Cognitive Assistance using Computer Vision

1. Real time face-recognition (capable of identifying or verifying a person from a video frame) and face-learning model based on introduction given by the person.
   Scenario: A visually impaired person has to make a acquaintance. But how? There is no pre trained model of that person's face. So we provide a solution to work with real-time data of the person's face and classify the person with a name (received through a microphone). So next time around, that person is automatically recognised.

   Challenges:
   - Usually this kind of problem (object recognition) requires a pre trained model as a solution, but we want to provide a model which learns from new data (image) obtained in real-time.
   - Converting speech to text (name of the new person) and using it as a class label for the new image data.
   - Working with multiple faces in the same image.

2. Provide environmental warnings or hazards:

   Visually impaired people require assistance to move around, but usually they face obstacles like stairs, walls etc. We want to build a solution to provide warnings against such obstacles and integrate this in our model.

   Challenges:

   - This solution requires a pre trained model, which requires a lot of training with a large variety of image data.
   - Trying to integrate a real-time database learning model (1.) with a pre trained model (2.)