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IMPROVING NAVIGATION FOR BLIND PEOPLE BY USING SMART HELMET

S. Karthikeyan*[1], R. Karthi[2], P. Boopalan[3], V. Srinivasan[4] and A. Sharadha[5]

[1,2,3,4]Final Year of Electrical & Electronics Engineering, AVS Engineering College, Ammapet, Salem 636003.

[5]Assistant Professor, Electrical and Electronics Engineering, AVS Engineering College, Ammapet Salem 636003.

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***Corresponding Author**
S. Karthikeyan
Final Year of Electrical & Electronics Engineering, AVS Engineering College, Ammapet, Salem 636 003.

ABSTRACT

The Main Objective Of This Project Is Modify Blind Aid Stick In To Smart Helmet To Give Safety For Blind In Public Transport Vehicles And No Man Lands. In Present Situation Un Sight People Are Using Digital Aided Stick But This Is Some Time Unconventional Because Tracking For Blind People Is Very Difficult How Means The GPS And GSM Placed To Inside Of Blind Aided Stick. In Worst Case Blind Peoples Are Missing Blind Aided Stick In Panic Situation. There For We Are Replace The Blind Aided Stick Into Smart Helmet And Integrating Some Features. That System We Have Panic Alerts System With IR Sensor And Internet Of Things Applications. Once Panic Alert Raised Our System Automatically Send To The Web Page, Track The Location And Send The Information To The Police Station Or Some Other Information Center. This Research Paper Is Carried Over Through Embedded Technology. In This Project We Are Using PIC Microcontroller In The Hub. In This Paper We Inserting GPS Module For Finding The Area From Blind People. Our Earth Is Enclosed By The 24 Satellites. GPS Receiver Will Communicate With Any Of The Three Satellites Then It Will Calculate The Latitude And The Longitude. With The Help Of The GSM Module The Current Latitude And The Longitude Can Be Sending To The Corresponding Tracking Center. The PIC Microcontroller Displays The Area In The Liquid Crystal Display According To The Place. Data Are Received In Universal Asynchronous Receiver Communication Scheme. Operating Voltage Of The PIC Microcontroller Controller

Is Five Volt This Is Get From Power Supply Unit. The Power Supply Unit Contain Various Parameters By Purpose Of Reducing Ripple From Incoming Direct Current. The Primary Aim Of The System Is To Provide A Convenient Size Helmet And Easy To Navigation Aid For Unsighted Which Helps In Artificial Visualization By Providing Facts About The Environmental Scenario Of Standing And Forceful Objects Around Them. The Proposed Research Paper Is Using Embedded C Algorithms And Result Will Be Obtained MPLAB.

KEYWORDS: Panic, GPS, GSM, PICMC, MAX232.

1. INTRODUCTION

Moving Through An Unidentified Surroundings Becomes A Real Challenge When One Can't Rely On Their Individual Eyes. Since Forceful Obstacles Regularly Generate Sounds While Moving, Sightless People Develop A Keen Sense Of Hearing Distance To Concentrate Them.[2] A Sight Less Person Generally Uses A White Cane Or Walking Stick For Direction-Finding. The Walking Stick Is A Humble And Chastely Mechanical Scheme To Detect Motionless Objects On The Ground, Uneven Exteriors, Fleabags And Steps Through Simple Tangible Response. The Expedient Is Light And Portable But Its Range Is Imperfect To Its Own Size And Is Not Usable For Forceful Components. Another Option That Provides The Best Aid Is Guide Dogs.[7] Based On The Interdependent Relationship Between The Holder And The Dog And Its Physical Activity, The Dog Is Able To Detect And Analyse Complex Circumstances Such As Cross Walks, Stairs, Probable Danger, Traffic Flow Signals And More.[4] Most Of The Intimation Is Passed Through Tangible View By The Handle Fixed On The Dog's Lapel. The Holder/User Is Able Tofeel The Boldness And The Stand Of His Dog, Analyse The Condition, And Give Correspondingly Suitable Orders. But Guide Dogs Are Still Not Very Concise Friendly, And Their Usual Life Is Limited. Above Research Detail Is Fundamental Helping For Sight Less People Not Applicable In This Scheme.[6] Blindness Or Visually Impaired Is Used For Complete Or Nearly Comprehensive Visualisation Loss. Visual Impairment May Cause People Problems With Normal Daily Doings Such As Driving, Understanding, Socializing, And Walking. Sightlessness Occurs When An Insufficient Amount Of Nimble Hits The Retina, Or The Information Has Not Been Conveyed To The Brain Properly. Complete Sightlessness: It Is Characterized By A Complete And Total Loss Of Sight.[1] Colour Loss Of Sight People Who Have Colour Loss Of Sight, Also Called Dyschromatopsia, Are Incompetent To Tell Apart Certain Colours. Night Loss Of Sight: Night Sightlessness Occurs At Night Or When Sunlit Is Dim. It Does

Not Normally Consequence In A Complete Lack Of Visualisation But Suggestively Impaired Vision. The Blind Wake Up Stick Helps The Visually Diminished People To Guide During They Walk. The Nifty Walking Stick.[15] Protection And Effective Mobility For Un Sight People Using Smart Stick For Blinds, It Is Challenging To Walk And Know Their Surrounding Devoid Of The Help A Stick. This Research Paper Targeting At Assisting Blind Person To Move Around Without Hand Aided Blind Stick And Empower To Recognize Important Objects. Visually Compromised People Are The People Who Can't Identify Smallest Detail With In Good Physical Shape Eyes.[10] Those Who Have The Visual Acuity Of 6/60 Or The Straight Extent Of The Visual Meadow With Both Eyes Open Minimum Than Or Equal To 20 Degrees, These People Are Reflected Blind. Such People Are In Need Of Aiding Devices For Sightlessness Related Disabilities.[9,5] As Described In 18% Of Blind Have No Usable Perception At All To Help Them Move Around Autonomously And Safely.[14,8] Visually Imperfect People Find Troubles Detecting Stumbling Block In Front Of Them, During Hiking In The Road, Which Makes It Hazardous. The Internet Of Things Aiding Devices Are Aimed To Solve Such Problem. Visualization Is One Of The Most Vital Senses Of As Most Of The Information Humans Gets From The Environment Is Via Sight.[8] World Health Organization Reported That In August 2014, About 288 Million People Suffer From Lack Of Visualization. It Is Estimated Worldwide: 42 Million Are Blind And 248 Million Have Less Visualization. Around 95% Of The Visually Weakened Live In Low Income Conditions. 87% Of People Living With Sightlessness Are Around 50 And Above. Internationally, Uncorrected Refractive Errors Are The Main Cause Of Moderate And Severe Visual Injury; Cataract Is The Leading Cause Of Blindness In Middle-And Low-Income Nations.[2,8] The Number Of People Visually Impaired From Communicable Diseases Has Reduced In The Last 25 Years According To International Estimates Work. 83% Of The Visual Impairments Can Be Prohibited Or Cured. The Basic Problem And Difficulties Which Every Blind Person Faces Is With Regard To Commutation And Navigation In Day To Day Life. The Most Basic Fundamental Tools For Them Are Walking Cane And Guide Dogs And Also On Kindness Of Parallel Commuters.[13] The Most Regularly Used Tool Is Still The Blind Stick. The Blind Aided Stick Is Some Years Before Not Digitalized. It Suffers From Negatives Like Lots Of Rehearsal, Range Of Indication, Less Dependability In Terms Of Dynamic Steeplechases And Also Range Detection. But Now Days Various Research And Development Is Using Embedded Technology Consequently Blind Aided Stick Is Digitalized. Also Some Updating Will Try To Modify This Cane With Advanced Electronic Components And Sensors.[10] The Ever Growing Technology And With Recent

Developments Can Help In Non-Natural And Accurate Navigation. Our Scheme Uses GPS Technology Along By Way Of Bluetooth Segment Which Then Will Inductee An Android Application Which Will Connect To Google Maps For Navigation.[13] In Addition We Have Used Ultrasonic And IR Sensors Which Help In Stumbling Block Detection And On Hurdle Recognition Will Ring The Speaker For Different Durations To Indicate Different Distances.[7,9] We Wish At Presenting An Inexpensive And Less Weight And Optimized Model Which Helps In Effortless Navigating For The Blind. Distress Mechanism Will Send Places Of Longitude And Latitude To Preregistered Transportable Numbers In Situations Of Anxiety. The Smart Helmet Comes As A Projected Resolution To Enable Them To Recognise The World Around. We Propose A Resolution, Represented In A Smart Helmet With Internet Of Things Applications To Identify The , Obstacles And Panic Alert Key Is To Make Alarm Or Give Intimation In Panic Situation .The Helmet Is Capable Of Finding All Stumbling Block In The Range 1 Meter During 1s And Gives A Apposite Respect Message Permit Blind To Move Twice His Normal Speed And Also Using Free Hands Because She/He Feels Safe. The Smart Helmet Is Of Low Cost, Fast Response, Low Power Consumption, Less Weight, Size Also Very Small And Ability To Wear Easily.

2. METHODOLOGY AND MATERIAL

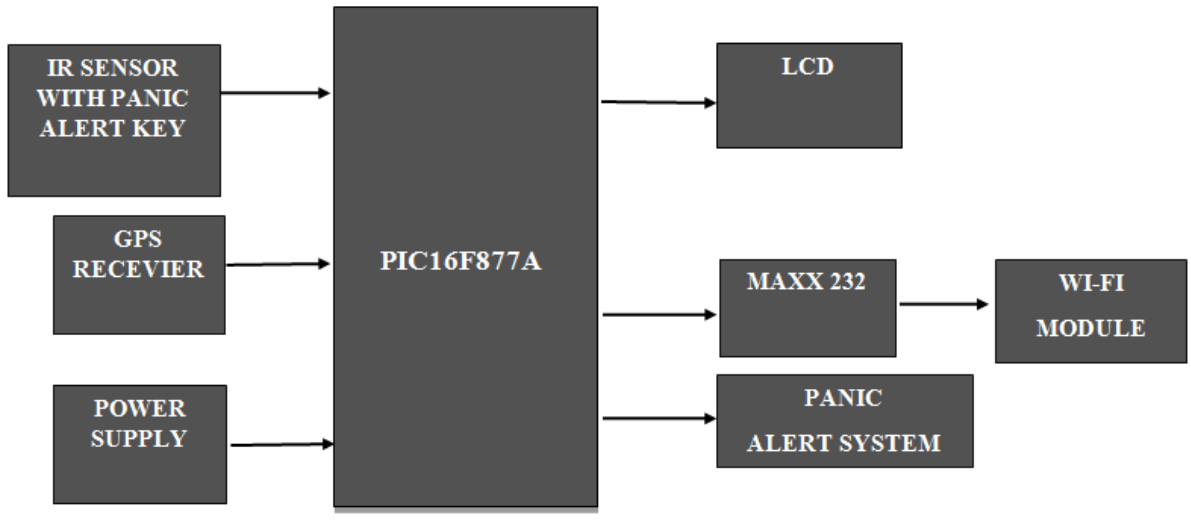

Figure 1: Typical Block Diagram For Smart Helmet System, Processing And Analysis.

The Novel Smart Helmeting System For Blind People Includes Two Or Three Stages Viz. Detail Acquisition, Pre-Processing, Signal Operational And Also Using Different Types Of Components. These Are Listed Based On Some Functions Such As Power Supply Unit Also Contain Many Converter Parts There Are Step Down Transformer By Using Step Down The Incoming Voltage Based On PICMC Configuration And Also Using Bridge Rectifier

Because PICMC Only Receive Direct Current Only Consequently Bridge Rectifier Output Of Direct Current Flow To Filter Circuit Because Bridge Rectifier Generate Direct Current With Ripple Content Therefor Filter Circuit Eliminated Ripple Content From Direct Current Output Finally The Dc Power Flow To Voltage Regulator And PICMC Vss Pin Shown In Figure 1. Reaming Parts Is Art Of This Project IR Sensor By Purpose Of Sensing Stumbling Block, Panic Alert Key Purpose Right Time To Generate Alarm Or Intimation Sending Corresponding Position And Also Using MAX 232 Is Using Serial Port Purpose, GSM, GPS Module For Communication Purpose, The PICMC Only Work For Panic Situation Not For Normal Condition. Panic Alert After The Message Will Be Send Police Station Or Particular Mobile Number Or Web Page.

3. PIC MC Pin Configuration with Interfacing Line

PIC Microcontroller Is The Smallest Microcontrollers And Also Have Some Advanced Features That Can Be Programmed To Carry Out A Enormous Range Of Tasks Shown Figure 2. These Microcontrollers Are Found In Many Electronic Devices Such As Phones, Computer Control Systems, Alarm Systems, And Also Various Types Of PIC Microcontroller Have Various Types Like Wise PIC16, PIC17 But In Our Convenient We Are Using PIC16F877A. Everypic16f77a Microcontroller Architecture Consists Of Some Registers And Stack Where Registers Function As Random Access Memory (RAM) And Stack Saves The Return Addresses. The Main Parts Of PIC Microcontrollers Are RAM, Flash Memory, Timers/Counters, EEPROM, I/O Ports, USART, CCP (Capture/Compare/ PWM Module), SSP, Comparator, ADC (Analog To Digital Converter), PSP (Parallel Slave Port), LCD And ICSP. The 8-Bit PIC Microcontroller Is Divided Into Four Types On The Basis Of Internal Architecture Such As Base Line PIC, Mid-Range PIC, Enhanced Midrange PIC And PIC18. In Our Project We Are Using Various Pins To Connected With External Components Likewise IR Sensor Output Pin Was Connected PICMC RC0, Voice Chip PIN During PIC RC1 Consequently GPS Module Connected With PIC RC7,. MAXA 232 Is Also Connected PIC RC6, GSM Also Connected With, Liquid Crystal Display Connected To PIC RB0-RB7(Data Pins) Shown In Figure3.

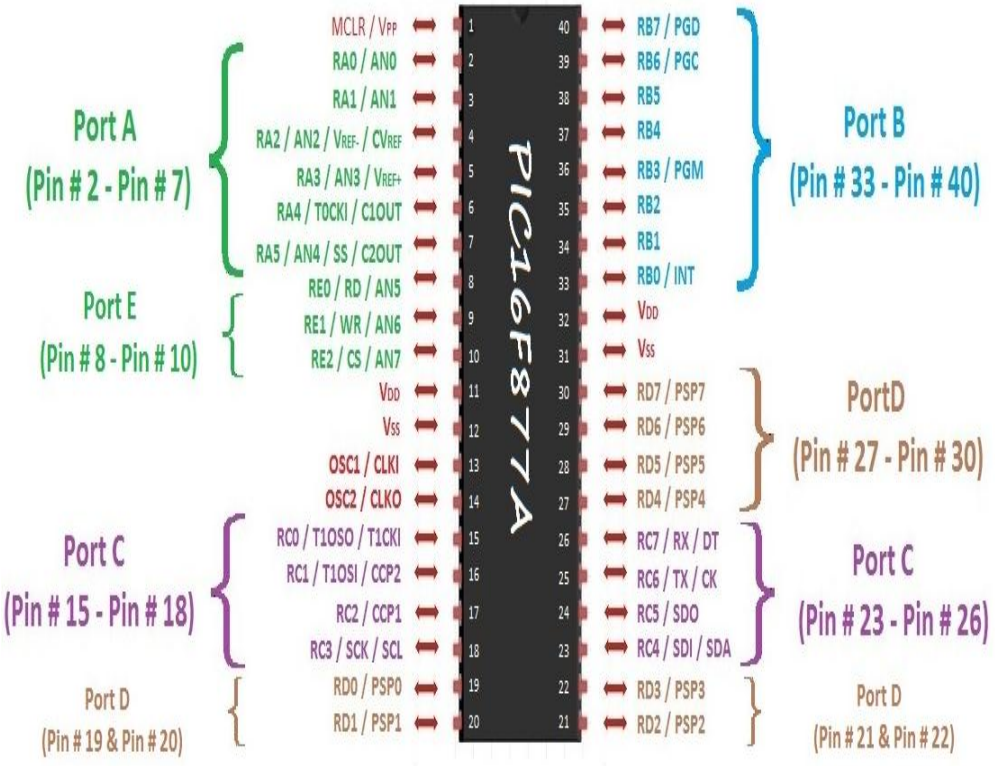

Figure 2: PICMC Pin Configuration.

4. Novel Smart Helmeting System for Blind People

Replacement The Already Prevailing System To Improving Blind People Navigation System. This Novel Scheme Consists Of Digital Display, IRSensor, Panic Alert System, MAX232, WI-FI Module, GPS And GSM Module Interfacing With PIC MC. The IR Sensor LED And Phototransistor Brace Is Generate Light Beam Switch Will Be Measuring Obstacles After The Light Beam Will Be Reflected Back On To Detector. PIC Microcontroller Is Programmed In Embedded C There For Reflected Light Beam Distance Condition Will Inserted Embedded C Program In Particular Condition For Reflected Light Beam Is Equalized Already Fitted Condition At Rime PIC MC Will Be Act As Center Source Likewise Send Message And Alarm, And GPS Will Be Used Tracking Area. GSM Module Is Used To Send Intimation To Particular Mobile Number Or Laptop Web Pages.

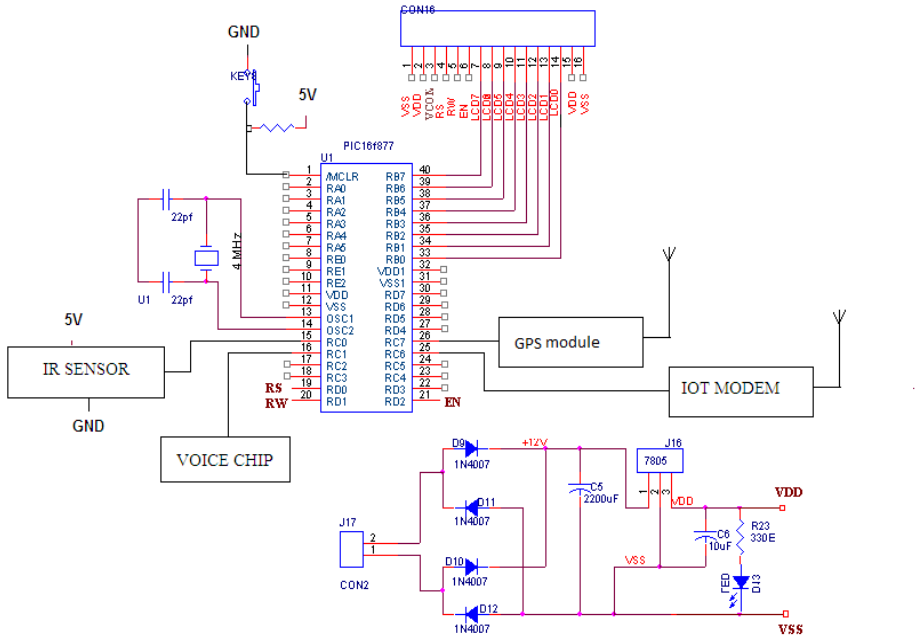

Figure 3: PICMC With Interfacing External Peripherals.

5. RESULTS AND DISCUSSION

The Results Which Are Obtained From Software And The Hardware Work Done Are Discussed Below- The Program Which Is Obtained From MPLAB Is Divided Into Various Parts But We Only Representing Coding Screen Shown In Figure 4.

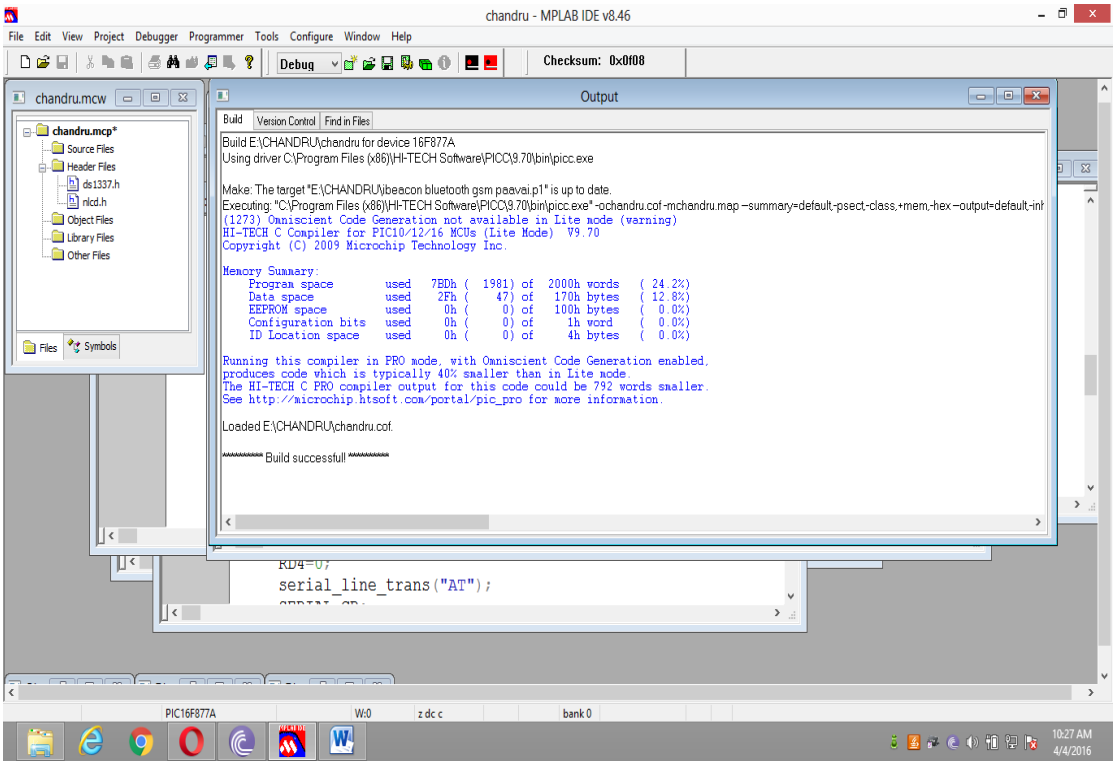

Figure 4: MPLAB Programing File.

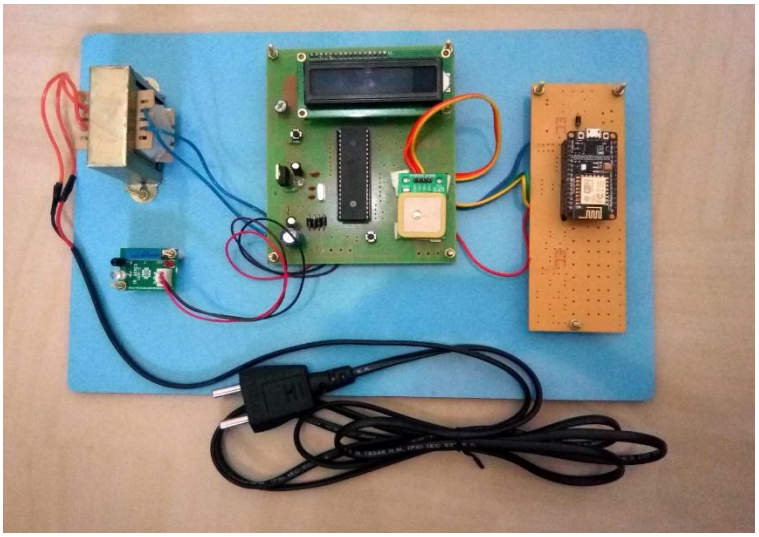

Figure 5: Novel Prototype Model Smart Helmeting System For Blind People.

The Novel Prototype Model Smart Helmeting System For Blind People Is Shown In Figure 5, Which Shows The Interfacing With PIC MC And Some External Peripherals Likewise Relay, IR Sensor GSM, MAX 232, WI-FI Module Etc. One Of The Primary Aim Is To Reduce The Wastage Memory From PIC MC And Free Handily Blind People Will Be Walk Without Blind Aid Stick. For This Various Signal Functioning Methodology Are Being Adopted.

6. CONCLUSION

This Paper Presents An Without Blind Aid Stick Blind People Will Be Walk Freely By Using Smart Helmet. This Is Based On Embedded C Process, To Meet The Requirement Of Current Major Security Application Of The Blind People Protection Purpose. There Are Advantages As Follows. The Functioning Signal Can Be Privacy Is An Issue And Also Low Cost Design They Can Be Invulnerable, It Can Stop Depending For Supporting Stick. This Project Main Part Of IR Sensor By Sense The Environment Periodically Static And Dynamic Obstacles. In Order To Make Use Of Modern Technology, We Have Proposed Android Based Direction-Finding Shoes System. Wearable Microelectronic Helmet Is Proposed. Main Target Of This Suggested System Is To Provide Navigation Assistance For This Visually Sight Less Person. Microelectronic System Will Detect Stumbling Block Our Methodology Is Make Easy Functional Application To Make Visually Sight Less Person To Live Autonomously.

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