SaarthiAI: A GenAI Framework for Inclusive Navigation and Health Safety

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1. Executive Summary

SaarthiAI is a browser-based, AI-powered assistive platform that transforms any smartphone into a contextual vision and safety assistant for people with visual impairments. Designed with a mission to deliver *"Independence Through Intelligence,"* SaarthiAI removes the cost, hardware, and connectivity barriers that limit accessibility solutions today. With real-time hazard detection and medical label interpretation, it brings contextual awareness to users through intelligent audio feedback—all within the browser, and entirely offline.

2. Problem Statement

285M+ people globally live with visual impairments, with a disproportionate impact in low- and middle-income countries. Many rely on expensive or ineffective solutions for routine tasks such as reading prescriptions, navigating staircases, or identifying objects. Smart glasses (costing $3000+) are inaccessible, and smartphone apps are either limited in scope or reliant on unstable internet connections. This isn't just inconvenience—it's *exclusion from independence and safety*.

3. Target User Persona

- **Name:** Anjali
- **Age:** 28
- **Location:** Bhubaneswar, India
- **Condition:** Legally blind since birth
- **Challenges:** Navigating unfamiliar public spaces; reading medication labels; cooking independently
- **Access to tech:** Basic Android smartphone with browser access

SaarthiAI is built for users like Anjali, who want confidence in daily movement and health decisions without needing expensive devices or an internet connection.

4. Core Use Case & Solution Flow

Use Case: Hazard & Medication Safety via Intelligent Audio Guidance

Flow:

1. User opens SaarthiAI in a browser
2. Smartphone camera scans environment or text
3. On-device TensorFlow.js detects objects and distances
4. Web Speech API converts insights into natural audio cues
5. Output:
    - "Caution: Stairs 3 steps ahead. Handrail on your left."

- “Medication: Amoxicillin. Take 1 tablet every 8 hours. Refill needed in 5 days.”**5. Technical Architecture**

Tech stack: OCR, TTS, OpenCV+YOLO , GPT-4o, Tensorflow.js

5. Innovation & Realism

Criteria	**SaarthiAI Solution**
Avoids obvious clones	Goes beyond OCR: spatial hazard detection + medical compliance
Built with today’s tech	Fully functioning demo using JS/HTML and public AI models
No dependencies	No backend, no cloud API, no latency
Prototype available	GitHub repo includes open-source code and walkthrough

6. Impact & Scalability

Metric	**Value**
Target user base	285M+ visually impaired
Supported devices	3B+ smartphones (Android/iOS)
Cost to users	$0
Offline access	Yes

7. Roadmap

Upcoming Features:

- Multi-language support
- GPS-free indoor navigation
- Remote caregiver alert mode
- Open-source API for third-party expansion

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8 . Call to Action

We’re building not just an application, but a movement. SaarthiAI is proof that GenAI can be purposeful, inclusive, and transformative without additional infrastructure.

Join us in creating a world where everyone, regardless of ability or income, can navigate life safely and independently.