

# AbleVision – AI-Powered Mobile Assistant for the Visually Impaired

Presented by:

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# Addressing the Challenges of Visual Impairment

Visually impaired individuals face daily challenges. Navigating unfamiliar environments is difficult. Traditional aids offer limited situational understanding. Without contextual awareness, independent movement is dangerous. AbleVision empowers the blind with real-time visual narration. It provides contextual scene understanding and intelligent navigation. Our goal is to promote confidence, independence, and inclusion.

# Who AbleVision Serves

## Primary Users

- Blind and visually impaired individuals.
- Located in urban and semi-urban settings.
- Applicable in both indoor and outdoor environments.

## Key Use Cases

- Crossings and public transit.
- Wayfinding and crowd navigation.
- Office and home navigation.



# Current Solutions and Market Gaps



## Limited Awareness

White canes and basic voice assistants offer minimal contextual understanding. They are limited to obstacle detection.



## Narrow Solutions

Existing apps like Seeing AI and Be My Eyes solve specific, isolated problems. They lack comprehensive integration.



## Unified Gap

There is a critical need for a unified solution. This solution must provide real-time navigation and contextual awareness.



# AbleVision: Our Comprehensive Solution



## Visual Narration

Real-time object detection and scene interpretation.



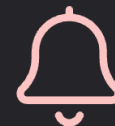
## Voice Navigation

Voice-guided directions for both indoor and outdoor.



## OCR Reading

Text-to-speech functionality for reading signs.



## Proximity Alerts

Audio and vibration alerts for nearby obstacles.



## Offline Mode

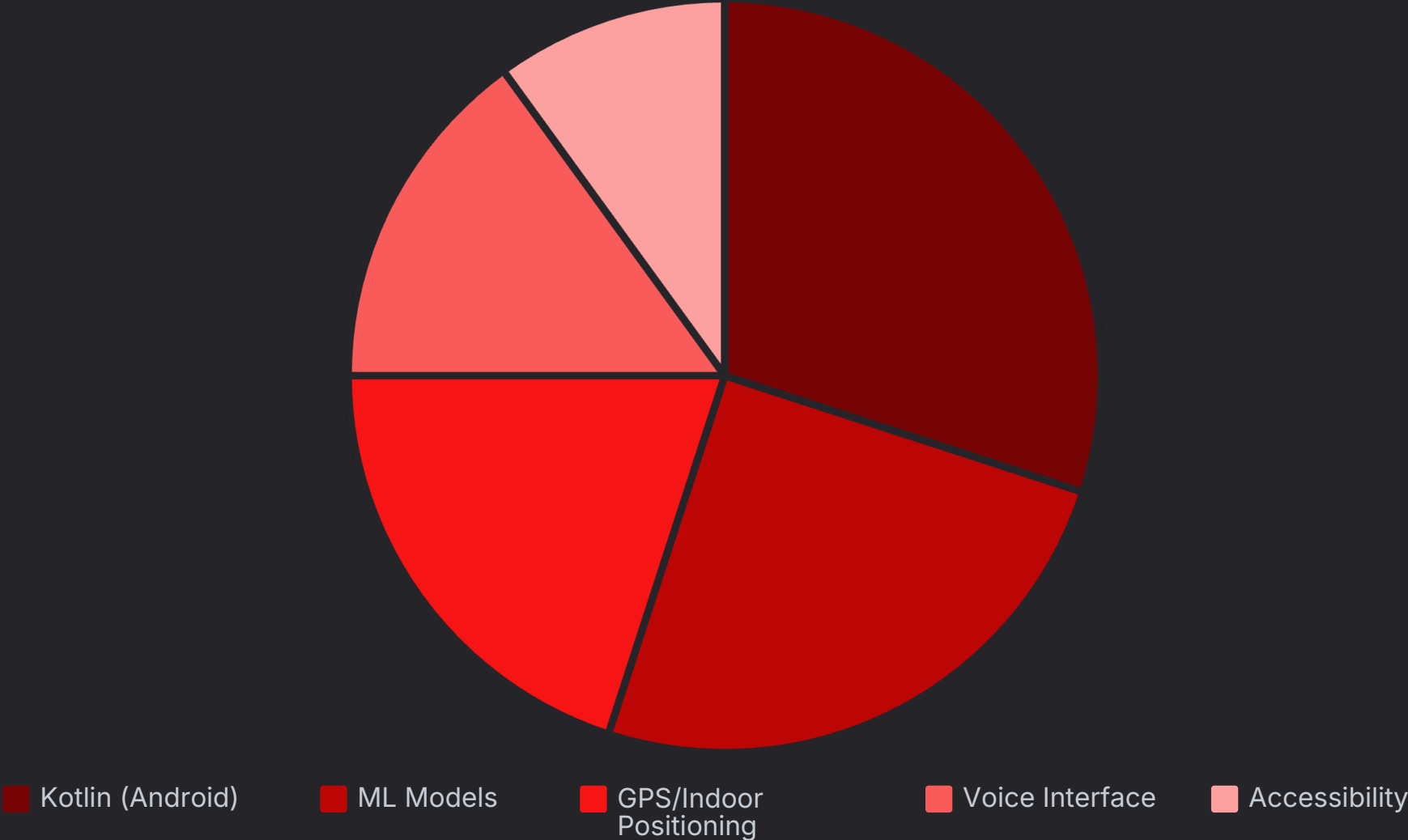
Reliable functionality without an internet connection.



## Conversational AI

Intuitive and natural voice interface.

# Technical Foundations



AbleVision is built on robust technical architecture. It leverages Kotlin for Android development. Our solution uses both on-device and cloud ML models. GPS and indoor positioning ensure accurate navigation. The voice interface uses Text-to-Speech and Automatic Speech Recognition. Accessibility features like TalkBack and haptics are fully integrated.

# AbleVision's Competitive Advantage



## Unified Platform

A single assistant, unlike fragmented, narrow apps.

## Offline-First

Ensures reliable performance, even without connectivity.

## Contextual Safety

Intelligent voice narration for enhanced awareness.

## Custom AI Models

Trained specifically for assistive technology needs.



# User Flow and Sample Scenarios

## 1 Street Crossing

AbleVision alerts: "Wait... Now cross safely."

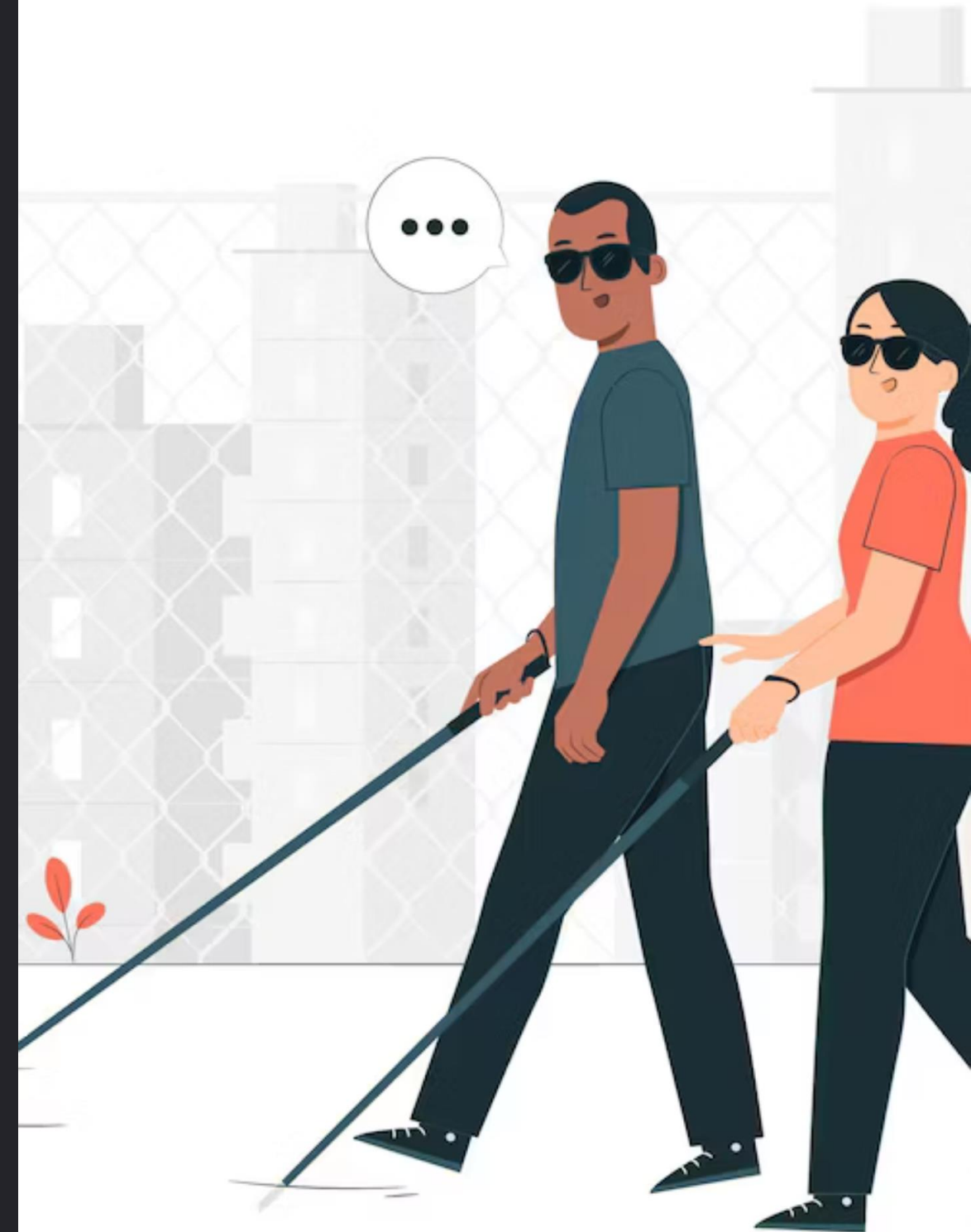
## 2 Locating a Door

Guidance: "Turn right in 3 meters."

## 3 Reading a Sign

Reads aloud: "Exit: Gate No. 4."

AbleVision provides practical, real-time assistance. These scenarios demonstrate the system's intuitive and critical support in daily life. From complex outdoor navigation to simple indoor tasks, AbleVision enhances independence.







# Vision and Future Roadmap

## Phase 1: MVP

Core detection, navigation, and OCR functionalities.

## Phase 2: Expansion

Integration with smart glasses and social context awareness.

## Phase 3: Advanced Features

Community integration, emergency assistance, and personalization.

Our vision extends beyond the current capabilities. We aim to continuously evolve AbleVision. Future developments include advanced hardware integration and personalized user experiences. We are committed to empowering visually impaired individuals globally.

# Team Contribution

## **Baravkar Aniket Ashok-22BEE1251 (Team Lead & Main Developer)**

Conceptualized the entire project idea and defined core features.

Developed the complete application architecture and backend integration.

Implemented major functionalities, including the AI-powered email reply generator, Gmail API OAuth setup, and database management using PostgreSQL.

Handled deployment, testing, and debugging to ensure a smooth user experience.

Coordinated the team and managed project timelines and deliverables.

## **Chinmay Joshi (UI/UX Support)**

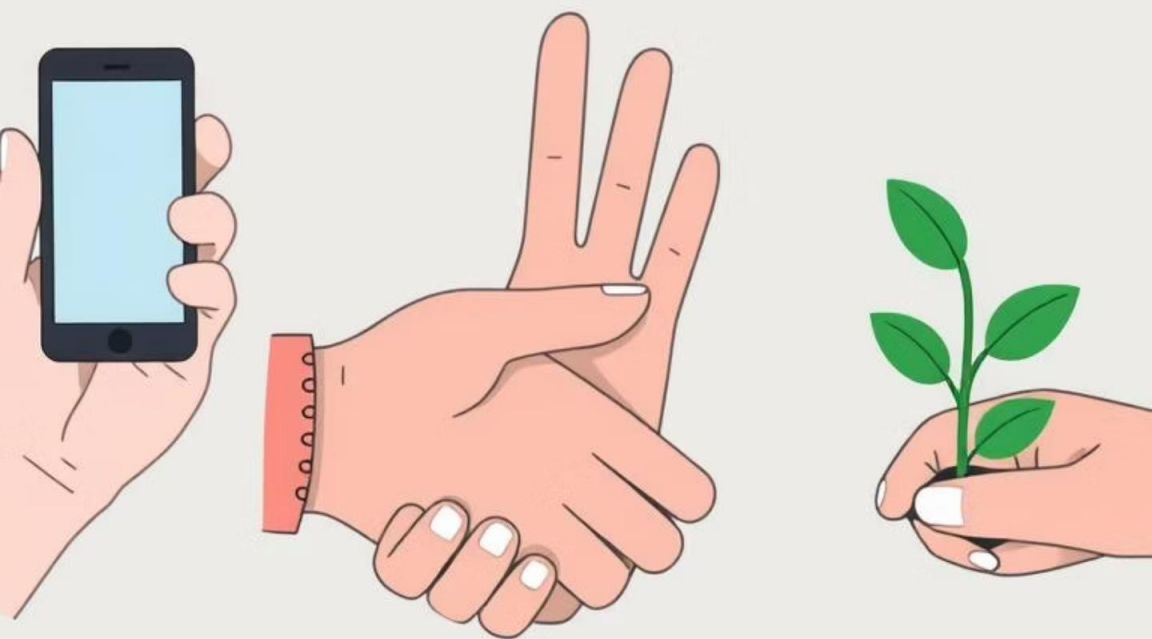
- Assisted in designing a few basic UI components and provided feedback on user flow.

- Helped test the app interface for usability improvements.

## **Ishaan verma (Documentation & Presentation)**

- Prepared a brief project summary and contributed to drafting the final presentation slides.

- Reviewed written content for clarity and correctness.



# Summary and Call to Action

AbleVision delivers safety, independence, and confidence. We are actively seeking partnerships and funding. Collaboration with NGOs is crucial for our mission. Our pilot-ready platform awaits real-world testing. Join us in transforming lives with AI-powered assistance.