

SYSTEM TO REPRESENT A THREE DIMENSIONAL VIRTUAL VIEW USING SENSOR AND TRACKER

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Abstract : In our work we have elaborated our idea about how a system capable of mapping in three dimensional space under ground and over ground with respect to ground level or sea level by combination of gps tracker and integrated sensor chip which can help during rescue and search operations etc. It can help Crime Bureau of Investigation , Navy, Army , Air force officials and soldiers and also can be commercially used.

Keywords- *gps, altimeter*

I. INTRODUCTION

The proposed system advances on the current global positioning system by the usage of altimeter for a real-time positioning of objects or subjects installed with the system. The system can be installed with a mobile application or with any wearable device.

II. ALTIMETER AND NAVSTAR GPS

An altimeter (aka altitude sensor) is the best way to determine the altitude of an object. Altitude of an object depends on the pressure as pressure changes with change in altitude. The precision sensor from Bosch is the best low-cost sensing solution for measuring barometric pressure and temperature. The sensor is soldered onto a PCB with a 3.3V regulator, I2C level shifter and pull-up resistors on the I2C pins. Shifter circuit is included so you can use this sensor safely with 5V logic and power.



fig: BME680 altitude/temperature/barometric pressure sensor

The BME680 is a basic environmental sensor that is designed specifically for mobile applications and wearables for highly accurate measurement of pressure, temperature and humidity. It's one of the few sensors that does this measurement, and its fairly low cost so you'll see it used a lot. As we travel from below sea level to a high mountain, the air pressure decreases. That means that if we measure the pressure we can determine our altitude - handy when we don't want the expense or size of a GPS unit. The sensor is easy to use and if an Arduino board is used then simply connect the VIN pin to the 5V voltage pin, GND to ground, SCL to I2C Clock (Analog 5) and SDA to I2C Data (Analog 4).



fig: gps tracker module

The NavStar GPS (aka Global Positioning System) is a satellite based radio navigation system. The GPS does not require the user to transmit any data, and it operates independently of any telephonic or internet reception, though these technologies can enhance the usefulness of the GPS positioning information. The GPS provides critical positioning capabilities to military, civil, and commercial users around the world. Many civilian applications use one or more of GPS's three basic components: absolute location, relative movement, and time transfer.

III. PROPOSED SYSTEM

The system consists of GPS module and sensor device module called altimeter. The system works as a whole with two modules (module 1 and module 2) system as both the module works independently and provide non-dependent data. The system can be installed on a wearable device or on any mobile. The GPS will provide the position by detecting the exact longitude and latitude of the location, the sensor that is the altimeter will provide the details and the measurements of the detected temperature, humidity, pressure (further determines the altitude) and gas constituents. The BME680 is a basic environmental sensor that is designed specifically for mobile applications and wearables for highly accurate measurement of pressure, temperature and humidity.

Real time tracking is configured by GPS and various environmental condition detection is configured by the altimeter. As a whole warning and protection can be given as fast as possible.

IV. PROCESS OF THE PROPOSED SYSTEM

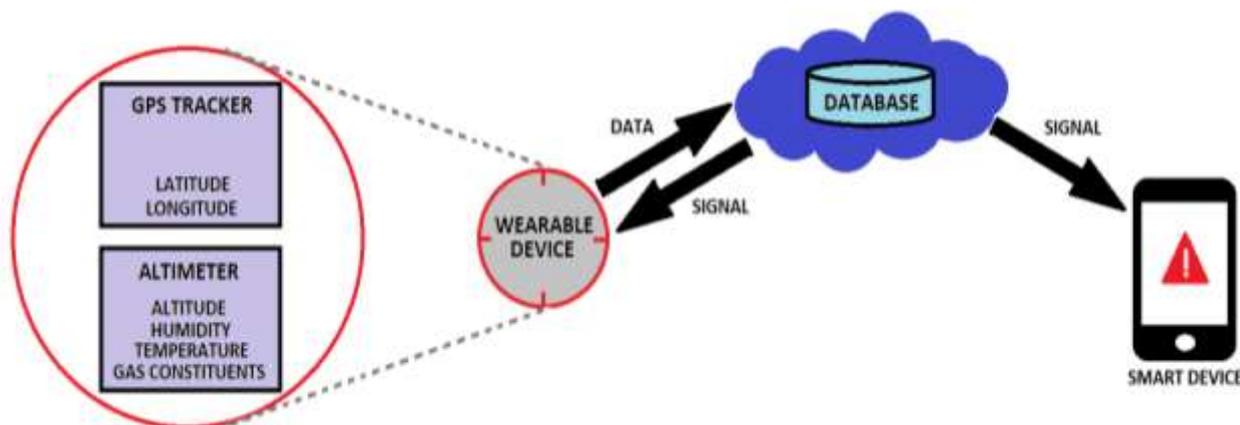


Fig: work flow diagram

Process explanation

The processing of the system depends on the modules used that is the altitude sensor and the global positioning system tracker. The gps tracker determines the latitude and the longitude of the device that is the wearable device. These measurements determines the exact location and can be viewed as a two dimensional plane model.

The altimeter or the altitude sensor provides the pressure, temperature, humidity and gas constituent measurements. The pressure is used by the altimeter itself to determine the height or depth. The process used by the altimeter to determine these environmental aspects is done by differential transceiver and transducer components inside the altitude sensor chip.

Both the modules are embedded inside a wearable device. The data collected is then sent to a private or public based cloud where these data constraints are analyzed in accordance with the cloud database.

If an harmful situation is detected during the analysis then a signal is send to the wearable device and a smart device like smart phone about that warning

V. CONCLUSION

The proposed system concludes that the enhancement in the existing system and technologies and using it as a whole can safeguard humans from and through various harmful conditions.

The above proposed system has the following advantages:

1. Very small and handy device which can be installed into a mobile or a wearable device.
2. Highly technological system with minimal errors.
3. Highly precise and accurate measurements.
4. Measures various natural aspects such as temperature, humidity, gas constituents, altitude which helps detect harmful environmental conditions and warn accordingly.
5. Not harmful to the human body.
6. Low cost device.
7. Easily operating device.

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