# AI Assistant for the Visually Impaired

## Introduction

The AI Assistant for the Visually Impaired is an innovative solution designed to empower individuals with visual impairments by providing crucial accessibility features. This tool integrates advanced AI technologies to describe scenes, extract text from images, and convert text to speech, thus enhancing independence and convenience.

## Features

The AI Assistant incorporates the following features:

1. 🔍 \*\*Describe Scene\*\*: Generates detailed descriptions of images and offers safety precautions.

2. 📝 \*\*Extract Text\*\*: Extracts text from uploaded images using OCR technology.

3. 🔊 \*\*Text-to-Speech\*\*: Converts the extracted text into audio for easy accessibility.

## Modules

The AI Assistant is structured into the following modules:

### Home Module

The Home module serves as the primary navigation interface, allowing users to access various features.

### Text Extractor Module

This module enables users to extract text from images using Optical Character Recognition (OCR). It uses the Tesseract library and provides a simple interface for uploading images and displaying the extracted text.

### Text-to-Speech Module

This module converts the extracted text into speech using the pyttsx3 library. It offers adjustable speech rates and provides an intuitive playback interface.

### Scene Describer Module

This module describes the contents of an image and suggests relevant safety precautions. It aims to provide contextual understanding to visually impaired users.

## Implementation Details

The AI Assistant is built using Python and employs the following libraries and technologies:

- Streamlit: For creating an interactive web-based interface.

- Tesseract OCR: For extracting text from images.

- pyttsx3: For converting text to speech.

## How to Use

1. Launch the application and select a feature from the home screen.

2. For 'Describe Scene', upload an image to receive a detailed description and safety advice.

3. For 'Extract Text', upload an image containing text and view the extracted content.

4. For 'Text-to-Speech', convert the extracted text into audio for playback.

## Conclusion

The AI Assistant for the Visually Impaired demonstrates the potential of AI in enhancing accessibility. By integrating scene description, text extraction, and text-to-speech functionalities, it provides a comprehensive tool for visually impaired individuals. Future improvements could include multilingual support and enhanced accuracy.