Final Project “Your Eyes” Proposal Document

Project Title: *Your Eyes*

🔷 Team Leader

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🔷 Project Description

> The proposed system is an AI-powered assistive model designed to support visually impaired individuals by detecting and warning (Through audio alert) them of potential obstacles in real time. The system operates through smart glasses equipped with a camera, which provide a live video stream as input to the model. Using computer vision techniques, the model analyzes the environment and alerts the user to nearby obstacles, both indoors and outdoors, enhancing their safety and independence.
>
> Furthermore, the system is designed to be extensible, allowing for the integration of additional intelligent features in the future—such as Optical Character Recognition (OCR) for reading printed text and facial recognition for identifying the user’s relatives or friends.

🔷 Objectives

- Develop an AI system capable of detecting obstacles in real time using a live camera feed.
- Provide immediate feedback (audio or vibration alerts) to assist visually impaired users.

- Design an extendable architecture for future features like OCR and face recognition.
- Ensure reliable, low-latency performance suitable for real-world use.

🔷 Functional Requirements

1. The system shall capture live video feed from the smart glasses' camera through connecting the camera with the system.
2. The system shall detect obstacles and determine their distance from the user.
3. The system shall alert the user in real time using audio or vibration feedback.
4. The system shall support indoor and outdoor environments.
5. Saying positive words when responding and getting farther from the obstcale.

🔷 Group Members & Roles

Name	Role
Fatema ElZhraa Ahmed ElFiky	Data PreProcessing , Detect and recognize object , describe scence & TTS , Frontend & Deploy
Nancy Ahmed Mohamed	Data PreProcessing , Detect and recognize object , describe scence & TTS
Shahd Ahmed Ali Morsy	Data PreProcessing , Detect and recognize object , Camra integration & framing
Abelrahman Mohamed Gabr	Data PreProcessing , Detect and recognize object ,Camra integration & framing
Mohamed Sadek Yousef Ali	Data PreProcessing , Detect and recognize object , describe scence & TTS
Mahmoud Ibrahim Mahmoud Askar	Data PreProcessing , Detect and recognize object , describe scence & TTS

🔷 Tools & Technologies

Category	Tools / Frameworks
Programming Languages	Python
AI / Computer Vision	OpenCV , TensorFlow / PyTorch , YOLO
Hardware	Smart Glasses with Camera
Deployment / Backend	Flask / FastAPI / Micrsoft Azure
Frontend	HTML, CSS , JavaScript
Other Tools	Git & GitHub, PyCharm , VS code, Google Colab , JupterNotebook
Other	TTS (text to speech)

🔷 Milestones & Deadlines

Milestone	Description	Deadline
M1	Requirement Analysis & System Design	12/10/2025
M2	Dataset Collection & Preprocessing	19/10/2025
M3	Model Training & Evaluation & System integration as (hardware+model)	2//11/2025
M4	Testing & Optimization	5/11/2025
M5	Frontend& Forming APIs &Depolyment	11/11/2025
M6	MLOPs & Mointoring	18/11/2025
M7	Presentation& Final Docs	19/11/2025

🔷 KPIs (Key Performance Indicators)

1️⃣ Model Performance

- The AI model will be evaluated using standard computer vision metrics, including **Precision** , **F1-score** and **mAP**.
- Inference **latency** and **frames per second (FPS)** will be measured using timing functions to ensure real-time performance.

- The results will help assess the model's reliability, speed, and suitability for assisting visually impaired users in real environments.

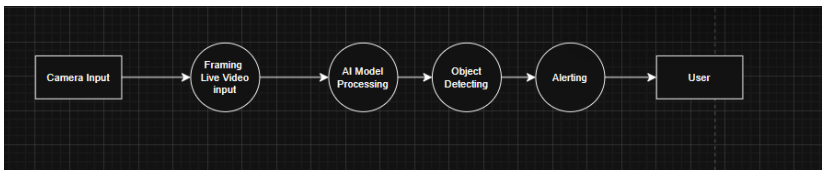
2️⃣ Deployment & Scalability

- Response time per request: **≤ 300 ms**
- Real-time processing speed: **≥ 25 FPS**

3️⃣ Business Impact & Practical Use

- Reduction in manual effort: **75%**
- Expected cost savings: **≥ 50%**
- User satisfaction: **95%**

🔷 System Process Diagram

> Data Flow Diagram :
>
> 
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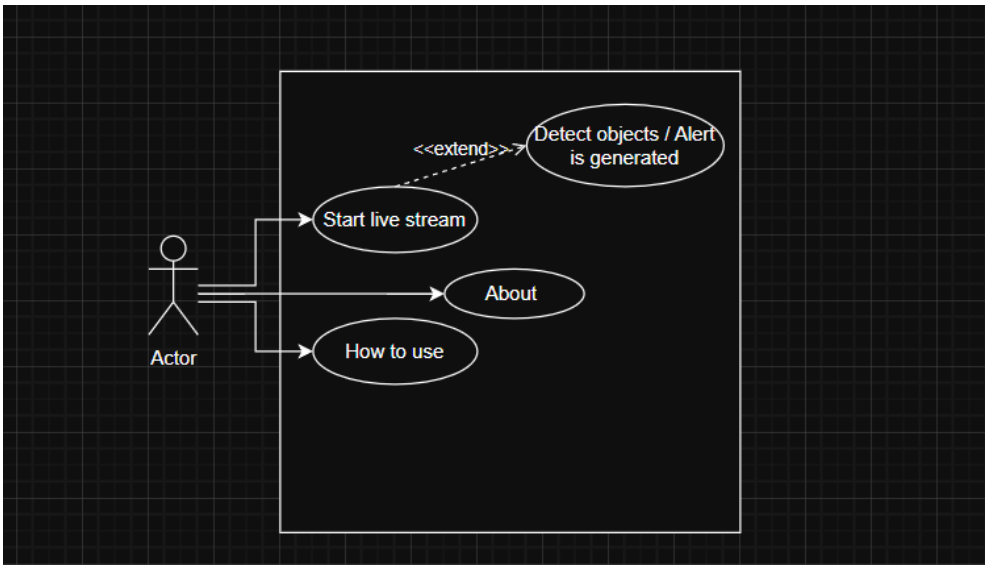
> Simple Usecase Diagram :



🔷 Future Enhancements

- Classfying Some papers by OCR
- Support for multi-language voice output.
- Recoginizing Some relatives and friends that help the person to know that is strange or someone he know.