Report - **Review Meet 2**

**iKshana**

# Team Details

| **Name** | **Roll number** | **Contact No.** | **Email ID** |
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Current Project Stage?

| * We have completed the hardware fabrication, and figured out the circuitry. * We have started building our software end for integrating Maps. |
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# Description *( in 80-100 words )*

| Our product consists of a harness which can be used with any shoe which can help people with visual impairments navigate through their lives.  It will consist of the following features:   1. Long range navigation via integration of Google Maps and using vibrational and acoustic cues to relay information. 2. Short range navigation coupled with obstacle avoidance using ultrasonic sensors. |
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# Work Distribution

| * Yash Bhake has worked on the mechanical design and its fabrication, as well as helped with the electronics assembly. * Abhineet Agarwal has worked on the software and the API integration and interfacing with ESP32. * Chinmay Moorjani has worked on the electronics, the CAD design and the code. * Tanish Raghute has worked on the Illustrator designs and 3d printing, as well as electronics.   Besides, everyone has been involved in ideation. |
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# Work Done Till Date

| * We have completed the ideation phase of the project. This involved a switch from the original idea to build shoes with end-to-end integration, to making a wearable and modular version of the same product. This is done via using cloth and adjustable straps to make a scaffolding which can be worn on top of any shoe. * We have completed the basic electronics assembly and testing required. * We have had our scaffolding made by a tailor. * We have 3d printed the boxes required to house our electronics on top of the scaffolding. * We have started developing the app needed to integrate our product with Google Maps. * We have gotten the API keys to the Google Maps API. * We have started working on advanced navigation techniques to help our user navigate through stairs and pits. |
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# Progress after Review Meet 1 :)

| Since Review Meet 1:   * We have had our scaffolding made by a tailor. * We have 3d printed the boxes required to house our electronics on top of the scaffolding. * We have started developing the app needed to integrate our product with Google Maps. * We have gotten the API keys to the Google Maps API. * We have started working on advanced navigation techniques to help our user navigate through stairs and pits. |
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# Facing any difficulties?

| * We wanted to make our product modular. In order to do this we ideated and changed our design. * Figuring out which batteries to use was a problem since we needed light ones which could still run our microcontroller. We settled on using Li coin cells. * We realized that our original idea for long-range navigation didn’t differentiate it from simply a visually impaired person using Google Maps along with earphones, and so we ideated and came up with a solution. |
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# Current tools and hardware in use?

| * ESP32 * Adobe Illustrator * Ultrasonic Sensors * Vibrational Module * Flutter * Visual Studio Code * Arduino IDE * Google Maps API |
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# References

| * [w.tec-innovation.com/wp-content/uploads/2018/12/Folder\_InnoMake\_EN.pdf](https://www.tec-innovation.com/wp-content/uploads/2018/12/Folder_InnoMake_EN.pdf) * <https://youtu.be/eMv7XJX1dLk> * <https://www.lechal.com/fallpreventioninsoles/> * <https://youtu.be/rXoRDW7hPOE> * <https://www.decathlon.ie/neoprene-accessories/169791-193363-ankle-strap-for-surfing-kitesurfing-and-windsurfing-wetsuits-black.html> * <https://www.jiomart.com/p/groceries/slovic-ankle-support-band-for-pain-relief-universal-size-ankle-strap-supports-stabilize-relieve-pressure-for-faster-recovery-single-strap-grey-colour/594332145> * <https://www.amazon.in/dp/B08CGTCQ9Q/ref=tsm_1_fb_lk> * <https://lastminuteengineers.com/arduino-sr04-ultrasonic-sensor-tutorial/> * <https://blog.google/products/maps/better-maps-for-people-with-vision-impairments/> * <https://www.allaboutcircuits.com/textbook/direct-current/chpt-11/practical-considerations-batteries/> * <https://cdn.sparkfun.com/datasheets/Sensors/Proximity/HCSR04.pdf> * <https://microcontrollerslab.com/esp32-controller-android-mit-app-inventor/> * [Your first Flutter app | Google Codelabs](https://codelabs.developers.google.com/codelabs/flutter-codelab-first#2) * [Write your first Flutter app | Flutter](https://docs.flutter.dev/get-started/codelab) * <https://circuitdigest.com/microcontroller-projects/programming-esp32-with-arduino-ide> * <https://github.com/espressif/esp-idf> * <https://www.instructables.com/Easy-IOT-Remotely-Controlling-ESP32-Using-an-Andro/> * <https://www.hubs.com/knowledge-base/how-design-snap-fit-joints-3d-printing/> * <https://www.espressif.com/sites/default/files/documentation/esp32_datasheet_en.pdf> * <https://filecr.com/windows/adobe-illustrator-2022-0039/?id=856138802> * <https://www.freepik.com/free-psd/sport-shoe-mockup-isolated_4075524.htm#query=Shoe%20mock%20up&position=10&from_view=search&track=ais> * <https://youtu.be/j69a3-shkGE> * https://youtu.be/XhaB2Ri9-Xo |
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Final Presentation? Coming soon :)

| * In our final presentation, we will be demonstrating the short-range navigation capabilities of our product by showing how it can detect and warn about incoming obstacles. * We will show how its long range navigation capabilities can help a visually impaired person walk from the Students’ Residential Zone to the LHC safely. * We will discuss the future improvements and modifications we have planned to make our product better and safer. |
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Bills & expenditures till now ITSP related :)

| * ESP32(1)- ₹513 * Straps- ₹330 * Elastic bands- ₹110 * Tailoring- ₹100 * Other electronics besides microcontrollers- ₹1500 |
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