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1 Abstract

Throughout this paper the works of the company OrCam is discussed. The company founded in Jerusalem works on creating technology geared toward helping the visually impaired. Their most famous product is smart glasses that create auditory feedback for what the camera in the glasses see.

2 Introduction

Improvements in computer vision have allowed us to implement intelligent models to help people all across different fields. From self driving cars to object detection. It allows us to accomplish tasks that are too hard to hard-code and require special algorythms to be able to create useful models. While computer vision has been a long developed field, it continues to show improvement and allows us to implement it to more complex scenarios. Orcam MyEye is a device that attaches to the users glasses and can be used to read text, recognize faces and even identify products for people who are blind or visually impaired.

Figure 1: Rendering of the OrCam device that attaches to the side of the users glasses. Image taken from the OrCam website https://www.orcam.com/en/.[2]

3 Technical Rationale

Creating a device that is able to detect objects, people and text has a number of benefits compared to other technologies that are useful for the visually impaired. Current visual aid technology does not allow text to speech functionality and this device can also help when glasses are not enough to identify an object or person. A visually impaired person can listen to the text that they are attempting to read, a functionality that no other visual aid provides. The small form factor and extraordinary computer vision models of the device allows it to outshine competition.

4 Method

To provide the text to speech functionality, the device snaps a picture of the text, analyzes it and then send it to the earpiece. While OrCam doesn't specify what kind of computer vision techniques they utilize but similar projects use trained convolutional neural networks to detect objects and words. A similar object detecting model could have been trained and installed on the OrCam device.

5 Example Results

The OrCam MyEye has helped countless of people giving them the ability to read and identify objects. Using this product is as simple as pointing and listening. On the OrCam website you can see some examples of peoples reaction to the product. Some say ""OrCam MyEye device has helped me tremendously with my disability" [2].

6 Technical Challenges

Some technical challenges that the product faces are accuracy and battery life. If the device were to read something incorrectly, It can cause all kinds of problems for the user and it can be potentially dangerous, therefore the accuracy must be perfect. In terms of battery power, the device must ideally last the whole day but given its size constraints this may be hard to achieve. Currently the device only lasts for 2 hours of continuous use. Lastly, the device should be as small as possible but the nature of all of the components that it has, the device can be a bit bulky.

7 Technical Risks

One of the biggest technical risks is making a device small enough that would fit in most glasses and not be too heavy. Although OrCam MyEye has done a great job a meeting this spec, it seems that it had to sacrifice battery life in order to do so. Another technical risk is maintaining the detection accuracy. Good detection and reading is crucial to this products success in the market.

8 Commercial Viability

OrCam MyEye is a device that can potentially help 14 million people in the US who are visually impaired [1]. This product has great market potential and the ability to help a lot of people. The only big issue for this product would be the price, which can potentially scare off future customers.

9 Commercial Risks

Big risks for this product would be big tech companies refining their smart glasses to add similar functionality to the OrCam MyEye. These big tech companies have dedicated AI research teams that can potentially add a similar capability to their current lineup of smart glasses and maybe even outperform its capabilities. Another commercial risk would be the financial availability. The big $4,000 price point for these glasses make it inaccessible to many people.

10 Discussion and Conclusions

In summary, OrCam MyEye has the potential to help millions recover their independence and partial eyesight. This company has created an amazing product but should be weary for future competition from big tech companies. Hopefully they continue making improvements to this product that can make a huge impact in the lives of the visually impaired.

References

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[2] "OrCam My Eye - For People Who Are Blind or Visually Impaired". In: (2021). URL: https://www.orcam.com/en/myeye2/.