**IBGS: A WEARABLE SMART SYSTEM TO ASSIST VISUALLY CHALLENGED**

**Alternative Title:**

**An Intelligent Voice Assistance System for Visually Impaired**

**Aim:**

The Main Objective of the project is to build an assist device for visually impaired people with deep learning algorithm, fall detection and payment option will be the part of the system.

**Abstract:**

At present, screen free interactive devices are emerging and people are very curious to interact with machines. Instead of depending on interfacing devices like touch screen, button systems we are going to control devices by means of voice. In this system we are going to utilize this technology to help visually impaired people to access the latest technologies without screen.

. In addition, a cloud database was built, and the Internet of Things technology was used to realize the information interconnection between the IBGS, cloud data and the guardian’s mobile terminal.

Traditional blind guide devices are expensive and large. In this study, an intelligent blind guide system (IBGS) was introduced. Maixduino (k20) is used as the main control AI chip, it co-operates with various functional modules to realizehumandetection, traffic light recognition, obstacle detection, payment, and navigation functions on the basis of audio identification. At the same time, IBGS uses WIFI connectionto get rid of the dependence on smart phones

As an additional feature Emergency help switch is added. If user press this switch using android mobile application User’s current location will send to user relatives as emergency notification. Accelerometer is used to detect falling event of user and relatives get notified if user fell down.

A RFID card is attached with system, using this user can pay any amount. If user tap the card in dedicated RFID system (ESP32 with RFID reader) user can hear how much amount will be deducted. If user press confirm button amount will be paid.

**Existing System:**

Existing system providing Object detection, Navigation using built-in GPS, NFC payment, Emergency Call and Guardian monitoring features. This system needs separate microcontrollers for different operations like ESP32 module for object detection, external function system etc.

**Disadvantages:**

* Separate microcontrollers need for different operations
* GPS navigation is done by built-in GPS module which is not accurate as much as mobile navigations

**Proposed System:**

Proposed system can classify objects using pre-trained YOLO model, traffic light sign recognition, human detection using YOLO algorithm and voice feedback. It uses Android mobile application for emergency notification and location sharing feature. For fall detection it uses an accelerometer with I2c ADC convertor. Using RFID payment network user can pay dynamic amount of money in various places.

**Advantages:**

* It uses single microprocessor **(**Maixdock) to perform all the tasks.
* It uses android mobile for GPS location identification which will more accurate than built-in GPS module
* Object detection, human detection, light detection and fall detection features are added with existing system.
* All the functions are based on the audio guidance, which help of user mobile phone and reduce the data hear miss understanding, user compare with external audio device

**Block Diagram:**

Maixdock

Micro camera

ESP8266with RFID reader

RFID card

Headphone

Android Mobile app

Firebase Cloud Storage

Mobile

Power supply

**Hardware Requirements:s**

* Maixdock
* Micro camera
* Headphone (Student should Bring)
* ESP8266
* RFID reader
* RFID card
* Android Mobile (Student should Bring)

**Software Requirements:**

* Language : C,C++, python
* Software: Arduino IDE, k-flash, MaixPy IDE, Android Studio,