V. Project ideas:

- **Overview:** Over the last two decades, the world has undergone massive changes; however, there have been few applications or websites developed to assist the disabled. When programmers create a program, they are typically concerned with the profit it will bring, but technology, to me, is a tool for improving people's living conditions. With a strong desire to make the lives of the blind easier, I decided to develop an application with AI support that would act as their second eyes, assisting them in recognizing everything around them. The project will run on both the iOS and Android platforms to reach the greatest number of users possible with the help of virtual assistants such as Siri, Alexa, Google Assistant, and so on.

- **Motivation:** According to the Visual Impairments and Blindness Global Data & Statistics in 2020 there are around 276 million people worldwide are blind or have moderate or serve vision impairment, among them 205 million visually impaired people are over the age of 50, accounting for 80 percent (Laser eye surgery hub - 2020). Above all, my grandfather is having diabetes which can lead to the complication is visual impairment, so I want to create something to help him and others like him enjoy the world around them without any difficulties. Furthermore, the basic AI system on a cell phone has been developed, so all that is required is an application that connects and controls the AI to do far more than ever before.

- **Description:**

+ To begin, the app icon will be created by using Adobe Photoshop and Adobe Illustrator.

+ Then, for Android applications, it must use programming languages such as Java or C++, and for iOS apps, I must use Swift or Object-C to ensure that the greatest number of users can approach (Sandamal Siripathi - Jul 24 2017). Making a basic user interface is critical for the majority of my users, who have visual impairments; yet I must also ensure that it loads quickly and runs smoothly.

+ In order create these apps, many professionals in various fields are needed, including mechatronics, robotics, industrial design, psychology, business development, and before publishing the application to the community, it must go through numerous tests with many blind individuals in order to deliver the best version. This is a revolutionary creation for the blind, so it forces to make no mistakes during the running process because it might be affected to their experience or even their lives. As a start-up, time is the most valuable resources to help us achieve goals and projects for the more time we spend, the more money we will have to consume.

+ I am also knowledgeable about AI development since I must allow the computer system to learn from the simplest to the most complicated data and images in order to recognize, analyze, forecast, and provide final findings as quickly as feasible. It has to understand the environment, objects, their position and movement in 3D. Then, virtual assistants transmit information to the blind using auditory impulses. To guarantee the system functions efficiently and properly, a good picture classification algorithm is designed, which needs a lot of individual and technological processes between the live camera video stream and data (Oction n.d.). To handle the input and output data, this will need extensive backend computing, such as massive database management, memory allocation, and powerful hardware interfacing (Kevin Toth - 16 Jan 2017).

+ Furthermore, because the mobile phone is portable and inseparable, individuals always have it with them; thus, it will now serve as a trustworthy aid for the blinds and visually impaired people.

+ Unlike other apps, users do not need to click on the app's icon or navigate through the user interface; instead, they will instruct the virtual assistant to turn on the app whenever they require it. The app will then connect and turn on their front camera to process data from a video stream in a radius of 1 meter in front of them to warn of impending risks and objects, and the virtual assistance access the microphone to read it out loud for you. Furthermore, it can identify the color, text as well as handwriting in newspapers, documents, determine the value of the money they paid, and human expression. With the development of LIDAR sensors on phones, the measurement of the surrounding environment will be faster and more precise, resulting in the greatest user experience (Jessica Canning - 26 March 2021).

+ The app will initially run with English and Chinese audio readout; however, in order to extend the market, it will be expanded to include many other languages such as Vietnamese, Japanese, and so on.

+ After completing the app, I will solicit feedback from friends and family to delete or add certain adjustments to produce the most user-friendly platforms. Furthermore, when my app is operating, I am looking for consumers' responses in order to make updates and maintain the program to guarantee that there are no malfunctions or troubles encountered.

- **Challenging:** In addition, we sometime may encounter some cyber-attacks and malfunction in our system; therefore, we have to train a fast reaction crew to deal with the emergency casualties. Developing strong security systems and firewalls are also important for app improvement for if the hackers gain access to the systems to obtain customer and company information, it will be a huge problem. The disclosure may jeopardize the syndicates' reputation, and their developing, working plan may be copied by opponents. Furthermore, malicious code can be delivered to the organization's system, which will take time to recover from and may affect the important data if timely technical actions are not taken.

- **Tools and Technology:** I must first write the program in Java and Swift; then, Adobe is also required to design and draw the app's icon. Once the apps are created, machine learning, which is an artificial neural network, will train the virtual assistants to absorb and categorize the input or real-time visuals from videos (IBM Cloud Education - 15 Jul 2020). This will necessitate a large number of videos for the computer to learn and imbrue with the expression, colour, and movements of objects. Furthermore, using the live text function, I must code for our virtual assistant to detect and understand the text and handwriting that appears in the camera.

- **Skill requirement:**

+ Learn coding in Swift and Java to develop the application on the mobile platform.

+ Acquire key hardware skills such as hardware development, analysis, and testing; network configuration and security; database management and so on.

+ Expertise in machine learning to make AI can recognize objects with high accuracy.

+ Practicing art drawing to design app's icon and user interface.

+ This app encompasses many fields in IT, so it requires an active, dedicated, and quick-response person who is skilled at teamwork, communication, and acute problem solving and strategic planning abilities.

- **Outcome:**

+ Training a guide dog can cost up to 60,000 dollars, and they cannot readily care for the dog on their own; also, using a walking cane for visual impairments is not always convenient or effective. As a result, our program was created to tackle this fundamental issue; it not only saves them money but also improves their daily activities and living conditions.

+ If the initiative succeeds, it will earn me a lot of money from users who purchase the software to serve the further research purposes; in fact, many huge syndicates and specialists want to join my community project, giving me the opportunity to work in a professional environment. Thus, this technology required many resources like this because we are not only aim to create a solution for the visually impaired, but also a best product, a reliable guardian to aid them in daily life. People with visually impaired can be support from the app to help them travel without guidance from others and documents, texts and even the total money in their wallet can be read out loud. This will be an opportunity for the blind to have an independent life and live the way they like with less difficulties. This will be a significant breakthrough, it will enhance the AI, censor and lidar cameras, and the virtual assistant's technology which can support us to come into many other industries such as

developing autonomous vehicles, manufacturing robots and education services (Mihai-Alexandru Cristea - 23/11/2020).

- Autonomous vehicles: Vehicle sensor technology, such as laser radar or LiDAR systems, is expected to be the new cornerstone of self-driving vehicles. Laser radar works in conjunction with other sensors such as cameras, ultrasonic, and long-range radar to assist cars and trucks in navigating their surroundings. (Ann Neal - Apr 24, 2018)
- Robots: in assembly applications, AI is a very important tool. When paired with advanced vision systems, AI can aid in real-time course correction, which is especially beneficial in complicated industrial industries such as aerospace. While in operation, AI can also be utilized to assist a robot in learning on its own which paths are optimal for various procedures (Robotics Online Marketing Team | 09/11/2018).

- Educational services: Many blind students struggle with their academics; they seldom catch up with classmates, so their phones might serve as trustworthy allies, reading and delivering information and documents for them. Furthermore, as AI advances, virtual technology can be used in class to make the material more specific and intriguing.

Beyond that, it has the potential to launch a revolution in technology development for the disabled, ensuring that no one is left behind in the 4.0 era.

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