

ABSTRACT

Smart Aid for the Visual Impaired with Speech Processing and Location Tracking Implementation

The visual impaired is a person who has vision problems that cannot be fixed by normal means, such as eyeglasses. With all the different challenges that is faced by someone with visual impairment such as having a quick access to get in contact with a family member or guardian if there is any emergency while working, a device is made that can help a visual impaired person and his/her family.

The device has features implemented such as location tracking that can be accessed by a family member through google maps that is integrated within an android application. This device also has a GSM and GPS module. The GSM module is able to send SMS where it contains data such as the coordinates that can be viewed at the application. Other than that, the coordinate can also be converted into a full address that is read to the person with visual impairment with the help of a text-to-speech system so that they can know where they are currently at. The module also works with a speech recognition system implemented in the microcontroller, where it will be able to run pre configured commands such as sending his/her location details to the application. The device does not have any physical buttons and can only be interacted by the voice commands that is configured.

After the research has been done, the device is able to help the family members locate the person with visual impairment up to an accuracy within 10 meters, this also cause the result of reverse geocoding to be accurate. The speech recognition system is only able to get an accuracy of 66.07% due to a few factors such as the microphone quality, the speed of commands being said and the noise level of the surrounding areas.

Keyword : GPS, GSM, Speech recognition, Smart Aid