GuideDog

AI-Based Narration Camera for the Visually Impaired

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Problem

People who are visually impaired face challenges including:

- Navigating environments
- Recognizing and interacting with people and objects
- Facing a world not designed with their particular needs in mind

Existing Solutions (Inadequate)

Cane

Service Dog

Hearing/Other senses

Audio GPS

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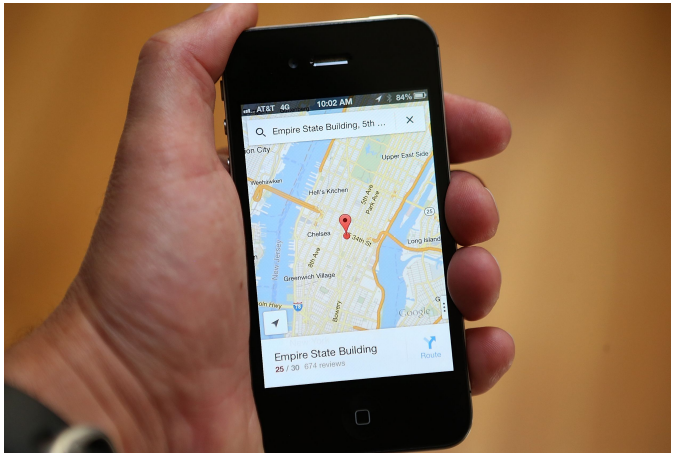


Pain Points

Limited modalities of perception/sensing

Static

Unreliable

Expensive

Too General

Pain Points

Limited

Static solutions can not update in real-time based on changing environment. Moving vehicles are a constant danger.

Unreliable

Expensive

Too General

Pain Points

Limited

Static

Unreliable - Information is not certain.

Expensive

Too General

Pain Points

Limited

Static

Unreliable

Expensive - and requires continuous maintenance (service dog).

Too General

Pain Points

Limited

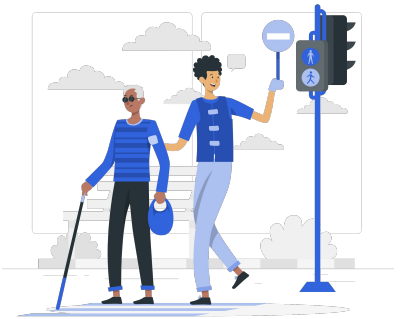
Static

Unreliable

Expensive

Too General - Details can not be captured (e.g. signs, scaffolds, trees)

Mission/Vision



- In an attempt to the help people with visual impairment, we wanted to create an app that is able to detect what is visible in front of a person and read out the objects to them

- Create a User-Friendly design that a visual impaired person is able to navigate using voice commands

User and Use Cases

Users: People with visual impairments or blindness

Use Cases:

- Correctly identifying items in front of the user with ease
- Generating a virtual view of user's environment in users mind
- Contextualizing the world around the user

Solution Proposition

GuideDog!

- Utilizes Machine Learning and image recognition to determine what objects are in front of a user.
- Users can now walk around knowing that the world around them
- Audio feature ensures that users can adequately understand objects in “sight” and anytime a new object appears, audio is played.

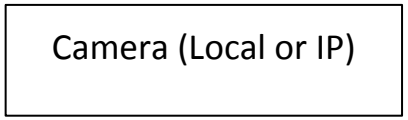
Solution MockUp

Home Screen (With Narration)

Tutorial (With Narration)

Camera with object detection

How it Works



1. Images are continuously captured by a local (mobile phone) or IP-connected camera.

How it Works

Camera (Local or IP)


```
1   person
2   bicycle
3   car
4   motorbike
5   aeroplane
6   bus
7   train
8   truck
9   boat
10  traffic light
11  fire hydrant
12  stop sign
13  parking meter
14  bench
```

2. Utilizes an image recognition algorithm that utilizes a pre-trained model based on YOLOv3. (Recognizes 80 of the most commonly found objects in daily life.)

How it Works

Camera (Local or IP)


```
1   person
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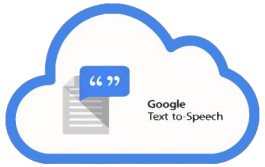

3. Objects are detected in real-time and sent to the Google speech API that generates a voice-based message.

How it Works

Camera (Local or IP)


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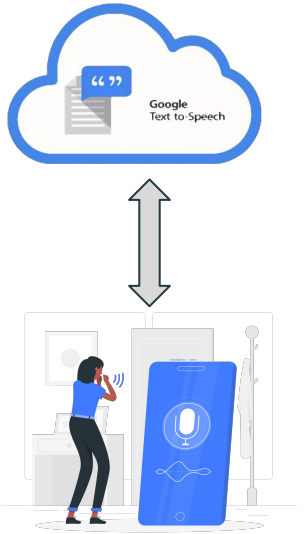

4. Audio playback happens immediately to alert the user.

How it Works

Camera (Local or IP)


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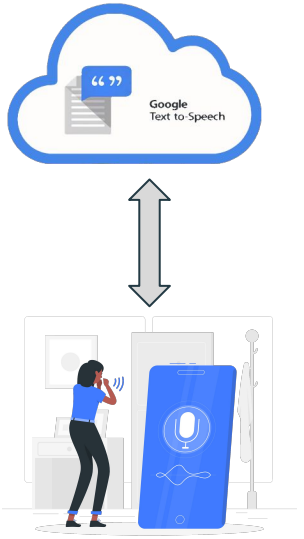
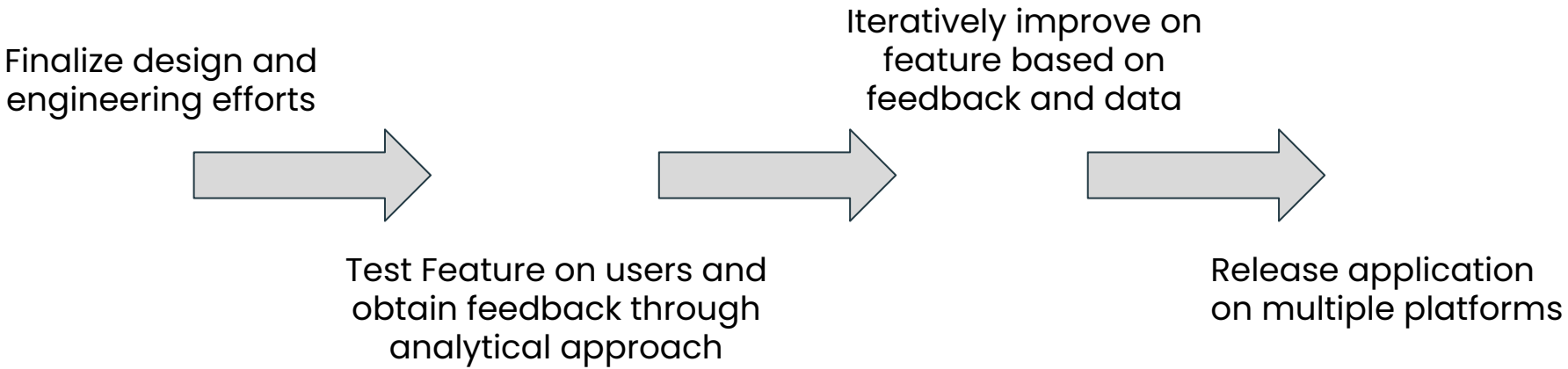


5. User can interact with GuideDog through voice commands.

Launch Timeline



Success Metrics

- User acquisition
- Growth rate
- Retention rate
- Monthly active users
- Feedback from users
- Percentage accuracy of object detection