Scene Describer for the Blind

We have built a scene describing which can aid blind people in better understanding of their environment and bring their life closer to a normal one.

Our project takes a picture of the scene in front of the blind person based on an interrupt given by them, sends this picture a cloud-based image processing device and gets a one-line description of the image captured. This description is then converted into an mp3 file containing the audio version of the description. The mp3 file is then sent back to an ESP 8266 module which takes help of the I2S protocol to play the speech using a speaker.

Key components used:

- ESP Cam
- ESP8266 module
- STM32F439ZI board
- MAX98357A amplifier

Result: We were successfully able to make our entire system work and the same was demonstrated in the evaluation.

References:

- ESP32 CAM: https://youtu.be/Sb08leLWOgA?si=Gypiijo_TI3EJ0xp
- GitHub repo: https://github.com/yoursunny/esp32cam
- I2S ESP8266: https://www.youtube.com/watch?v=At8PDQ3g7FQ
- ESP8266 Audio: https://github.com/earlephilhower/ESP8266Audio/tree/master
- STM32 I2S: https://youtu.be/kMVNKttrlmg?si=EDmHHZzUDAZUjj3o
- STM32 interrupt: https://youtu.be/oJc0seuBbzI?si=bDkKDhBa2sJbCByi