

IDEA SUBMISSION

TEAM IKSHANA

ARTIFICIAL-EYE



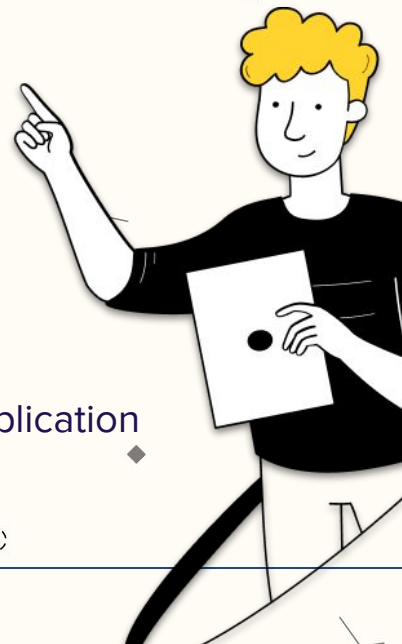
GUIDELINES

Rules:

- Participating teams must use this template only for online submission of their idea.
- The judges shall evaluate your idea based on the contents of this document only.
- In case of discrepancies, the decision made by the organising committee will be final and binding.

Instructions for online submission:

- Go to File > Make a Copy > Entire Presentation
- Save a copy of this file to your Drive *(Do not request access to edit this file)*
- Populate all the slides with relevant information
- Export as PDF and submit the file at [Devfolio](https://devfolio.co) with your application
- Every team member has to upload the idea individually on their Devfolio application and then only form a team





IDEA OVERVIEW

ARTIFICIAL-EYE (A-EYE)

OPEN INNOVATION

- Globally, Around 2.2 Billion people don't have the capability to see. Our project is fabricated for the visually impaired class of the society.
- They cannot identify objects, text and basic emotions, ergo our project provides a new perspective for the dim-sighted.



DELIVERABLES

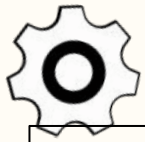
OBJECTIVES:

- To be able to understand the scene by providing a gist of the objects present in front of the user and make a befitting decision.
- To be able to diagnose human emotions, age, gender and react accordingly.
- To be able to apprehend the text content by capturing a photocopy and converting it to speech.
- To provide pertinent indication of the location, given the origin and destination.

SOCIAL IMPACT :

- The visually impaired will now emerge to be more confident and feel more empowered to the other section of the population.
- The blind can now be less dependent of their current environment and people.
- The visually challenged can now get first hand access to technology and make best use of it.



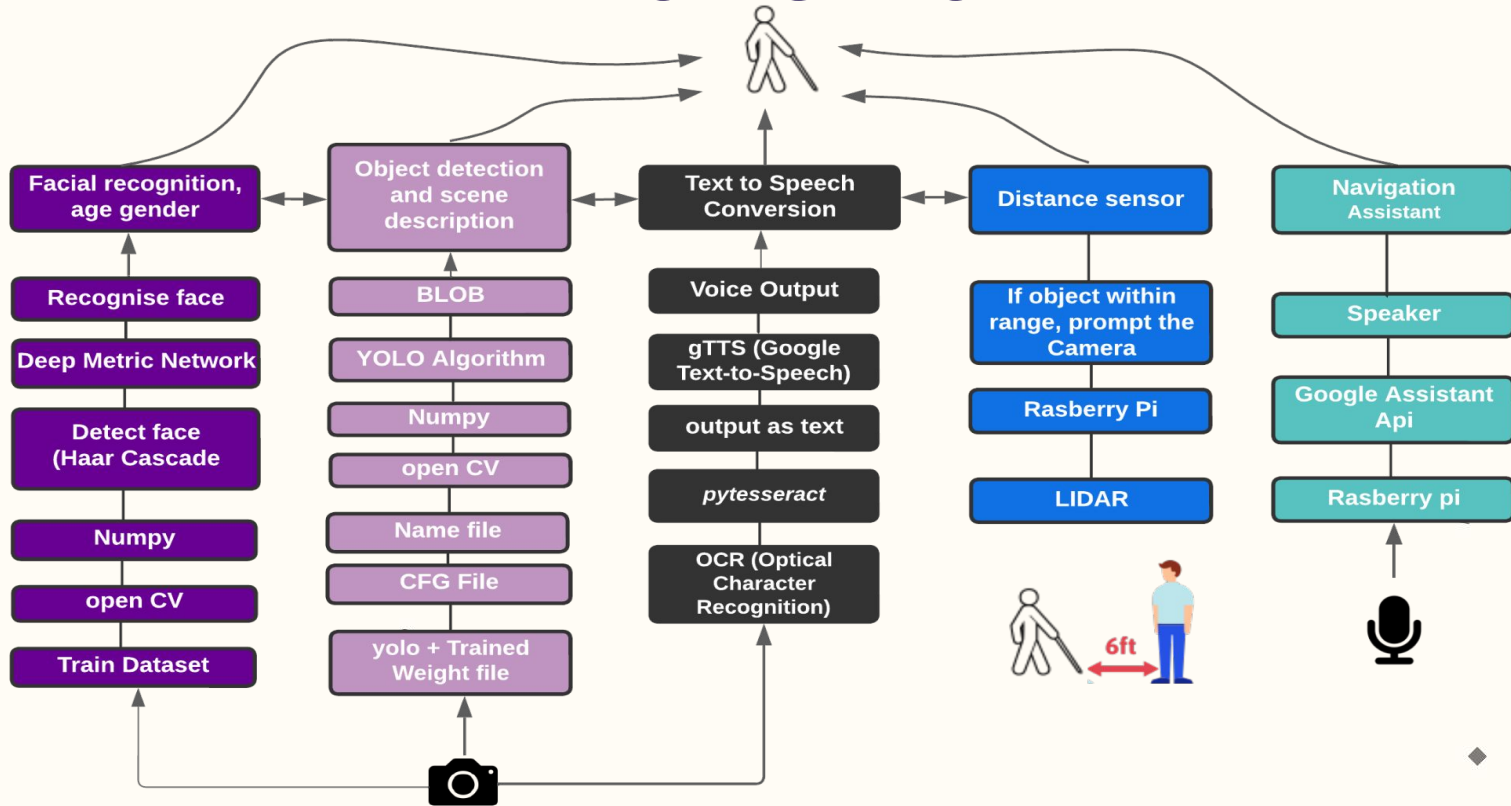


METHODOLOGY

- For object and scene description, method is capturing the image and analysing the objects present in the scene at that instant.
- For facial expression detection, AI uses a lot of non-verbal cues such as, facial expressions, gestures and body language. Whereas, to determine the age and gender it uses a broad dataset which include significant amount of pictures of men and women contributing to the dataset which in turn helps in accurately determining the age and gender of the person.
- Text to speech conversion is done by storing many different font and text image patterns as templates. It also uses pattern-matching algorithms to compare text images, character by character.
- For navigation, bert algorithm and google maps are used for internal and external navigation respectively.

- Alternatively, real time video detection was not chosen since the microcomputer cannot handle high GPU power.
- Our intention was to make this project cost effective, so we tried to utilise minimum resources to make it affordable as well.
- Tesseract(used for text image to speech conversion) is a very powerful OCR-engine and if used correctly(with having required fine-tuning) may deliver quite high recognition results. It is also an open source solution that doesn't require any investment/license cost unlike other models.
- The performance of bert model(used for navigation)over other legacy models is way better since it provides us a large library and also an easy route to using pre-trained models.

TECH STACK



- Dependencies include opencv, Name file, CFG File, pytesseract and raspberry pi



TEAM DETAILS

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