Panoculon Lab

1) **Challenges faced by visually impaired people:-**
   A. **Reading**
      Current solution**:-** Now more than ever, there are braille documents, text-audio apps which are available.
      Advancements:- AI Agents for conversion of text to audio then listening to the user; performing the task based on the users instructions. Like taking notes; clarifying doubts.
      OCR to scan and convert printed text into digital format which can be read by screen readers.
   B. **Movement and walking**
      Current solution:- Dogs and canes
      Advancements:- AI power smart glasses to perceieve the environment, give directions
   C. **Consuming entertainment:-**
      Current solution:- To "watch" a football match they usually require a friend who guides there hands to tell them how the goal was scored and pass was made.
      Advancements:- A physical device which automatically relays information on time in the same way but at the comfort of your house and even when they are home alone.
   D. **Cooking assistant**
      Current solution:- dependent on others
      Advancements:- Here too use of AI glasses or any device physically attached that has a clear view of the cooking can help. For example, to know if the onions have been caramelized, they usually turn brown. This can be detected.
   E. **Getting jobs in the field they are interested**
      Solution:- "Research" in the field they are interested in would cut the problems they
      would face in the corporate world in the same field.
      Multiple govt education institutes have reservations for people with disability
      Advancements:- In any corporate job, the most import is reading mail, answering, setting And attending meetings. A complete AI agent which does this on voice command If the person is interested in coding, we can upgrade IDEs which would read out the Errors.

2) **Advantages**
   A. Other senses are better
   B. Improved empathy and therefore social intelligence.
   C. Improved memory.

3) Ray-ban Meta:-
   They take photos, attent calls etc.
   They should be updated with more features and need to improve battery life.

Omron HeartGuide: is a wearable blood pressure monitor that looks like a smartwatch. It provides accurate blood pressure readings and tracks other health metrics like physical activity and sleep.

Need to add more personalized feature and base predictions on users historical data

4) **A**. A fitness device which can detect any abnormal change in body while exercising. Personalized devices for people of different age, sex and health conditions. This will store the users data and base on present heartrate and BP. This device should record sleep pattern.
Another feature would be to calculate the caloric intake of the person and based on their goal of either reducing or increasing weights suggest if more steps are needed for the day and how many.
Visually impared people:- text-to-speech, vibration patterns, voice activated

B. Smart glasses with enhanced edge detection and improved color identification. Most visually impaired people are not completely blind but partially. If we can use computer vision techniques for edge detection, this would definitely be an improvement.
Additionally for people who are color blind, we can use smart classes to identify those colors and convert to the colors they can perceieve.

C. Not a device but a "Productive app" which kills all the unproductive apps on the phone for a duration of time with no override. Or if you want to study but with the help of youtube videos, such an app would only recommend productive content on it.

5) A. Historcial Data collection -> preprocessing -> Model training -> API calls
B. Data capture -> data preprocessing -> Edge detection -> feedback mechanism

We can use models such as Tiny llama for fitness devices. We can use techniques such as Qlora on LLMs.

These devices will only be making predictions and not actually be trained with the help of a smart phone. We can train the model with the help of higher computational resource.