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Real Time Text and Gesture Detection for Dumb People

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ABSTRACT: Today, the main problem for the visually impaired is text recognition. Text-to-speech (TTS) is the creation of synthesized speech from text. This paper presents a survey of text recognition and speech. Many methods have been used for text recognition in previous works. This article explores the techniques of various text recognition methods. This abstract proposes a laptop camera based assistive text reading framework to help blind people read text labels and product packaging on portable objects in their daily life. The framework of the system consists of three functional parts: First, capture the scene - with the system camera, the text required for reading by the user is recorded as an image and sent to the image or data processing platform. Second, data processing - where the text is filtered from the environment and recognized by optical character recognition (OCR) software, and finally speech output - the filtered text is fed to this system as an audio output. In addition to text recognition using OCR, the project also includes pattern matching technology as a separate method for recognizing certain objects, such as banknotes. Since the project is supposed to be portable to help the blind, the entire application is based on a laptop camera system.

KEYWORDS: Blind, Object, Detection, CNN (Convolutional Neural Network), OCR (Optical character Recognition), Deep Learning.

I. INTRODUCTION

Text recognition is the ability of a machine to receive and interpret handwritten input from various sources such as paper documents, photos, touch screen devices, etc. Object and machine character recognition is a developing field of research and finds wide applications in banks, offices and industries. Optical character recognition (OCR) is the process by which text characters can be entered into a computer by giving the computer an image. Computer uses OCR Engine, i.e. a computer program whose special task is to guess which letter (recognized by the computer) is represented by the image (recognized by a person).

The main goal of our system is to detect, extract and recognize text from an object, image or hand gesture depending on the system. Provides a simple interface for inserting an object image. The user should be able to upload an image. The system must be able to preprocess the given input to suppress the background. The system should detect the text areas in the image. The system should search for text from the image and provide the user with audio as output.

II. RELATED WORK

There are several tools that can use computer vision techniques to help the blind. The Tap See mobile app captures an image taken by blind users in about 10 seconds using computer vision and crowdsourcing.

Blindsight offers a mobile app called Text Detective that uses optical character recognition (OCR) technology to identify and read text from images captured by the camera. Facebook is developing photo captioning technology to help blind users discuss photos with other users.

Baidu recently released an introductory video about the DuLight project. There is currently no more detailed information about the product. However, the product video suggests concepts for filming scenes and recognizing people, bills, goods and crossroad signs. However, these products were not about enabling general vision for the blind and did not use surround sound technologies to enhance the user experience. Some works exist in the general field of sensory substitution. Daniel Kish, who is completely blind, developed the ability to accurately echo with "mouth clicks" for navigational tasks, including bicycling and independent hiking.

Neil Harbisson, a color blind artist, developed a device to convert color information into sound frequencies. The extreme attempt to turn the visual sense into sound leads to sound technology. The audio system scans each camera

image from left to right and correlates pitch with pitch and brightness with volume. However, all these attempts at sensory substitution were reported in the context of very difficult learning. In contrast, we use visual recognition algorithms that lead to more direct ways of understanding objects from a visual scene.

The researchers, who also investigated the use of 3D audio technology to provide useful information and help the blind, presented a system that uses ambient sound to make it easier to find objects of interest in large, unfamiliar indoor environments (such as a shopping mall) in one. an effort to integrate. 3D sound. For a GPS-based outdoor navigation product. However, visual recognition was not used in these works. The use of object recognition technologies can open up new possibilities to help blind and partially sighted people navigate indoors.

III. PROPOSED METHODOLOGY

In this work, a novel text detection and recognition algorithm is proposed. The system describes about reading of printed letters on the objects for helping the blind people. The problem for the blind persons in reading is solved by this proposed method. This system will distinguish the object from the captured image and detect the texts from the image. The proposed method is demonstrated for localizing text in natural images.

MSER is used to detect the text information from the image. This will extract the text patterns from different backgrounds. This is the robust algorithm for text detection. OCR is used for text recognition on the localized text patterns. The system will transform the localized text to the audio output for blind people. The results point out that it is be possible to achieve high performance using MSER and OCR for text detection and recognition. Two techniques are used to detect the text and recognized that text in this proposed system.

The results are evaluated on the dataset of captured images. This system is instructing the blind users to read the hand held objects. Using this algorithm we are correctly detecting the text in proper area. After the localization of text, these text are recognized using OCR tool. This system is actually based on the reading text from camera based images. The efficiency of the system will be improved by parallel processing of text detection and recognition. The output is giving text as the speech output to blind people.

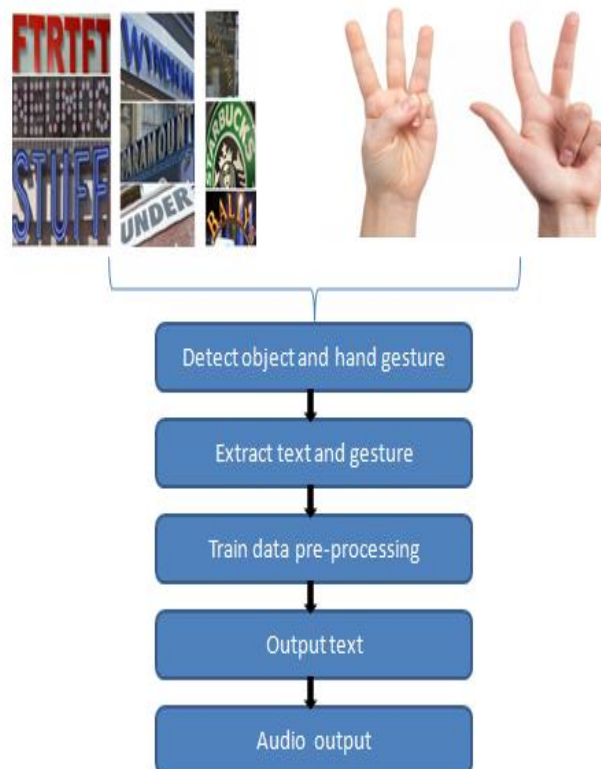


Fig 1. Proposed System Architecture

Optical character Recognition:

Optical character Recognition (NLP) is the process that converts an image of text into a machine-readable text format. For example, if you scan a form or a receipt, your computer saves the scan as an image file. You cannot use a text editor to edit, search, or count the words in the image file. However, you can use OCR to convert the image into a text document with its contents stored as text data.

IV. WORKING MODULE

The system recognizes a handwritten English word and generates the corresponding output as an English word, and the output in English is converted to audio using various techniques. The technologies involved are CNN (Convolutional Neural Network), OCR (Optical Character Recognition) and Deep Learning. In this work, a new text recognition and recognition algorithm is proposed.

The system describes the reading of letters printed on objects to help the blind. This proposed method solves the problem of blind reading. This system separates the object from the captured image and recognizes the texts in the image. The proposed method is presented for text localization in natural images. MSER is used to detect textual information from an image. It separates text patterns with different backgrounds. It is a strong algorithm for text recognition. Text recognition is used to recognize text in localized text patterns.

The system converts localized text into voice output for the blind. The results show that MSER and OCR can achieve high performance for text recognition and recognition. In this proposed system two techniques are used for text recognition and it is recognized. The results are evaluated from a dataset of captured images. This system guides blind users to read handheld objects. Using this algorithm, we correctly identify the text in the right area.

After locating the text, these texts are recognized by an OCR tool. This system is actually based on reading text from camera images. System performance is improved by parallel processing of text recognition and recognition. The result is text to speech output for the blind

V. CONCLUSION

In recent years, deep learning has become increasingly popular and has been applied to areas ranging from facial recognition to object recognition, including OCR. Different types of object recognition networks such as Faster and RCNN are continuously used by researchers for text recognition in the field of OCR. Compared with traditional text recognition, deep learning embedded text recognition is more accurate and stable due to noise tolerance and robustness. It is able to withstand effects such as background changes. An end-to-end deep learning network is more accurate when used in text recognition compared to traditional image processing and cropping, as well as character classification enabled by machine learning. In addition, with the progress of research, researchers have shifted their focus from everyday document processing to more complex text recognition and text recognition in natural scenes and developed excellent structures such as CTPN and CRNN.

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