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OBJECT DETECTION FOR BLIND PEOPLE

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Abstract:

Blind people face several problems in their life, one of these issues that is the most vital one is identification the hindrances when they are walking. A visually impaired person needs absolution to help him overcome problems in navigation due to his disability.The need of guidance helps among blind people and a broader look at the advanced technology becoming available in today's world motivated us to develop this project. Technology is something which is there to ease task. Hence, in this project, we use Technology to solve the problems of visually impaired people. The project is mainly focused on providing a type of visual aid to the visually impaired people. In this context we propose system in which an Android Smartphone is used to help a blind user in obstacle detection and navigation. Today, Smartphone's are available to anyone. In fact, they have become the most common device available everywhere. Hence, this project uses an Android Smartphone that uses its camera to identify objects in surroundings and gives an audio output.

Keywords: *Obstacle Detection, Blind People, Camera*

INTRODUCTION:

Visually Impaired People confront many problems in moving from one place to another, i.e., navigation. Vision is human's power to notify him of the obstacles in his way. The application developed can detect the objects in the user's surroundings. It can alert the user of the obstacles in his pathway and this way helps the user to navigate from one place to another saving him from tripping anywhere. The reason it is more reliable is because it is developed on the Android operating system and Android-based Smartphone's are very common and highly available almost everywhere. In fact, it's one of the most used mobile operating system. This makes the application convenient to get.

Thus, a model has been proposed which makes the use of Smartphone, a common device available to anyone and used technology to make an application which can help the blind user detect objects in his surroundings and help him in navigating from one place to another. The output of the system is in audio form that can be easily understandable for a blind user.

OBJECTIVES:

The need of navigation help among blind people and a broader look at the advanced technology becoming available in today's world motivated us to develop this project. Technology is something which is there to ease tasks for human beings. Hence, in this project, we use technology to solve the problems of visually impaired people. The project aims to help users in navigation with the use of technology and our engineering profession motivates us to use the technology we have.

METHODOLOGY:

- Web app, built on vanilla JavaScript and react native
- Used Web scraping code in python and downloaded the datasets
- Used Teachable machine to Train the dataset
- The camera on an Android Smartphone will be used to capture an image of the surrounding.
- The image will be passed to cloud model (Teachable Machine).
- The process gets completed and the object is identified from the image.
- By using Text-To-Speech Browser API, the output which was in text form is converted into Speech.
- The user gets informed about the identified objects present in his surroundings via an audio output

CREATING DATASETS:

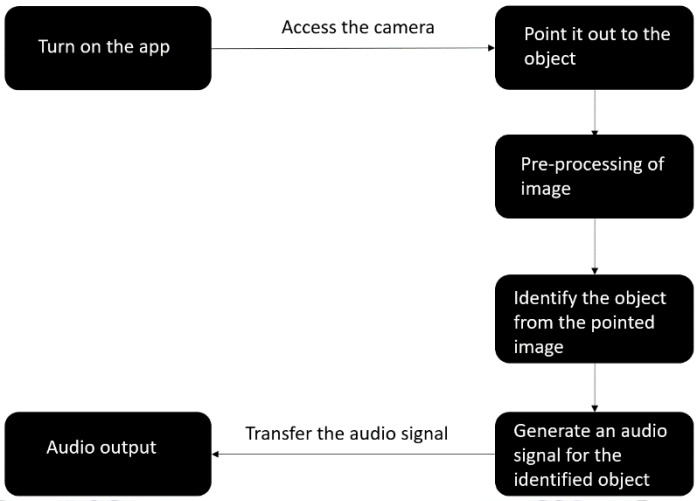
- Web scraper in Python, and downloaded all the images which is required for the project
- Google cloud API (google_images_download) where all the images are downloaded from google
- Using keywords: class name; limit: var; print_urls:True;
- The path is directed where all the data is stored in an individual folder
- Once downloaded, we filtered the unwanted images from each folder

TEACHABLE MACHINE:

- Teachable Machine is a web-based tool that makes creating machine learning models fast, easy, and accessible to everyone. It is a cloud-based platform by Google.
- Educators, artists, students, innovators, makers of all kinds – really, anyone who has an idea they want to explore. No prerequisite machine learning knowledge required.
- You train a computer to recognize your images, sounds, and poses without writing any machine learning code. Then, use your model in your own projects, sites, apps, and more.

- We have uploaded the classes on teachable machine and trained the model.

ARCHITECTURE DIAGRAM:



RESULTS AND DISCUSSIONS:

The tests will go smoothly and had no problems. This report introduced two environmentally-friendly designs for a blind people. We presented information about the Blind people application. This application will be more effective for blind people. It is important to develop this application for the future.

CONCLUSION:

Here we have successfully modelled the Object Detection. The tests will go smoothly and had no problems. This report introduced two environmentally-friendly designs for a blind people. We presented information about the Blind people application. This application will be more effective for blind people. It is important to develop this application for the future. The system is used by Blind peoples but the normal people also can use.

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