HelpAI

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Abstract

The project uses the strongest aspects of artificial intelligence and enables it to make the lives of visually impaired people who need help the most, at least a little easier. It is a social responsibility project that enables these people to have an eye by using computer vision.
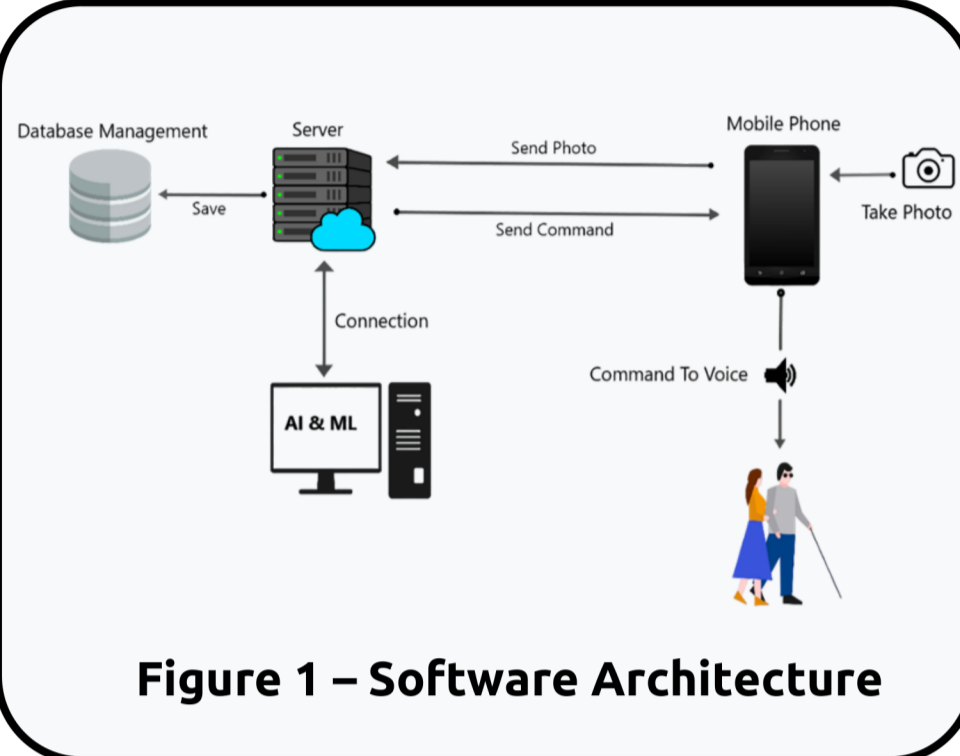
Introduction

Users send images to the server through an application they install on their phones, the server predicts these images and transmits the results back. The predictions are translated into the phone's native language and delivered to the user via voice commands. This solution builds on existing technologies and provides a more accessible and user-friendly experience. Unlike existing apps like Orcam and Be My Eyes, Seeing AI has the ability to provide faster predictions and feedback. Additionally, users being able to use the app in their own language increases accessibility. It aims to provide more appropriate solutions to the needs of visually impaired individuals by optimizing artificial intelligence and computer vision technologies.

The artificial intelligence models we use in our project are:

General Model - Labels: 1000+

Text Model - Languages: 50+

Street Model - Labels: 40

Fruit Model- Labels: 6

Money Model - Labels: 12

Color Model - Labels: 6

We trained and used Street, Fruit, Money and Color models ourselves, and customized other models and integrated them into our project.

Figure 1 – Software Architecture

Figure 2 – Finished Product

Figure 3 – Class Diagram

Company and Product Info

There are 45 million blind people and 135 million partially sighted people in the world, and these people are our potential users, but there are not many projects that make their lives easier. Other projects are very difficult to access or work incorrectly. For these reasons, since there is not much competition, we can establish a company ourselves or sell it to large companies (such as Microsoft, Amazon).

Results & Conclusion

We have developed a completed and expandable project that will make the lives of visually impaired people easier. Users will be able to easily access and use our project. As a result of the project, we learned many things such as group work, combining the technologies we use in a single project, optimizing artificial intelligence and computer vision technologies, and server architecture.
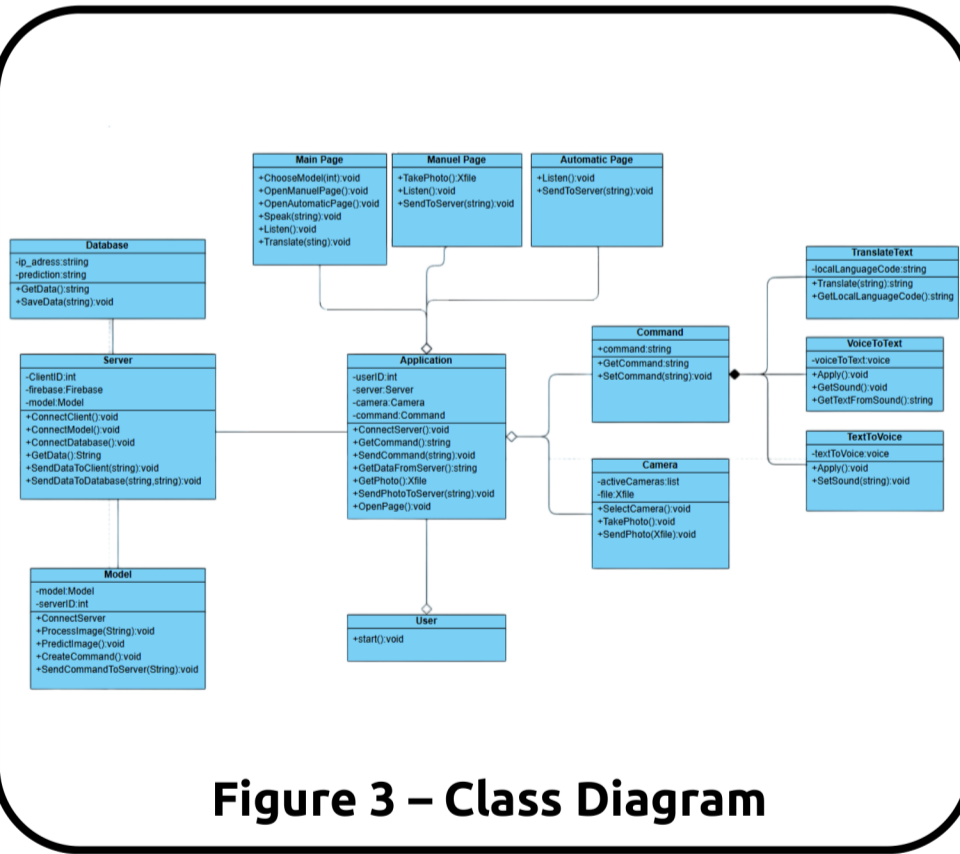
Future Work

Since the project is expandable, new features can be easily added. We can offer users the opportunity to use it easily with headsets, or we can add more advanced and faster artificial intelligence models and assign new features to these models. For example, providing location information or detecting distance

Acknowledgement

Street Model

Model:	MobileNetV2
Accuracy:	0.9801
Loss:	0.0600
Labels:	25
Map:	%88
Precision:	%84

Dataset Split			
TRAIN SET 79%	VALID SET 13%	TEST SET 7%	
7882 Images	1336 Images	727 Images	

Preprocessing — Auto-Orient: Applied / Resize: Stretch to 640x640

Augmentations — No augmentations were applied.

Training Graphs — mAP

Average Precision by Class

Class	Value
Bed	99
Bench	100
Bin	66
Book	73
Car	99
Chair	96
Crosswalk	98
Door	90
Green	86
Laptop	80
MADENISTL	100
Mirror	88
Pencil	94
Red	96
Socket	89
Stair	77
Table	93
Telephone	84
Television	89
Washing Machine	51
Window	100
Yellow	98
cat	51
dog	88
pole	99

Object Loss