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**Questions and Answers:**

Q: Do you use a cane within your own home? If not, how do you prevent yourself from knicking a table or stubbing your toe?

A: She has limited vision so she is pretty familiar with her own home, but she struggles when people leave cabinets open and can hit her head.

Q: What is the right way to guide someone?

A: They do not want to know where to go, rather they just want awareness of what is around them.

Q: Do you have any devices that help you to denominate monthly bills? If not, how do you differentiate them?

A: She struggles to know what she’s handed them and what she gets back, she can use a card or depend on others.

Q: How do you work out? Do you have specific machines that you have memorized? And when using a machine, how do you know what weight you have changed it to?

A: She uses the machines with pins to feel the holes and measure the weight. Free weights are a lot easier to mess up. She often starts with a trainer and gets their insight as to which weight it starts at and the increments.

Q: How do you approach cooking or preparing your meals independently?

A: It's hard to know how long to cook things and truly know if its cooked long enough

Q: For your professional related tasks how do you manage your written information such as emails or documents?

A: She uses SeeingAI (an app) to be able to read back signs and documents to her.

Q: How are you able to read music?

A: She has to transcribe music from print to braille but it's very costly and takes a long time.

Q: What are some current devices you use?

A: She uses a screen reader and she reads braille. She connects a braille reader to a computer to use as well. She uses a cane as well.

Q: how do you match colors when getting dressed if you are color blind?

A: Sticks to jeans and a nice shirt but it is difficult to match colors. She has her default clothes that she wears on a normal day.

Q: How do you use your phone and know what apps you are using?

A: The phone has a screen reader that talks back and describes the interface.

Q: Do you have problems with obstacles at eye level?

A: Yes, she can use a protective position with her arm up so she doesn’t get hit in the head. Overall though, she has some vision to see big obstacles

**Pain Points:**

1. Obstacles when walking
2. Using a calendar or planner
3. Cooking (knowing when a burger is done or knowing what is hot)
4. Knowing different weights in the gym
5. Counting money and knowing different dollar amounts
6. Social interactions
7. Employment Discrimination
8. Financial Independence
9. Using a thermostat
10. Technical accessibility
11. Reading signs such as names on a cup or signs to wear a mask
12. Living in isolation
13. Emotional and psychological impact on health
14. Distinguishing colors
15. Public stereotypes
16. Bumping open cabinets
17. Reading documents
18. Bumping head from low hanging trees, signs, etc when out
19. Reading music
20. Cleaning, doing household chores
21. Safety - being followed
22. Matching clothes - especially when not jeans
23. Stairs going down or ledges

**The Problem / Pain Point:**

Problem: The issue we are addressing is being able to match clothing to create different outfits. It is easy for visually impaired people to wear jeans and a top, but there are many instances where they have to branch out and need to be able to match, for example, needing to wear slacks for a business meeting and accidentally choosing brown pants and a black blazer. In addition, there are many events or instances where individuals may want to wear specific colors, such as pink for breast cancer awareness or school colors for a football game. Being able to match colors can help with overall confidence, professionalism, and give an extra outlet for expression.

The current state of art:

The Envision Low Vision glasses use AI technology to translate visual information into audio to inform you of your surroundings. This technology is very helpful for obstacle detection as well as being able to describe objects like shirts in a closet, but it has a harsh barrier of entry with a price tag of over $2,000.

There are talking handheld color detection devices as well, at around $250 or more. These devices are much less expensive but still not cheap, and they might be tedious to use when quickly flipping through your closet. They also do not have features that can tell complimentary colors or fabric types.

There are colorblind glasses for those who have no visual impairment and are just colorblind, which are ranging from $25-300. This is likely a much easier fix for those who are not visually impaired.

There are mobile apps that are available that are able to detect color as well. They are based off of the phone camera, so there are some limitations based on lighting in the room and quality of the camera. These mobile apps are very accessible, but it still takes up a hand when trying to find clothes and does not help much in terms of finding complementary outfits, because the user still has to do the matching.

The scope of the problem: The impact of this product will be limited due to the price because of the large percentage of unemployment in the visually impaired community. There are also other similar products on the market that can help as well, so it limits the customer base we are working with. That being said, this product can still help visually impaired people to quickly flip through their closet and be able to match colors. If we also have a feature that helps them find matching articles of clothing, it will take it a step further and open many doors in terms of fashion.

**Customer Archetype:**

This product will be for the visually impaired, especially with visual impairment such as a colorblindness or complete blindness. Any sort of visual impairment affects the ability to be aware of colors of objects, especially clothes. This product is specifically designed for those who may want to take more risks or branch out in their fashion sense, rather than sticking to the safe choice of jeans and a top. It is also very useful for those in the professional world that have to match suits and blouses without clashing. This product is most helpful for those with a large collection of clothes in their closet, because it will allow them to flip through clothes quickly and tell the color and how to match it.

**Requirements:**

Functional:

* Has to be able to tell what color the clothing is in front of the person.
* Tell what shade of color it is, dark blue or light blue instead of just blue.
* Possibly have options on what would be the best to match with that specific piece of clothing.
* Doesn’t take too long to process.
* Easy to operate

Constraints:

* Products can be very costly for customer
* the product may be difficult for a visually impaired person to use

Design Requirements:

* User-friendly
* Wearable
* relatively fashionable
* easy to process

**Potential Products:**

* Glasses that detect color when up close
* A hat that has a camera you can put fabric up to for color detection
* A glove that has a color sensor and can read back the colors when
* A watch that can detect color when up against the fabric
* Neck band / necklace that has color sensors