Building AI Powered Solution for Assisting Visually Impaired Individuals

Problem Statement

This project aims to leverage Generative AI to assist visually impaired individuals in perceiving and interacting with their surroundings.
Visually impaired individuals often face challenges in understanding their environment, reading visual content, and performing tasks that rely on sight.

There is a need for an intelligent, adaptable, and user-friendly solution that provides:

- Real-time scene understanding.
- Text-to-speech conversion for reading visual content.
- Object and obstacle detection for safe navigation.
- Personalized assistance for daily tasks.

Task

Develop an AI-powered application using Streamlit that provides assistive functionalities through image analysis. The application should allow users to upload an image and implement at least two of the following features:

1. **Real-Time Scene Understanding**
   Generate descriptive textual output that interprets the content of the uploaded image, enabling users to understand the scene effectively.
2. **Text-to-Speech Conversion for Visual Content**
   Extract text from the uploaded image using OCR techniques and convert it into audible speech for seamless content accessibility.
3. **Object and Obstacle Detection for Safe Navigation**
   Identify objects or obstacles within the image and highlight them, offering insights to enhance user safety and situational awareness.
4. **Personalized Assistance for Daily Tasks**
   Provide task-specific guidance based on the uploaded image, such as recognizing items, reading labels, or providing context-specific information.

Implementation Requirements

Langchain, Streamlit, Google Generative AI

Evaluation Criteria

1. Uniqueness of Implementation
2. Successful implementation of atleast two Functionality and Features
3. Technical Accuracy
4. Documentation