OPTICAL CHARACTER RECOGNITION ALGORITHM FOR VISUALLY IMPAIRED PEOPLE

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ABSTRACT

We proposed a system which facilitates the visually impaired people by ‘Optical Character recognition’ is to broaden OCR software program for character recognition. OCR is an optical individual recognition and is the mechanical or digital translation of pix of handwritten or typewritten textual content (generally captured by using a scanner) into machine-readable textual OCR is a discipline of studies in pattern reputation, artificial intelligence and device vision. Consequently, OCR allows a machine to robotically recognize text in such files.

Keywords: OCR, Image processing, Machine Learning, visually impaired people, Python, Neural Network, EAST, Tesseract.

I. INTRODUCTION

Optical Character popularity (ocr) defines the technique of automatically or electronically converting scanned pictures of handwritten, typed, or published text into device-encoded textual content. The massive quantity of documents, either current or historic, that we've got in our ownership these days, due to the enlargement of digital libraries, has talked about the want for reliable and correct structures for processing them. This machine may be used by multiple customers. We can do that by means of enhancing our software program for spotting the handwriting of more than one consumer. Additionally if we will take the stroke records and offer it to our machine, then it is going to be feasible to understand even cursive script also. The diagnosed characters are saved inside the text document. We can add phrases to the sound files and invoke them through this system, so that the recognized words can be examine aloud. For that reason we can make the computer read the handwritten document.

II. PROPOSED SYSTEM

The block diagram of the proposed technique is tested in parent real time textual content detection set of rules which makes use of clipping and cropping characteristic for photograph segmentation.
III. METHODOLOGY

The proposed methodology have a look at the three basic steps that deals with the optical character recognition

- Image Preprocessing
- Text Detection
- Text Recognition

IMAGE PREPROCESSING

Image processing is to perform an operations on an image, as a manner to get an greater suitable photo or to extract a few useful records from it. It's miles a kind of signal processing in which enter is an image and output can be image or tendencies/functions related to that photograph. These days, photograph processing is among swiftly developing technologies. It bureaucracy middle studies place interior engineering and computer technological know-how disciplines too.

- Picture processing basically is of
  - Importing the photo via picture acquisition tools
  - Reading and manipulating the image
  - Output in which in quit cease result can be altered picture or report this is based totally totally on image evaluation

- This process deals with the three methods of Image processing techniques
  - Noise Removal
  - Background separation
Lighting Normalization

NOISE REMOVAL
The main objective of the noise elimination diploma is to smoothen the photograph by using doing away with small dots/patches which have high intensity than the rest of the image. Noise removal may be completed for every colored and binary photos. One manner of appearing noise removal by way of the usage of opencv de-noising function.

BACKGROUND SEPARATION
The class one processing of an vision steps to many applications in the image. Where as an instance, undergo in mind the times like tourist counter where a static digital camera takes the huge sort of web page visitors entering or leaving the room, or a website site visitors virtual dig-cam extracting statistics about the vehicles and so on. In all these cases, first you want to extract the person or vehicles on my own. Technically, you need to extract the shifting foreground from static Historical past.

LIGHTING NORMALIZATION
The lighting normalization of OCR handling with the exceptional lighting condition within the photo. Coloration normalization is a subject in computer imaginative and prescient concerned with synthetic color vision and object recognition. Shade normalization permits for object recognition techniques based totally on shade to make amends for those variations. Lighting normalization deals with the different configurations of the pixels with their RGB values.

TEXT DETECTION
Text detection techniques are required to come across the textual content inside the picture and create and bounding box around the part of the image. Detecting text from picture is a prototypical modern puzzle that consists of image processing, pc vision, and gadget learning. Many present packages do a brilliant process in appearing this feature, which includes google lens and camscanner. Each of these packages take the next step and put into effect an optical character reputation (OCR) algorithm to interpret snap shots into real text.

Every of the person is separated by way of the bounding box technique, which the text are drawn with separate box of edges. An algorithm that stumble on the edge of the characters to separate from the photo and which are prepared inside the sequential way to come across the textual content.

There consists of various types of techniques that employed for textdetection:
- Standard objection detection technique
- Sliding window technique
- Single window and region based detectors
- EAST(Efficient Accurate Scene Text Detector)

TEXT RECOGNITION
As soon as we've got detected the bounding boxes having the textual content, the following step is to recognize text. There are numerous techniques for recognizing the textual content. We can be discussing some of the fine techniques within the following Section.
- Convolutional Recurrent Neural Network
- Recurrent Neural Network
- Tesseract
SIMULATION RESULTS

INPUT IMAGE

Far out in the uncharted backwaters of the unfashionable end of the western spiral arm of the Galaxy lies a small unregarded yellow sun.

Orbiting this at a distance of roughly ninety-two million miles is an utterly insignificant little blue green planet whose ape-descended life forms are so amazingly primitive that they still think digital watches are a pretty neat idea.

This planet has – or rather had – a problem, which was this: most of the people on it were unhappy for pretty much of the time. Many solutions were suggested for this problem, but most of these were largely concerned with the movements of small green pieces of paper, which is odd because on the whole it wasn’t the small green pieces of paper that were unhappy.

OUTPUT IMAGE

IV. CONCLUSION

The proposed gadget offers a totally easy method for detection of text in photo. OCR generation deals with the problem of spotting all forms of special characters. Both handwritten and published characters may be identified and converted right into a gadget-readable, digital records layout. The method proposed here whilst evolved extra, will devour much less put off in individual spotting. In future work to mix ocr and tts (text-to-speech) technologies for assisting visually impaired individuals inKnow-how textual content they stumble upon in each day life. Further works a lots more efficient algorithm in addition to miniaturized hardware implementation will be developed.

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