# Project Title: AuraVisor – AI-Powered Smart Glasses for the Blind

## Problem

Blind people face daily challenges such as navigating their environment safely, reading text, recognizing people, and relying heavily on others. Globally, over 39 million people are blind, with 3.5 million in Egypt alone. Existing solutions are either too expensive, offer limited functionality, or require constant phone usage.

## Solution

AuraVisor is a low-cost, AI-powered smart glasses system designed to assist blind and visually impaired users with everyday tasks using image processing, voice control, and real-time feedback. The device combines a high-resolution camera, Raspberry Pi, microphone, speaker, and GPS tracking into one compact wearable that supports object detection, currency reading, text-to-speech, face recognition, and more.

## Key Features

* Object & Obstacle Detection
* Currency Recognition (Egyptian pounds)
* Text Reading (OCR + Text-to-Speech)
* Time & Date Notification
* People Recognition & Familiar Faces
* GPS Tracking & Remote Monitoring
* Voice Command Activation

## Tools & Technologies Used

* Hardware: Raspberry Pi 4, High-Resolution Pi Camera, Rechargeable 3.7V Battery, Glasses Frame
* Software & Models: YOLOv8 (object detection), EasyOCR (text reading), Face Recognition library, pyttsx3 / gTTS (text-to-speech), Streamlit (UI for demo), Power Automate (optional future app link)
* Languages: Python
* Extras: GPS Module, Bluetooth Speaker/Mic

## Team Roles

* Member 1 (Hardware & AI Models): Object detection (YOLO), OCR (EasyOCR), face recognition setup, hardware wiring
* Member 1 (Voice UX & TTS): Voice command interface, Text-to-Speech, interaction logic
* Member 1(Integration & Demo): Streamlit interface, code integration, recording the demo, PowerPoint preparation

## 8-Day Project Schedule

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| Day | Tasks |
| Day 1 | Brainstorm + Finalize Hardware + Setup project repo |
| Day 2 | Install camera + TTS + Start object detection with YOLO |
| Day 3 | Currency detection + Audio output |
| Day 4 | Add OCR + Text Reading with voice |
| Day 5 | Face recognition + Add/Identify people |
| Day 6 | GPS integration + External monitoring logic |
| Day 7 | Integrate all modules into final glasses script + Test |
| Day 8 | Polish demo + Record video + Prepare slides |

## Topics to Learn (if needed)

* Raspberry Pi 4 camera setup & optimization
* YOLOv8 object detection on edge devices
* EasyOCR text extraction from natural scenes
* pyttsx3 & gTTS voice output libraries
* Face recognition model training
* Streamlit interface design for accessible demos
* GPS module integration in Raspberry Pi

## Target Users

* Individuals who are blind or visually impaired
* Blind support schools and training centers
* NGOs and healthcare orgs supporting people with disabilities

## Future Recommendation

Add an AI-powered object/face search assistant that lets the user ask, “Where is my friend Ali?” or “Find my phone,” and guides them via voice instructions.