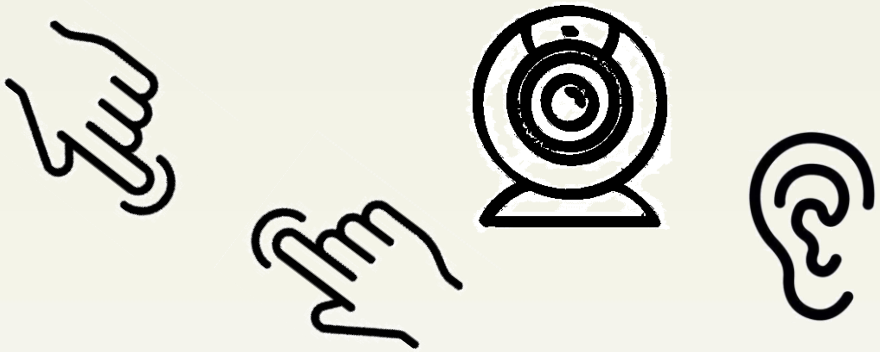
Edith

A Point-Detecting System & Application aiming at helping those who are in need of auditory education & convenience.



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What are we trying to do?

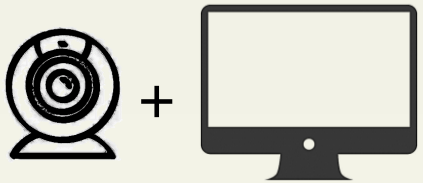
We'd like to create an in-time instructor by designing a Point-Detecting System to help those who are in need. Also, we need hardware to deploy this system, then comes the issue of devices.

For example, Google complished a product named Smart Glass in 2015, which can use existing Google application like Google Map and Gmail or third-party application like Twitter or Instagram.

However, we should learn from Smart Glass failed experience that we are supposed to create a device which are simple in usage and outlook with several complete functions.

Therefore, we want to develop a simply-used light device for those who need auditory education &convenience.

How it is done today?
Any limits?



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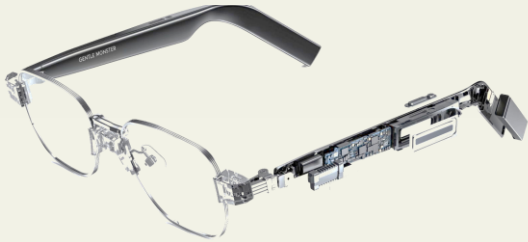


Nowadays, the technologies of detecting fingers, things and articles are very common and we can learn from the open source.

However, we didn't see people make up them together to create a system or devices to help specific people.

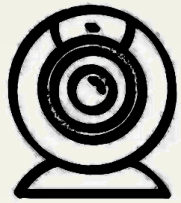
As for the limit, it would be how to design a proper device for people to use, like:

1. Camera + PC-software (unportable)
2. Smart glass (kind of expensive)
3. Smart headband (great)

or

How it works?

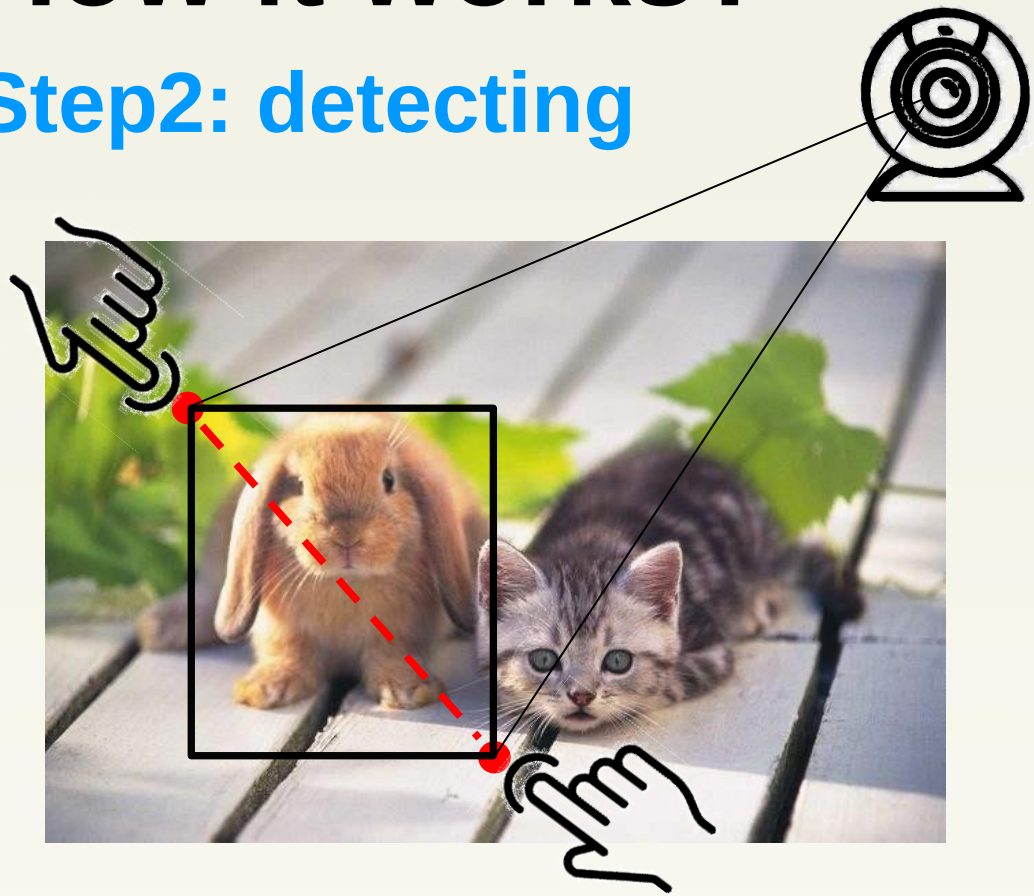
Step1: pointing



The fist step is use 2 index fingers to point out the area you want to recognize, it could be anything, like animal, article or tools.

How it works?

Step2: detecting

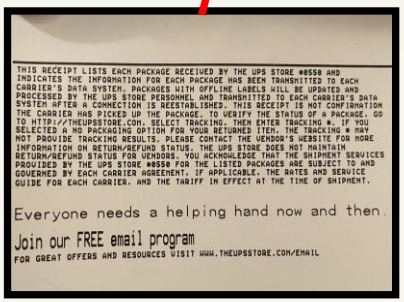


In this step, we start by the detection of the index fingers, after that the system configs a certain rectangle area through the link line between the 2 points on your index fingers. Finally, the system will recognize what is in the image.

How it works?

Step3: feedback

Rabbits, also known as bunnies or bunny rabbits, are small mammals in the family Leporidae…



Then the system will start a brief introduction of the things in the image. If there are just characters in the image, it will read the article.

This receipt lists each packages received by the UPS store #0550…

Anything new?
Whether it will be successful?

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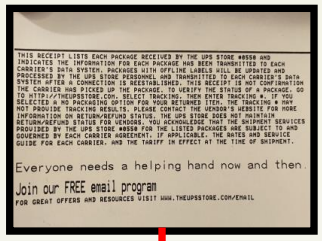


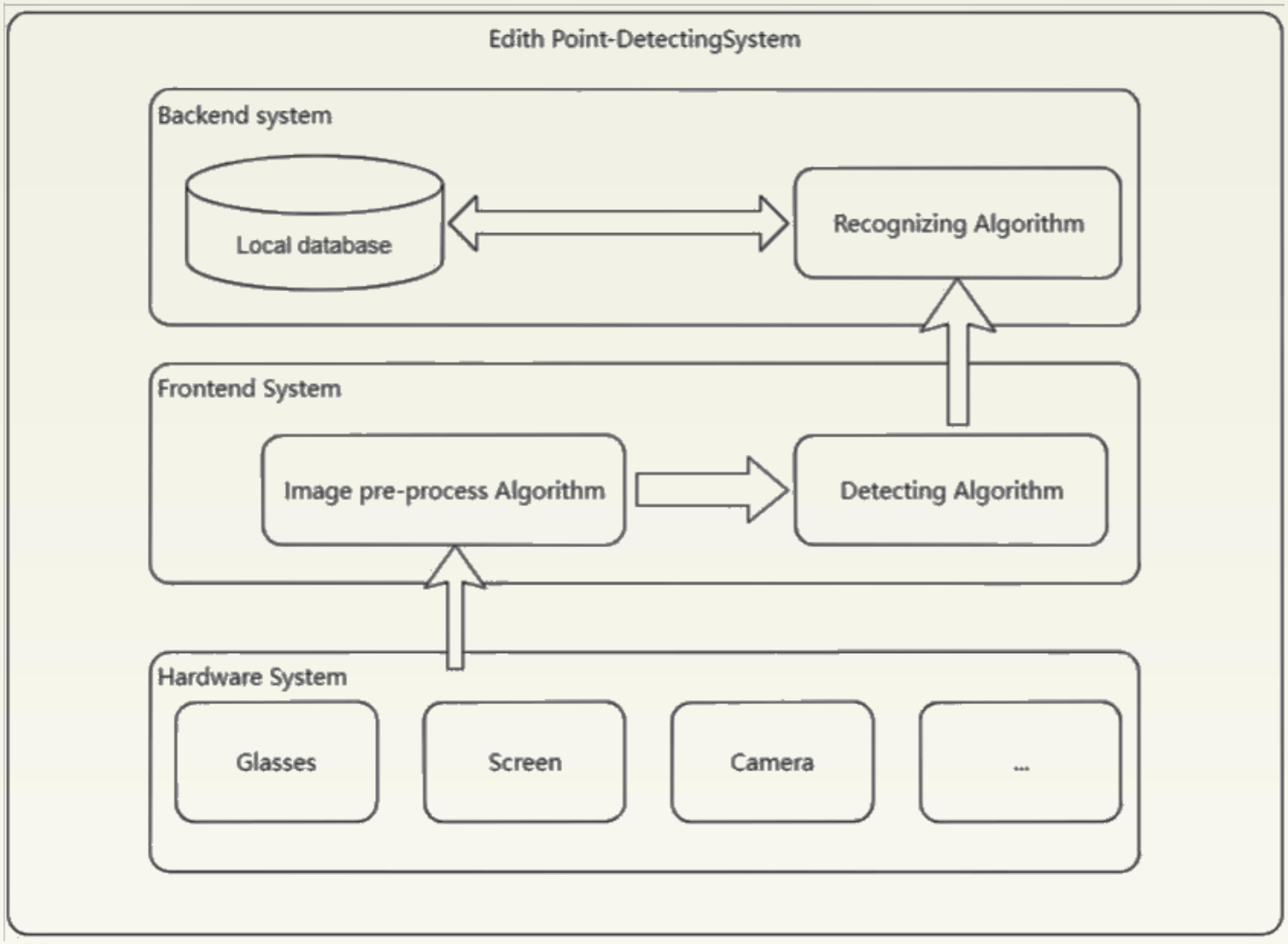
This receipt lists each packages received by the UPS store #0550…

The superiority is that this system is able to transit the images to auditory information, which help specific people to read, learn and live.

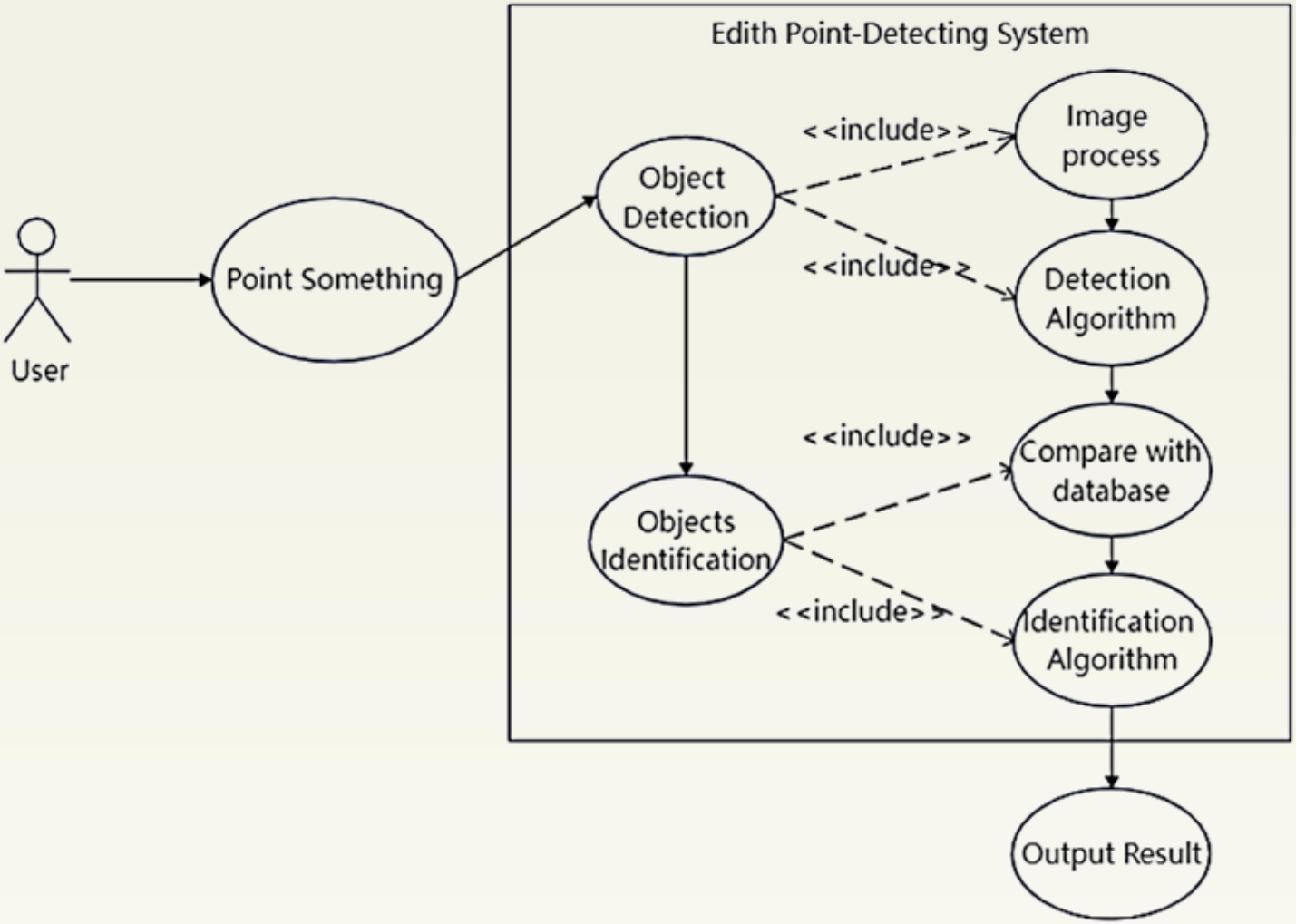
We would say that would be a successful project cause we don't need to care too much on prime cost and information security compared with Google Glass. Also, we are going to create different products for certain people:

1st : A smart glass, which can carry lens with diopter or sunglass.

2nd : A smart headband, which is light and easy to wear.



System Architecture



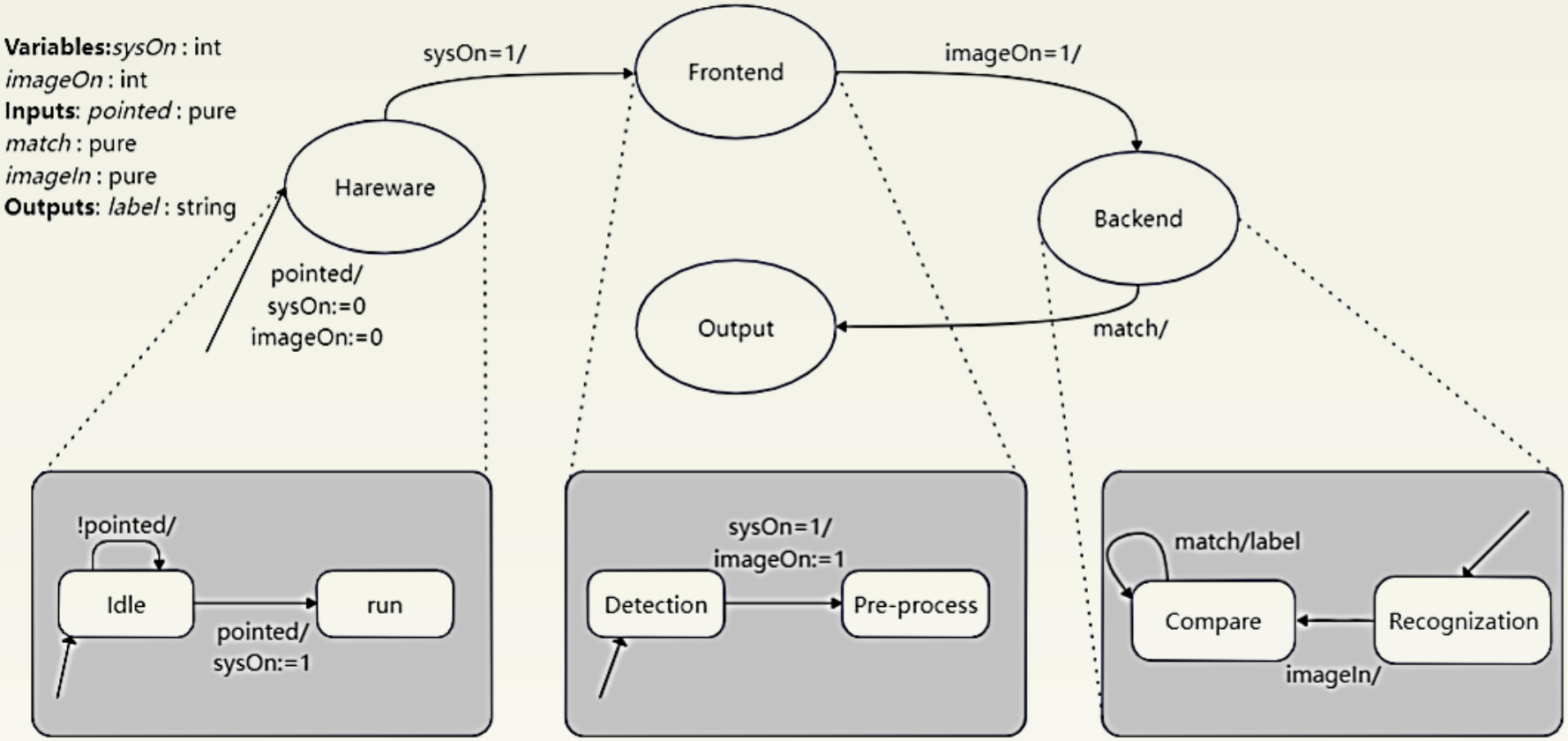
Use Case Diagram

Who cares?
What difference will it make?

For blind people, in the past, they touch without knowing what they are touching, but they can point the things with fingers after touching them and the system will tell them what the thing is or read the article.

For young kids, they are able to learn more about this world when their parents are not together with them. Also, it helps parents to release pressure of family education.

For normal people, some of them prefer listening to reading and they are going to benefit from this system &device too.



State Machine

Any Risks?

1. Special environment might influence the accuracy of identity and pointing-detect models. (eg: strong light environment)

2. Errors exist in the identity model, which may be dangerous for blind people. (eg: regard a knife as some silver hard things they need)

3. Price. The past products, such as Google Smart Glass, is too high to afford for the public, especially blind people who have low income. Also, we know that low price with high quality brings more customers. Hence, we need to balance the price and sales volume.

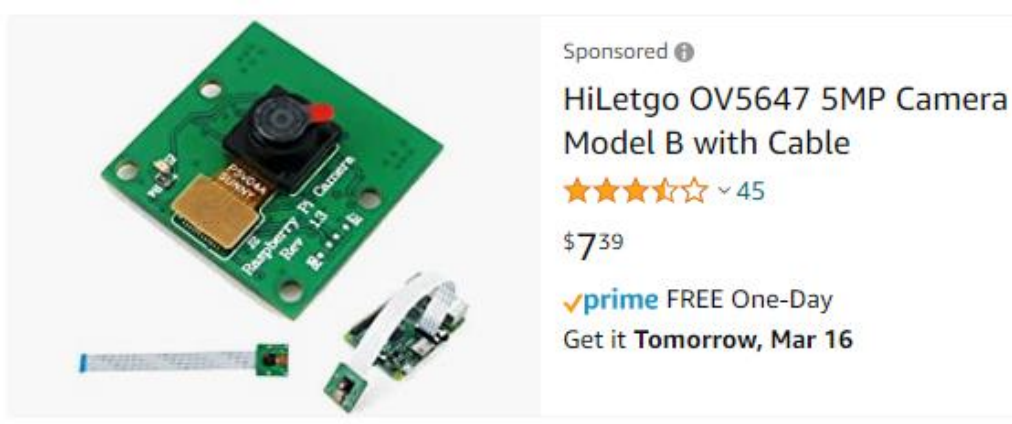
Learning from Google Glass failure

Three main reasons for its failure:

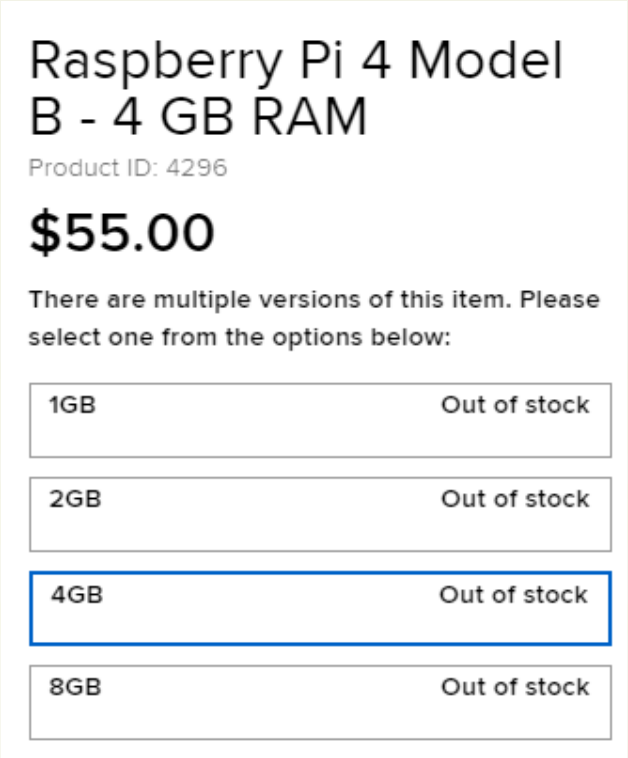
1. General Functions: We basically don't have this risk, since we narrow down the functions to a very specific point.
2. Battery Issue: Google glasses only can work 4 hours. The limits of battery needs us to concerns.
3. Comfort level: Long time using ->heating issue. This will be a critical risk for our product.
4. Language issue: Google Glass only worked properly with a native English speaker. Since we want to help blind to know the world, the language model has to be as many as possible.

How much will it cost?

very low: the main cost is hardware



around 100$ for developer hardware



How long will it take?

Development periodic check	duration/day	day 0-7	day8-14	day15-24	day25-32	day26-40
stage1: hardware pre-development						
glass camera	7					
headband camera	7					
stage2: AI development						
gesture recognition	14					
item&object recognition	14					
edge AI conversion	7					
stage3: deploy & intergation						
code deploy	7					
hardware integration	7					

Periodic check?

Midterm exam:

1. Finger& gesture detection
2. Item classification
3. Characters Recognition &reading

Final exam:

1. The effect of making up them together
2. The effect of deploy the program on the devices
3. Producibility(balance of price and usage mode: smart glass or headband)

Summary

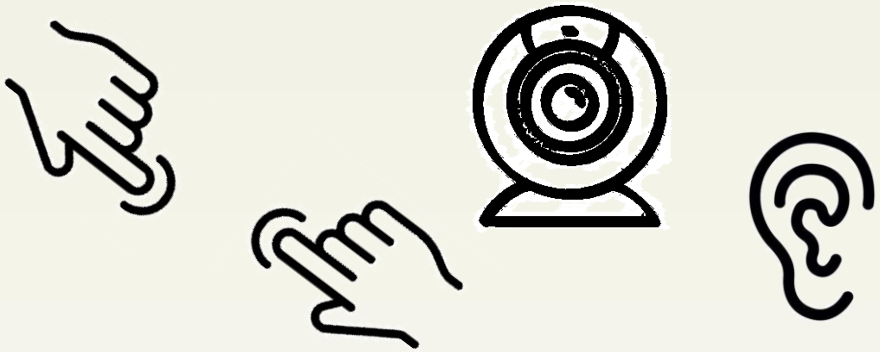
The project we would like to design is a system &device which helps certain people to learn through auditory instruction, especially blind people and kids.

The system runs through 3 steps:

1. Config certain area for detecting through index fingers.
2. Detecting the things or article in the image.
3. Giving a brief introduction or reading the article.

With the help of this system, we hope to bring convenience to those people who are in need of getting to know this world through auditory sense.

THANK YOU



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