

# Implementation of Assistive System for Blind Person using text reading, direction navigation and obstacle detection

Roshani B. Palandurkar, Apeksha Sakhare

**Abstract**— An beneficial gadget for visually impaired individual is intended to assist for the textual content labels analyzing from product, to direct for correct path and to locate the impediment go inside the course all through the searching within the market. essentially beneficial machine is cut up in following ways: capture the scene, technique on captured scene mistreatment OCR algorithmic program which includes extraction and reputation of textual content, Audio output and further for path navigation and obstacle detection is being processed and end result's once more inside the type of audio. to separate the component from littered backgrounds or opportunity close to gadgets that seem inside the camera sight, initial companion diploma reasonably priced and effective motion primarily based in general approach to outline a place of interest (ROI) within the video method via shaking the thing in advance of digicam for a 2d and until textual content detection arise. In the extracted ROI, localization of text and popularity of textual content are performed to accumulate text information. first off to mechanically localize the text place from object ROI, textual content individual within the localized text areas are then binarized and recognized by means of optical person reputation software program device. second route navigation with the assistance of RFID tags. basically RFID interfaced with ARM7 microcontroller. every time card comes closer to the RFID module it reads the statistics saved within the card If know-how is matched with understanding inside the software memory then it will reborn in message in audio kind and if it doesn't suit with program reminiscence then it'll now not provide a message. And in the long run detection of impediment in the direction of the blind man exploitation unhearable sensing element and resultant output are going to be within the fashion of audio or speech. This beneficial device is utile for eyeless man or woman of their everyday habitual.

**Index Terms**— Assistive system, Blind person, Optical character recognition, Region of interest (ROI), RFID Reader, Ultrasonic sensor.

## I. INTRODUCTION

Daily the population of world rises with their unemployment,

*Roshani B. Palandurkar, Computer Science and Engineering, G.H.R.C.E., Nagpur, India.*

*Apeksha Sakhare, Assistant Professor, Computer Science and Engineering, G.H.R.C.E., Nagpur, India*

poverty, physical problems and residence all trouble increases with population. We recognize the human is social animal, he cannot live to tell the story by myself without Interacting with society and in coming days no person has time to attend to unknown person. Life is convenient if we're living with knowledge and exciting and that is viable to everyday character who has impartial tradition and unbiased technique of dwelling life but foremost problem is created when character is bodily challenged and again out of that when the character is blind there are plenty of reasons like diet A deficiency, retinopathy of prematurity, vascular ailment regarding the retina or optic nerve together with stroke, ocular inflammatory disease, retinitis pigmentosa, maximum crucial or secondary malignancies of the eye, congenital abnormalities, hereditary ailments of the attention. Human eye is maximum primary a part of body. it is as an alternative complicated project for visually impaired character to outlive in rapid beforehand metro towns like common character with none difficulty. In their every step they want to require guidance or support of different for reading, writing, searching, appearance etc they certainly would really like facilitate of different. Absolutely everyone seems to be busy in their daily recurring and busy schedule and no one has time to save you and assist visually handicapped person. All informed state of affairs visually impaired is not able to address every situation of existence as easy as attainable and their self-assurance get reduces with growing drawback of every day recurring. As in keeping with the technology worries several machine has designed to help the visually handicapped individual with the aid of detection obstacle in their direction, studying of barcode on product printing to understand regarding the products, photograph popularity by way of sound, Voice enabled interface with clever voice reaction gadget, to navigate cellular gadgets for purblind people, text analyzing to be had manage items and so on. all device cited higher than totally gives assist within the one among the route with a few minors but completely it had been not able to help visually handicapped person in studying, directing, detection impediment etc. Our projected device has designed to help the visually handicapped person in many methods to meet the condition in their would like with maximum effectiveness. analyzing is powerful method to recognize the objects desire to act with international exploitation newspaper analyzing, whereas searching to browse product packaging, studying is important in banking

whereas filling kind and in railroad terminal, airport, school rooms, and health center throughout although kind of machine has designed for textual content studying still no system has equipped to separate textual content from complicated heritage with variant of font, fashion, pattern and many others. to choose out the placement of the item of interest in the digital camera scene is largely complex undertaking for visually handicapped man or woman consequently our device has planned to extract the text information with efficiency from hand-held object within the motion based totally technique to get a neighborhood of interest (ROI) of the article in captured scene.

## II. RELATED WORK

As in keeping with the survey it is been determined that there rectangular degree multiple range of gadget has designed to assist the complex lifestyles kind of blind man and definitely every gadget has aid the dim seeing folks in considered one of the suitable course to create their lifestyles as easy as conceivable amongst them one in all the planned device is employed browse text on product packaging from hand-held item for blind individuals of their life. And separate unique object from blended backgrounds or opportunity envoi mental objects in the snap shots. At some point of this approach a skillful and beneficial motion primarily based hobby to outline a district of hobby (ROI) type the video by means of shaking the item for seconds. A completely unique methodology combination-of-Gaussians based totally background subtraction is hired to extract transferring object place. Within the detected ROI, textual content detection and reputation rectangular degree conducted to induce text and assemblage data. and additional lots of textual content characters in the localized textual content rectangular measures are then binarized and recognized with the aid of the off-the-peg optical character popularity computer code. end to blind users is conversion of detected textual content within the sort of audio. some of the all planned structures 2d device has been determined is in your price range and different approach is deliberate for blind parents to browse written labels and programs of product via taking pictures 1D barcode at the products that enhance freelance residing and sell financial and social self-help. . A key satisfactory of the algorithmic program is that the potential to sight barcodes from explicit distance. Experimental outcomes with a blind sunray concern show the possiblensness of the machine. However restriction of this technique is it is extraordinarily effective to are seeking out the precise role of the familiar Product Code on product and to correctly involves the regular Product Code for blind customers.

The various deliberate systems 1/3 machine has been determined is advanced companion diploma unusual method anyplace a visually handicapped individual will return to understand information concerning the define of a picture thru speech sign. Individualism of this technique is that it converts the image to voice victimization the method of side detection. A whole lot of variety of options is to be thought-approximately to enhance the performance. the

event towards partner diploma least expensive and utilization nonetheless should be finalized.

Novel approach of a machine given to behave blind users with their gadgets and technology already hired by means of customers, as their personal excellent cell phone. Victimization the Bluetooth generation vicinity gadget is being advanced, present in nearly in each the cell phones. Specific environment is provided with excellent sensors, the system is prepared to find the person and ship him/her directions that motive the specified destination essentially. A essential best of the gadget is that the reachable information gadget: this technique conjointly presents the know-how regarding available on the market shops, service middle or locations.

In a survey 5th device has determined that system enforced accumulation detection only for Malaysian blind oldsters. all through this technique captures a photo from public board or accumulation and convert it right into a record victimization Otsu's OCR method. The detected textual content document reads via a speech synthesizer then the device can provides information to blind guy basically what the image is all concerning. Typically this technique would not want first-rate deal records of the buildup however it desires person information.

The various deliberate structures one in all of the structures has been found machine that has been enforced human-computer interface with a whole textual content detection and speech process capacity. Planned gadget uses text to speech conversion and (OCR) approach to research picture procedure and extracted textual content code data from photographs that is digitally experiment. Microsoft visual studio software package deal is hired for implementation. OCR is employed for text extraction and is expressed in audio or speech.

## III. METHODOLOGY

### I. Video Procedure

First of the beat undertaking situation the foremost crucial project of the system is to system on video acting arts in the back of the scene to extract and sight the ROI from the captured photographs while system a few frames in video, a body is taken for analyzing product space i.e. ROI. Video has the restriction of completing the method of textual content detection in location of interest. Consumer should preserve product earlier than of the digicam for preliminary few seconds and so he must preserve product strong for few seconds on the tip of the video. Subtraction of background is completed via imply and variance technique at some point of this system each new body is compare with preceding one and with ever-changing variety of pixels.

### II. Textual Content Area Localization And Textual Content Extraction

On this evaluation, likely we will be inclined to have an interest in detection and popularity of textual content routinely. Utility situation while the technique of video is as

follows. A consumer preserves a digital camera steady to require an entire scene for in the future till textual content is not detected or extracted. textual content detection components routinely detects textual content in the scene and so offers records concerning the location of textual content by localization method and a few opportunity alternatives like textual content coloration distribution, text form, textual content size, text sample and so forth. Detected text regions are then causation into the popularity module for classification. For the duration of this technique the out there procedure is finished by text location localization and textual content extraction

### 1. Text Extraction

Main statistics supply for textual content detection is that the depth of image, however it's numerous with to lighting distinction. Text is meant with high distinction to its history in every function of photograph that's coloration and intensity. Every character has one or additional connected vicinity consists. The man or woman has same foreground and history if it's identical context. Often to deal with complicated historical past we've designed to method textual content extraction by using stroke orientation and aspect detection, severally. Here, stroke is outlined as a steady region with delimited measurement and vital extent .function of stroke maps region unit blended to construct An Adaboost based totally text classifier that is hired for textual content extraction.

### 2. Text Stroke Orientation

Textual content characters region unit encompass strokes with various orientation within the simple shape. Throughout this technique new sort of font orientation, pattern to explain textual content character in native structure. Here new operator to map a gradient function of stroke in every element once it'll model the textual content structure with the aid of stroke orientation. From evaluation of detail stroke orientation is perpendicular to the gradient orientations at detail of stroke boundaries.

### 3. Distribution of Side Pixels

After the stroke orientation detection and distribution of edges is finished all through this technique the appears of characters inside the form of stroke obstacles and it conjointly describes the alternatives structure of text. We generally tend to calculated the advantageous coaching sample by producing the bottom truth textual content region as per the ratio of measurement w to peak h.

### 4. Localization of Textual Content

Localization of text as according to the call suggest it's all bound on digicam primarily based scene once the approach of capturing photo. For textual content localization the Cascade-Adaboost classifier confirms the legitimate data of textual content inside the captured picture however this

method isn't capable of handle entire photo for this reason heuristic format evaluation is records in a image patch but can't cope with the complete photograph, hence heuristic format analysis is ready to carry out the extraction of image in patches for text class. Typically text records is appear in the picture horizontal and there is no such restrict for character individuals. So the fragments of text string is to be calculated of the same height and edge boundary with the aid of scheming the ratio.



Figure 2.4.1: Text detection and extraction

## III.REPUTATION OF TEXTUAL CONTENT AND AUDIO OUTPUT

Textual content popularity approach is largely remaining and essential approach of OCR this could decide that man or woman is basically your place unit seeking out. Off-the-rack OCR is hired to perform textual content reputation. As in step with once the technique of textual content area detection it really is vicinity of interest is minimum square area for the accommodated textual content in this container that has established by way of a few threshold fee of top and size. OCR presents amazing result for the textual content underneath the correct place of hobby in square field so the binarized the text from history to well known the individual. each localization of textual content region is maximized with improving the measurement to peak quantitative relation through ten pel every for such we generally tend to use Otsu's method for text region binarization. Heritage is to be consider as margin space of the text. And for route navigation impediment detection on the same time output can get within the form of audio and 2nd technique of the gadget all through this gadget is RFID module that contains a transmitter receiver, antenna, and dominant unit. Commonly RFID interfaced with ARM7 microcontroller. each time card comes in the direction of the RFID module it reads the information saved within the card. If expertise is matched with expertise inside the software memory then it's going to regenerate in rub down in audio type and if it doesn't suit

with program memory then it will no longer supply a message. 1/3 method of the assignment

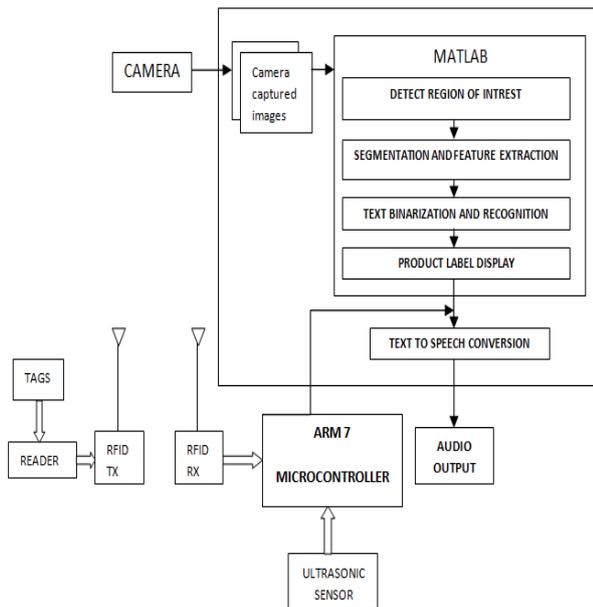


Figure3.1: Block diagram

#### IV.RESULTS AND EXPERMENTS

In this proposed system the experimental results square measure done by mistreatment the efficiency of the algorithmic program as per the font size have taken varied which 10 completely different size pictures has taken and potency of this algorithmic program is taking with increasing order that has not been given in previous system this is often the improvement and accuracy of the system. This is the best method of text detection and extraction rather than previously implemented method this efficiency and accuracy is increases with designed system. Graph given below is shows the efficiency of the text detection and recognition with font size and word accuracy.

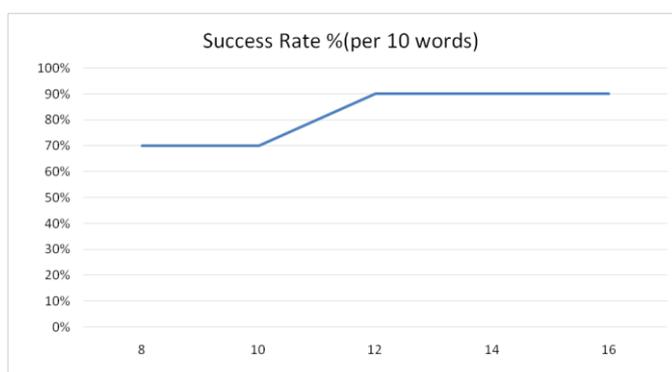


Figure 4.1: Efficiency graph

#### V.CONCLUSION

To overcome the demerits of previous papers, A prototype device study in addition to direct blind individuals with path. A moving-based method to stumble on the place of hobby is projected whilst the blind person actually shakes object for more than one seconds in front of digicam for unique place of interest with the intention to hit upon and recognized. In additional, for guiding the blind character in proper path with the assist of RFID tags to direct them. Impediment detection for his or her unbiased day by day recurring with the aid of ultrasonic sensors. Textual content detection, popularity, segmentation, and feature extraction with a purpose to do by way of OCR (optical individual recognition) software program.

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**Roshani B. Palandurkar** is pursuing her M.E. from G.H. Raisoni College of Engineering, Nagpur, in embedded system and computing, department of computer science and engineering.



**Apeksha Sakhare**, Assistant Professor, Computer Science and Engineering, G.H.R.C.E., NAGPUR, Nagpur, India