AI Vision Assistant for the Visually Impaired

Empowering independence through artificial intelligence

Team Detonator

By Utkarsh Tripathi and Rishabh Gupta

| AI for Public Good

The Problem We're Solving

Daily Challenges

Over 285 million people worldwide live with visual impairments, facing constant barriers to independence. Simple tasks like crossing the street, reading labels, or identifying objects become complex challenges requiring assistance.

Limited Solutions

Current assistive technologies are often expensive, bulky, or lack the intelligence needed for real-world environments. Most solutions require specialized hardware that's out of reach for many who need it most.

Why This Matters

Mobility & Safety

Navigating unfamiliar spaces, avoiding obstacles, and crossing streets safely remain critical daily concerns

Loss of Independence

Constant reliance on others for basic tasks impacts dignity, confidence, and quality of life

Limited Opportunities

Barriers to education, employment, and social participation restrict potential and economic freedom

Our Vision

> An intelligent, affordable AI companion that sees the world and guides users through it—making independence accessible to everyone.

We're building a **voice-first, accessibility-focused** solution that transforms any smartphone into a powerful vision assistant, providing real-time guidance through AI-powered scene understanding.

Solution Overview

Camera Capture

Smartphone camera continuously captures the environment in real-time

AI Processing

Computer vision models analyze scenes, detect objects, and understand context

Voice Guidance

Natural voice output delivers clear, actionable information instantly

Our system combines cutting-edge AI with intuitive voice interaction, creating a seamless experience that feels natural and empowering.

Key Features That Transform Daily Life

1

Object Detection

Identifies and describes objects in the environment with distance and position information

2

Obstacle Avoidance

Real-time alerts for obstacles in the path, including stairs, walls, and moving objects

3

Text Reading (OCR)

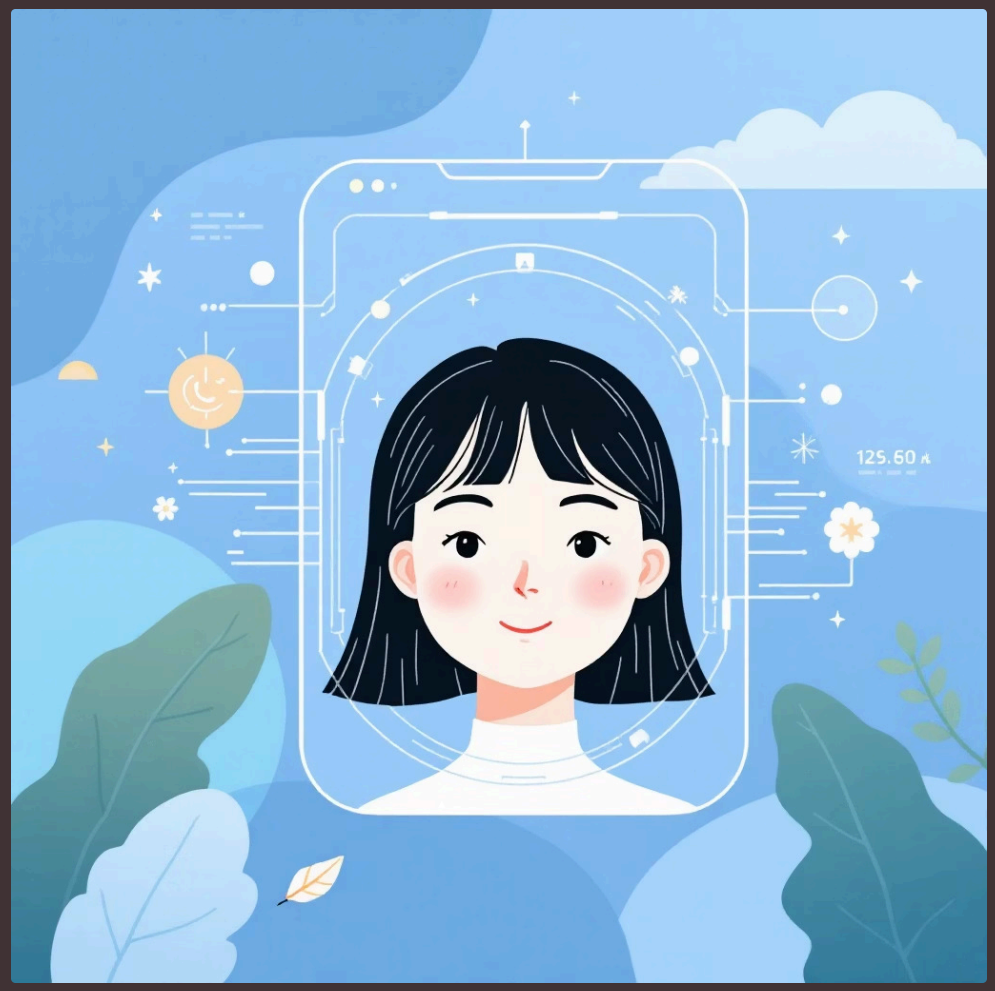
Reads signs, documents, labels, and menus aloud with multi-language support

4

Voice Interaction

Hands-free voice commands in local languages for intuitive, natural control

Advanced Capabilities



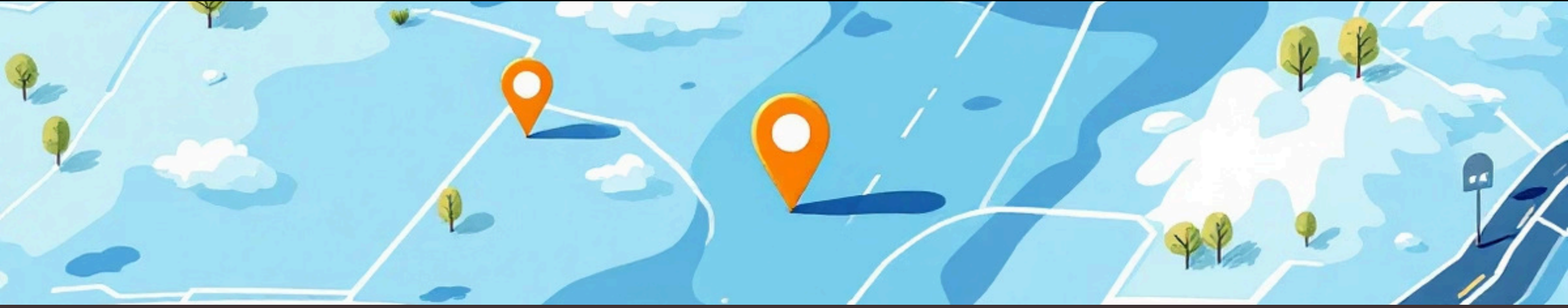
Face Recognition

Identifies familiar faces and announces who's approaching, helping maintain social connections and personal safety.

Currency Detection

Recognizes and announces denominations of bills and coins, enabling independent financial transactions.

Scene Understanding: Our AI doesn't just detect objects—it understands context. It knows a "chair" in a kitchen versus a waiting room, providing richer, more useful guidance.



Navigation & Safety

Indoor & Outdoor Guidance

Step-by-step navigation through complex environments with spatial awareness and directional cues

Safety Alerts

Proactive warnings for hazards like moving vehicles, open doors, or sudden drop-offs

Emergency SOS

Voice-activated emergency command that shares location with emergency contacts instantly

Technology Stack

Computer Vision AI

YOLO and TensorFlow models for real-time object detection and scene understanding

Mobile-First Platform

Optimized for iOS and Android with optional wearable integration

Voice Technology

Advanced speech-to-text and text-to-speech engines with natural language processing

Edge & Cloud AI

Hybrid processing for speed and accuracy—works offline for core features

Impact & Future

Social Impact

- Restored independence and confidence for millions
- Improved access to education and employment
- Enhanced safety in public spaces
- Affordable solution at scale

Next Steps

Smart glasses integration, offline AI capabilities, and partnerships with NGOs and governments to distribute freely to those in need.

> **Technology with empathy. AI for public good.**
>
> — By Utkarsh Tripathi and Rishabh Gupta.
>
> — Indian Institute of Technology Jodhpur
>
> — Team Detonator