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Drishti - IoT based Blind Stick

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Abstract - **Drishti, is a IoT based wearble for blind which supports user tracking, hailing cabs via present online services, detecting obstacles ahead, and distinguishing if its a human. All this comes with a ear piece for compatibility**

Index Terms— **APIs, Arduino nano, Distance Sensor GSM service, Internet of Things , Proximity Switch**

INTRODUCTION

This paper highlights some of the opportunities presented by the rise of the so-called Internet of Things (IoT) in general and wearable technology in particular and encourages policymakers to allow these technologies to develop in a relatively unabated fashion.

With the rise of IoT applications, and automation being a major part of most of the innovation being done; my project mates and I decided to venture into IoT wearables which could help our community towards a sustainable future.

Drishti, is a IoT wearable for the blind which helps blind to perceive objects, obstruction and people in front of them, beside helping them through their path with google maps.

II. THE CONCEPT

This being,not a very recent field, a lot of research already has been done. With The Student of IIT Delhi, innovating on the same field, it left us with a very little scope to try something offline but a bigger benchmark. We viewed this problem statement as a opportunity to integrate an IoT solution and land where we are right now.

Drishti, uses a web server for running location APIs, where an efficient backend script is necessary. Besides this the processor used is Arduino Nano to synchronise everything.

III. HARDWARE

A. Controller

The most robust controller that I have ever known is the Node MCU which has a esp8266 processor and built Wi-fi, which is preferably used in a lot of application, but this being a wearable which we intend to use outside our homes Wi-fi did not seemed to be best choice, keeping one's personal phone hotspot on would increase dependency and

the user would have to have a smartphone, besides it would drastically effect the battery life.
To solve this problem we came up with the idea to use GSM 900a or 800l
with a Arduino Nano which facilitates with it's small size, which then would use a SIM card's network to access our web services.

B. Sensing

The anticipated decision here would to use a HC-SR04 ultrasonic sensor, but the changes we made is to add a PIR (passive infrared) sensor to distinguish between the objects and living things.

C. Power

Rechargeable Li-ion cells make up a constant supply.

IV. WEBSERVICE

The backend is a php script which runs on 000webhost domain.
It is basically a web scraper, which first uses the google API, Google Maps Geocoding API which provides a place for the Latitude and Logitude sent by the GET request of the GSM 800L module. This gives a response in a javascript string about the place the user is and then the user, who is interfaced with a earpiece can select option of all the popular and saved location which is then transmitted to the same script with another get request for accessing Google Maps Distance Matrix which calculates distances and offers a walking path for the same

IV. COSTING

The IIT bombay variant checks for distance, it is availabe for 3,500 [2] whereas we have tried to make our IoT integrated solution, for the same problem is much less. A

estimated production rate for your IoT Blind Stick would be less than a 800 so we can reach our demographic deeper.

This is contributed by us fabrication the board for GSM module in house, where the chips costs less than 2$.

CONCLUSION

Lastly, this has never been about competing with other products nor judging which engineered product is the most efficient, rather to prove a simple point that the technology exists and if wisely used we can cater to a lot of people in need.

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