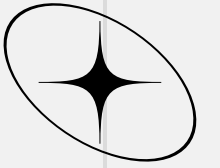
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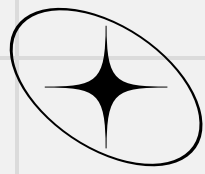
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# PROBLEM STATEMENT



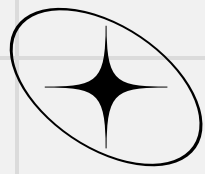
Wearable technology that improves the lives of people with visual impairments is the main focus of "Smart Glasses for Visually Impaired." In order to give visually impaired persons more independence, better navigation, and information access, smart glasses are intended to address specific issues that they experience. To help users read text, recognize barriers, and navigate their environment, these smart glasses make use of technologies like optical character recognition (OCR), text-to-speech (TTS), and object identification. By bridging the gap between daily duties and visual impairment, the project hopes to improve the quality of life for those who suffer from vision loss.



# BACKGROUND STUDY

**\*INNOVATIVE ULTRASONIC SMART GLASSES\*:**

- **\*AUTHOR\*:** CHAUDHURI ET AL. (2021).
- **\*FOCUS\*:** FALL DETECTION DEVICES FOR ALL AGE GROUPS, INCLUDING VISUALLY IMPAIRED INDIVIDUALS.
  - **\*METHODOLOGY\*:**
    - ANALYZED NEARLY 100 RESEARCH PAPERS RELATED TO FALL DETECTION.
    - EXPLORED VARIOUS SENSOR-BASED APPROACHES.
  - **\*IMPORTANCE\*:** ENHANCING SAFETY AND INDEPENDENCE BY PREVENTING FALLS.

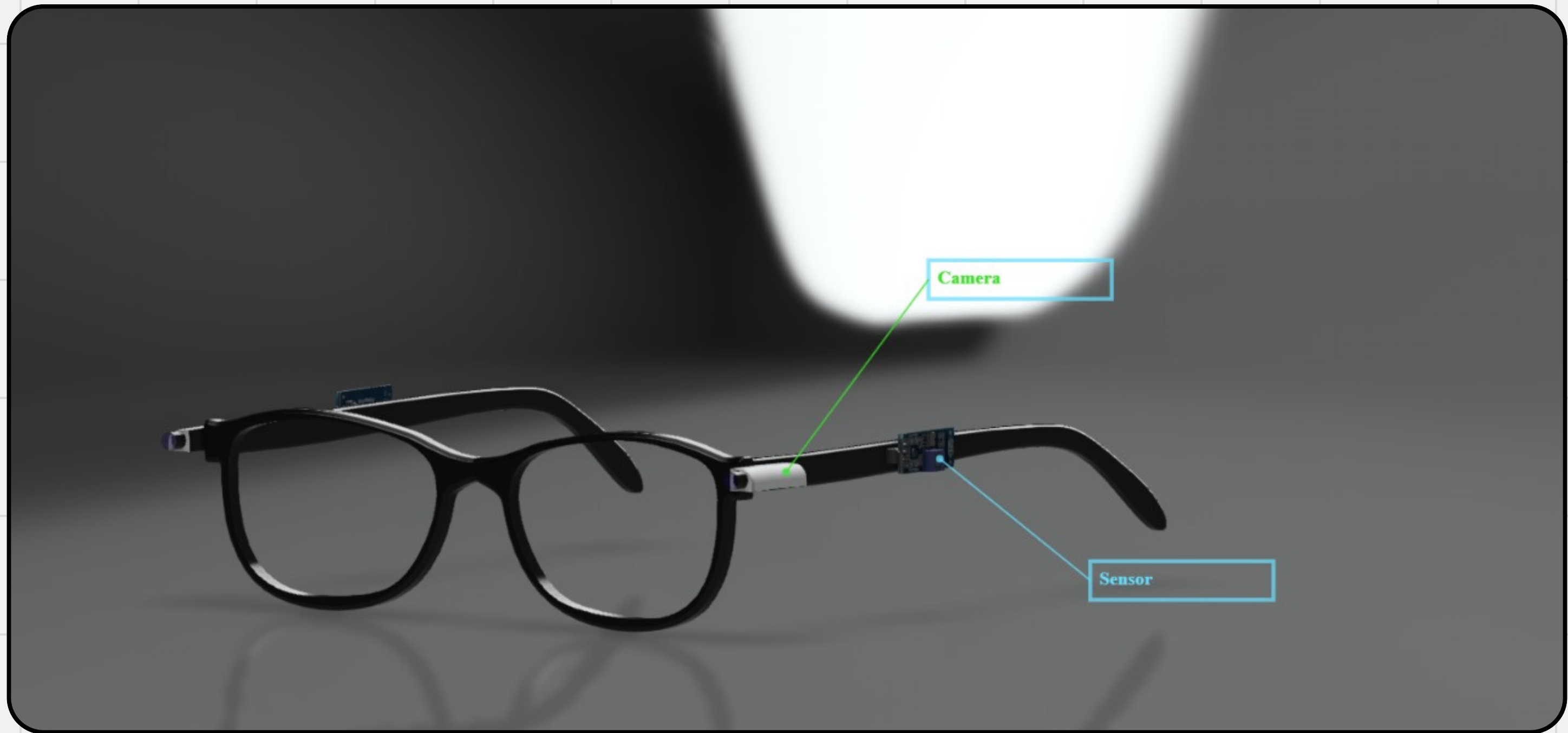
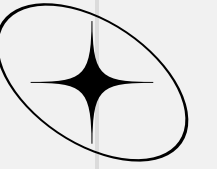


# BACKGROUND STUDY

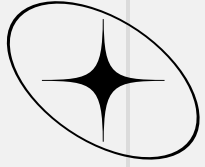
“SMART GLASS SYSTEM USING DEEP LEARNING FOR THE BLIND AND VISUALLY IMPAIRED” BY MUKHRIDDIN MUKHIDDINOV AND JINSOO CHO:

- DESCRIBES SMART GLASSES WITH AN IN-BUILT SENSOR THAT SPREADS ULTRASONIC WAVES TO ASSIST VISUALLY IMPAIRED INDIVIDUALS IN NAVIGATION<sup>5</sup>.
- REVIEWS EXISTING ASSISTIVE SOLUTIONS FOR BLIND AND VISUALLY IMPAIRED INDIVIDUALS.
- FOCUSES ON OBJECT DETECTION SYSTEMS<sup>3</sup>.

# DESIGN



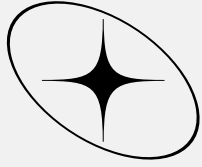
**LINK**



# PROPOSED SOLUTION

Visual impairment can significantly impact an individual's quality of life by limiting their ability to perform daily tasks independently. While traditional assistive devices such as canes and guide dogs offer some assistance, advancements in technology have opened up new possibilities. Smart glasses equipped with various sensors, cameras, and augmented reality (AR) capabilities can provide real-time assistance to visually impaired individuals, enhancing their mobility and independence.





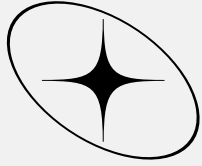
# PROPOSED SOLUTION

## Camera and Image Processing:

- The smart glasses are equipped with a high-resolution camera that captures the user's surroundings.
- Advanced image processing algorithms analyze the captured images to identify objects, obstacles, text, and people in the environment

## Object Recognition and Navigation:

- Utilizing machine learning algorithms, the smart glasses can recognize common objects, landmarks, and signage.
- A navigation system provides auditory or haptic feedback to guide the user through their surroundings, alerting them to obstacles and hazards in real-time.



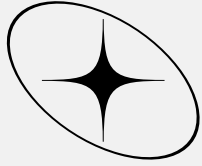
# PROPOSED SOLUTION

## Text-to-Speech and Optical Character Recognition (OCR):

- The smart glasses feature OCR technology that converts printed text into digital text.
- A text-to-speech engine reads the converted text aloud to the user, enabling them to access information from signs, documents, and screens.

## Augmented Reality (AR) Overlay:

- AR overlays provide contextual information about the user's surroundings, such as nearby points of interest, businesses, and public transportation options.
- Virtual markers and audio cues help users locate objects and navigate indoor and outdoor environments more efficiently.



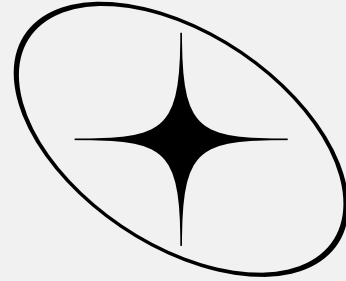
# PROPOSED SOLUTION

## **Connectivity and Integration:**

- The smart glasses are integrated with a mobile app or companion device that allows users to customize settings, access additional features, and receive updates.
- Connectivity options such as Bluetooth and Wi-Fi enable seamless integration with smartphones, navigation apps, and other assistive technologies.

## **Comfort and Accessibility:**

- Ergonomic design and lightweight materials ensure comfort during extended wear.
- Adjustable settings and customizable features accommodate individual preferences and visual impairments.



**THANK YOU**

