

AI Smart Glasses for Blind

"Detect→Decide→Navigate"

Team: CareSync

Team Members:

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PROBLEM STATEMENT:

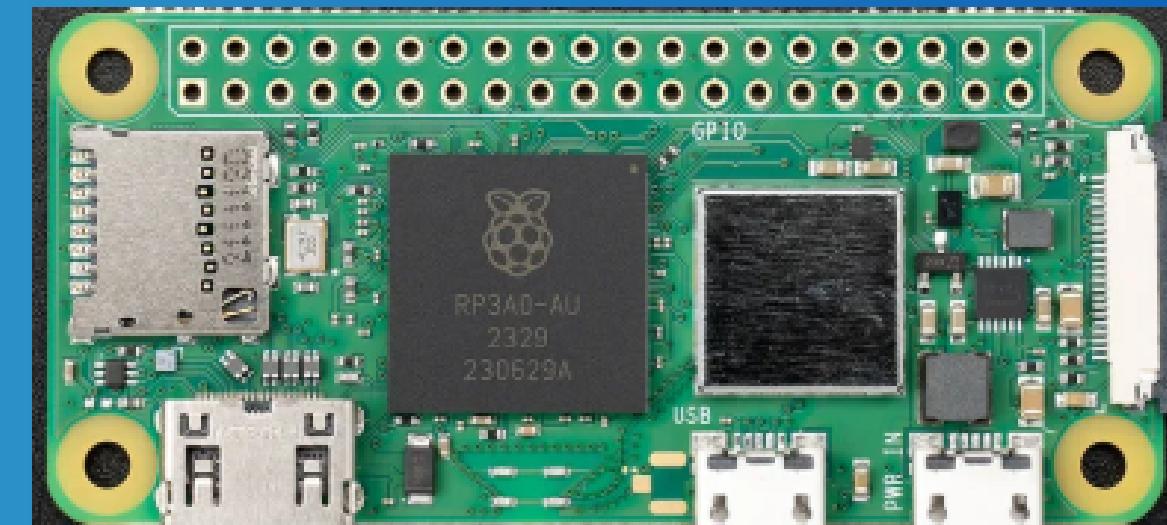
Visually impaired people have difficulty navigating safely because of unseen obstacles. Existing technologies such as smart canes or wearables are hardware-dependent, thus costly and non-accessible. My project deals with a software-based prototype based on YOLOv5 for detecting obstacles in real-time and pyttsx3 for speech output, providing an economical, AI-based assistive technology without any dedicated hardware. This method guarantees broader accessibility and simpler scalability



Materials and Cost Estimation:

- Raspberry Pi Zero 2W (1200-1300INR)
 - Runs YOLOv5 (optimized) + pyttsx3.
- USB Webcam (800-900INR) – Wide-angle 1080p for obstacle detection.
- Power Bank (700-850INR) – Portable charging (12+ hours backup).

Total Cost Estimation: 3500-4500 INR



Challenges and Limitations:

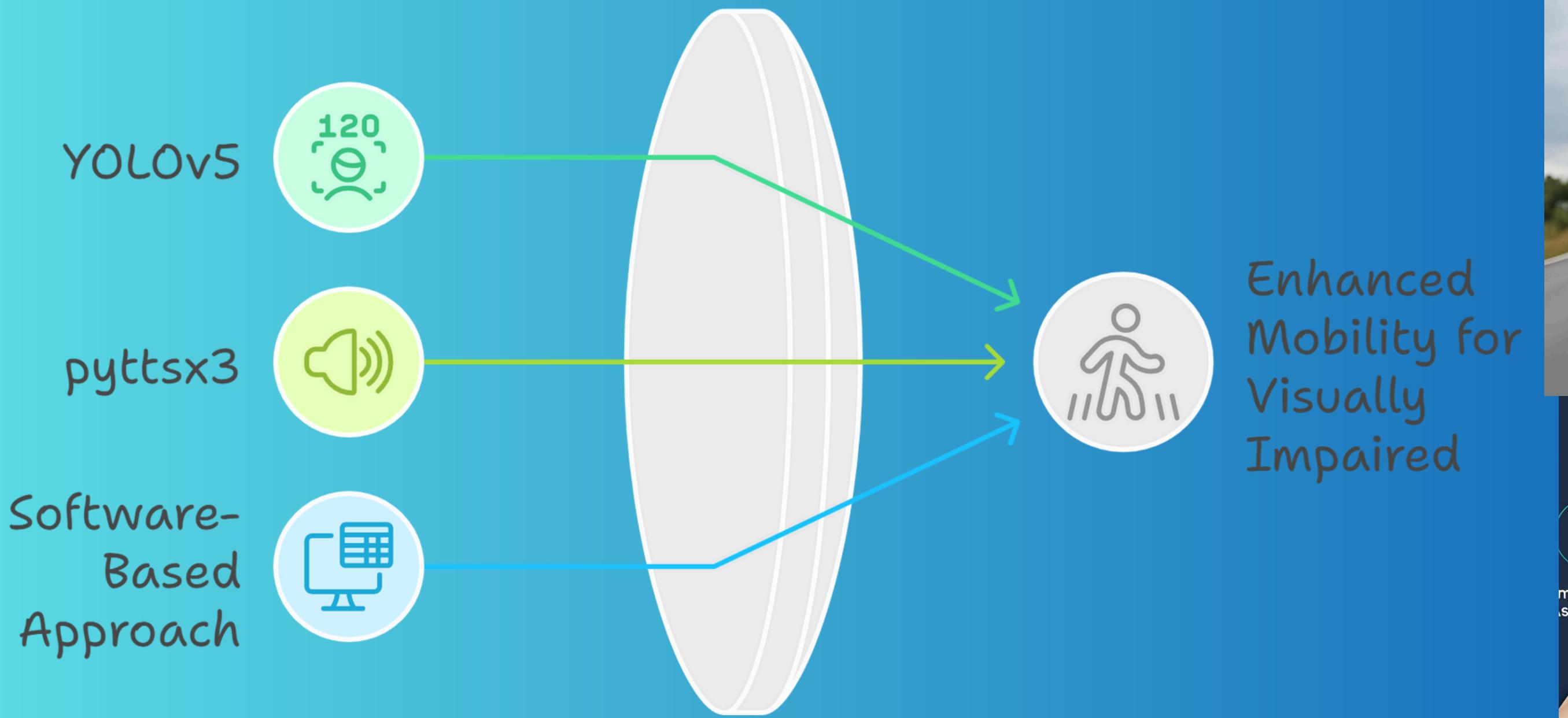
- No Dedicated GPU (can't run advanced models like YOLOv8).
- Raspberry Pi's Weak AI Performance
- Power Consumption.
- 24/7 Connectivity & Offline Use

Future-Proofing Your Project

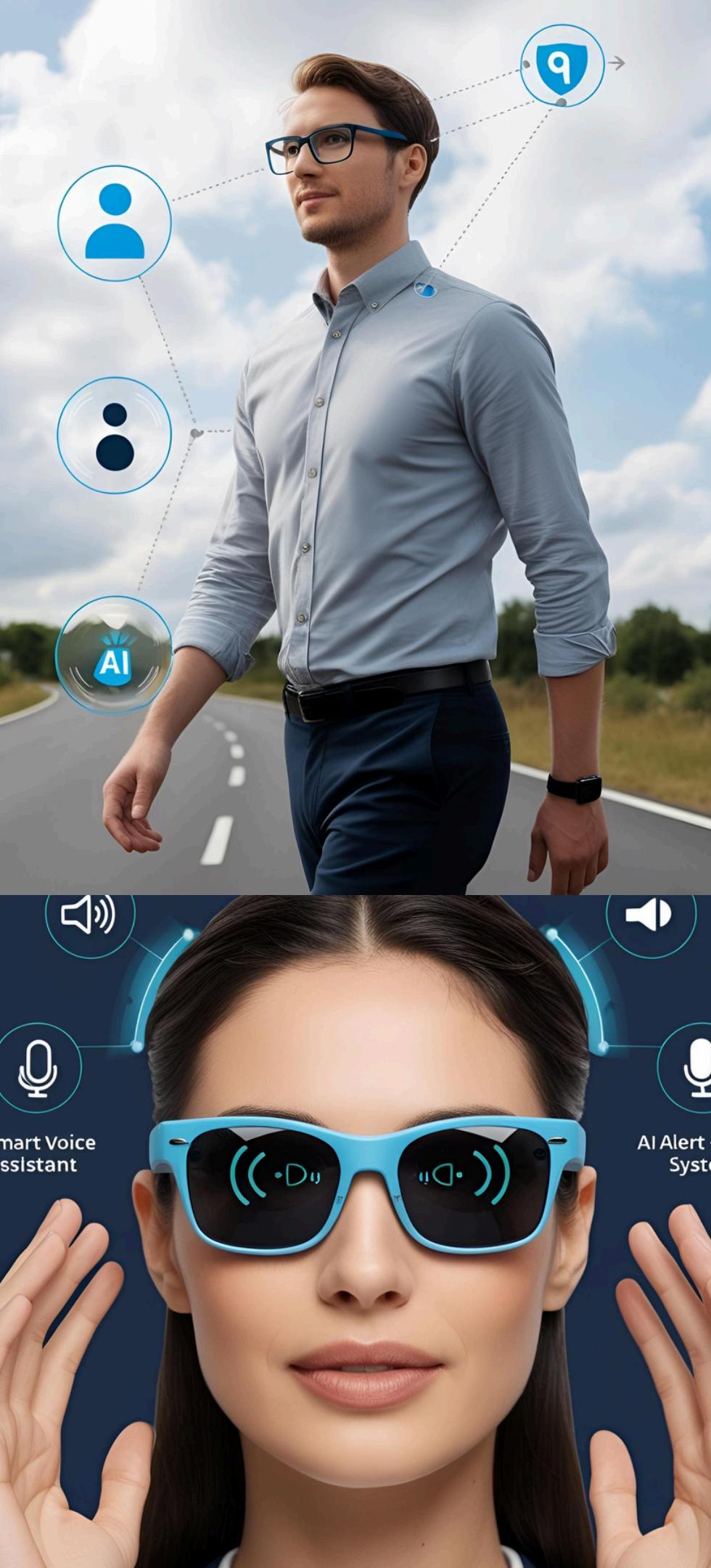
1. Jetson Nano Lite – If prices drop, migrate for 10x performance.
2. Voice Assistant – Integrate Mycroft AI (offline alternative to Alexa).
3. Haptic Feedback – Add vibration motors (\$2) for silent alerts



TECH STACK

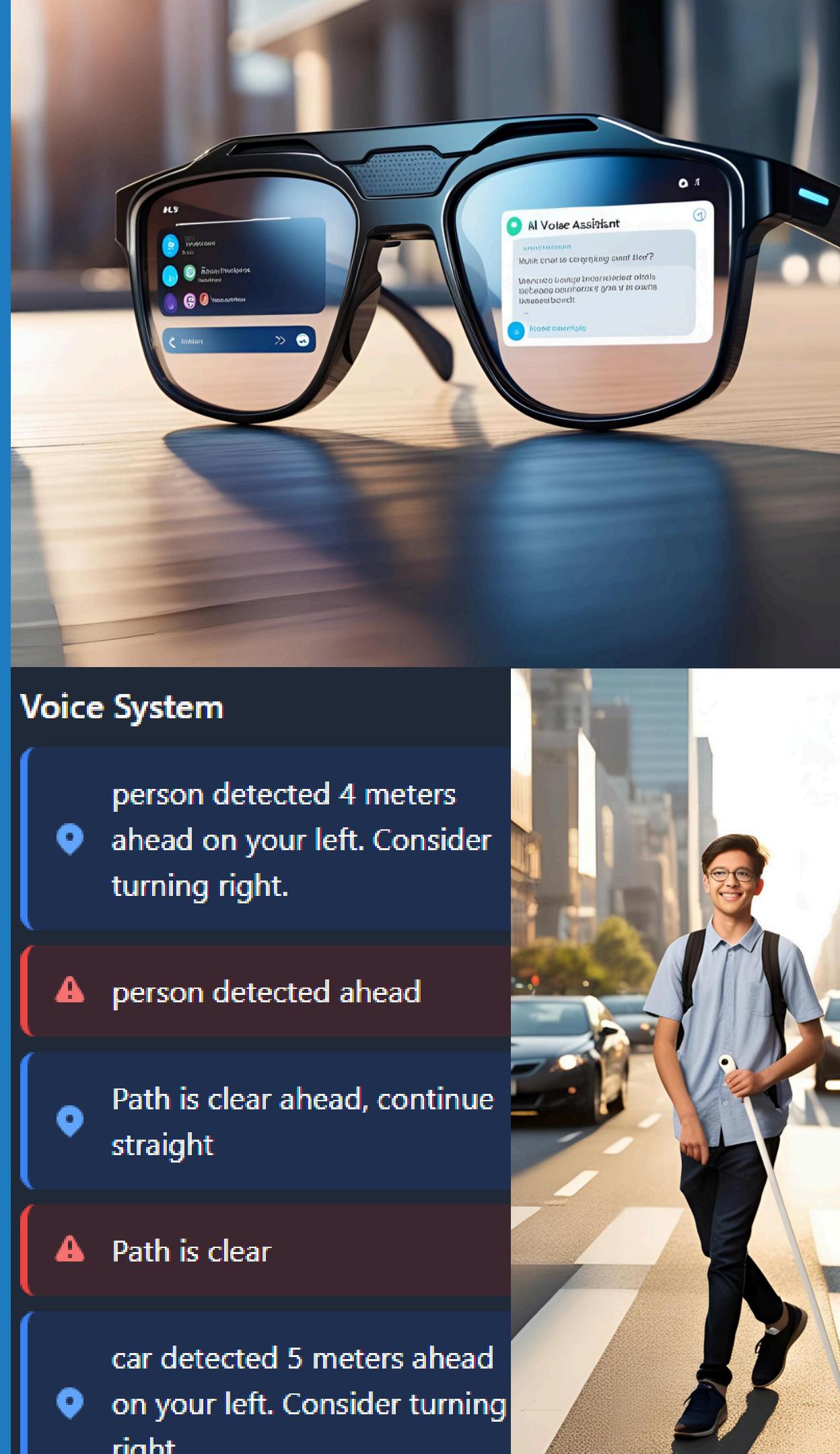


Made with Napkin



Advantages of the Software:

- **Cost-Effectiveness:** Eliminates the need for specialized hardware, reduces costs, making it more accessible to audience.
- **Accessibility:** This can be run on commonly available devices such as smartphones ensuring that more individuals can benefit from the technology without the need for additional purchases.
- **Scalability:** It can be easily updated and improved over time, allowing for the integration of new features and enhancements based on user feedback and technological advancements.



TARGET MARKET

Large & underserved population

1. Massive Demand:

285M+ visually impaired worldwide (WHO)

<1% adoption of smart glasses (due to high cost/limited features)

2. Growing Market:

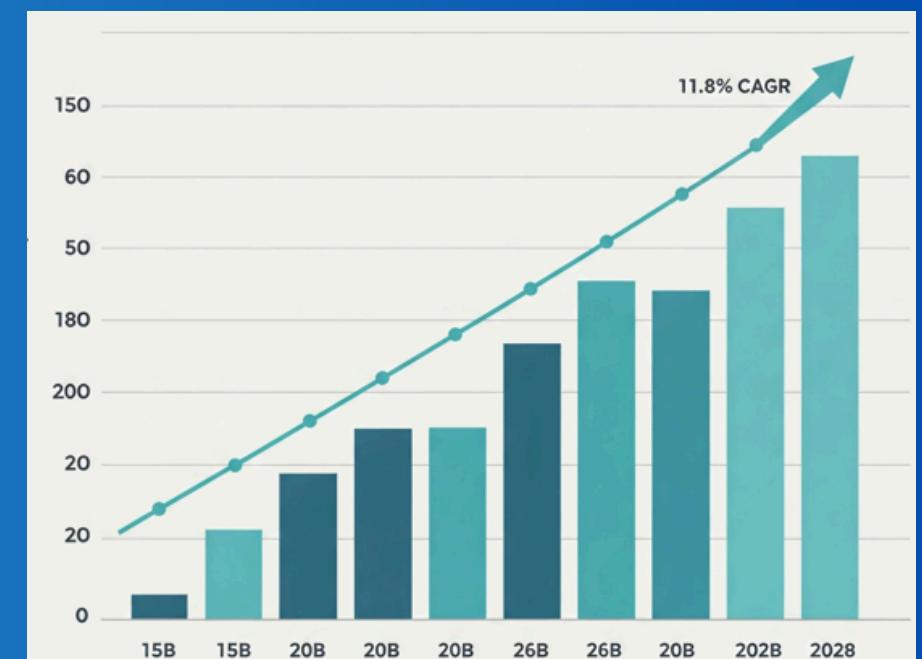
\$26B assistive tech market by 2028 (Allied Market Research)

Key drivers: Aging populations, tech advancements, accessibility laws

3. Current Leaders (and Their Gaps):

OrCam: \$4,500 – Manual triggers, no real-time AI

Envision: \$2,000 – Basic object detection, no actionable guidance



COST ANALYSIS

Metric	Amount (INR)
Manufacturing Cost	2000
Selling Price	2500
Profit per Unit	500

1. "Bulk production reduces per-unit cost by 15% (₹1,700 at 1,000+ units)"
2. "40% profit margin enables reinvestment in R&D"
3. "1/100th the price of premium competitors (OrCam @ ₹3.7L)"

