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Survey on Alpha-Numeric Recognition using Machine Learning Techniques

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ABSTRACT: The present interest of digitization of content and original copies requires a quick arrangement so they can be gotten to electronically. While in content to discourse, there happens different frameworks which convert ordinary language produced content into discourse, subsequently empowers the client to recognize them. The proposed framework expects to contemplate picture acknowledgment innovation (Alpha-Numeric Recognition) with content to discourse transformation innovation and to build up a financially savvy easy to use framework. In this framework we have attempted to cause a framework by which we can get the content through filtered picture and afterward that content is changed over to discourse. Straightforward Arithmetic activity are performed dependent on the tasks notice in the checked picture.

KEY WORDS: Optical character recognition, Convolutional neural network, Text-to-speech, Artificial neural network.

I. INTRODUCTION

After the coming of computerized PCs, fusing human capacities to PCs has been an intriguing and energizing exploration field. For over years, people have been considering machines with the capacity to peruse and decipher printed literary archives, with the goal that they can be naturally changed over into a substitute medium or organization effective calculations have been grown up until now in order to empower the machines to perceive characters. Such a framework is named as Optical Character Recognition. This is a framework created for getting character-based documents from digitized pictures of printed or typewritten records and additionally written by hand original copies. Digitizing is finished by utilizing flatbed scanners or computerized cameras. It is in this manner a procedure of visual acknowledgment, which changes over content records into editable or accessible content.

II. RELATED SURVEY

An Optical character recognition (OCR) model is been introduced that utilizes neural Network (NN) for both the checked furthermore, written by hand characters which has a demonstrated to be an proficient one. This uses different calculations which are very much novel in their own. Subsequently this model executes different propelled systems for the discovery of characters furthermore, along these lines study the conduct of different calculations. Optical character acknowledgment is a procedure of distinguishing, portioning also, perceiving different characters from their particular content or on the other hand picture. This could be particularly utilized for the chronicled compositions or any more seasoned reports. The acknowledgment framework first produces the record, at that point digitalizes it lastly put away in the framework. Different external factors should be kept at the top of the priority list that it doesn't upset the framework. The exactness of HCR is been pushed up to 90 percent because of tremendous changes in the shape, size, scale and direction. Different inquiries about are likewise accomplished for the Arabic dialects where the perusing

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design totally changes. Along these lines picture handling and acknowledgment assumes significant job in character acknowledgment.

When a report is brought utilizing the camera, the product will in general pick the content, pursues scarcely any handling advances and at long last attempts to separate the examined record. The highlights separated from the archive are grouped into elevated level or low level. The low level extraction incorporates stature, width, waviness and viewpoint proportion. Then again significant level extraction incorporates number of position of circles, straight lines and so forth. Because of quality of different handling exercises, these methods could be grouped into different systems. The proposed framework is been created based on neural organize which gains from preparing informational collection and gives productive outcome. This method utilizes optical instrument to perceive character. The utilized framework utilizes barely any exceptionally solid calculations to deliver proficient yield. Right off the bat the info is gotten to the info layer. Further these information sources are engendered through the whole system until the last yield unit gets. Because of this forward pass the genuine yield are anticipated. The genuine system are additionally subtracted from the underlying info and creates mistake signal which depends on the back engendering strategy where the mistakes are engendered back. The loads are additionally balanced and the neural system has recently gained from the experience. These organize further experiences managed preparing which leads to display at the info layer which passes the example to the next neuron displayed at the concealed layer. Along these lines the last yield is controlled by the initiation from yield layer. This procedure is rehashed different occasions and once the system has taken in the right arrangement of orders for a specific set of information, it tends to be tried on further test inputs.

Outwardly tested people find different difficulties to discover an examined or printed content that prompts troubles to separate between different properties like precision, course of action, focus, reasonability and adaptability. A keen framework is been utilized to empower outwardly moved individual to beat such issue all the more profitably and absolutely. Here an individual uses a camera based assistive gadget to seek after the whole content passage. The accompanying framework employments a specific camera in order to bring the contribution through the client and later is been perceived by the procedure of digitization. The examined archive is additionally been handled by the product called OCR which wraps up of the work. The current framework has a PC program which empowers the individual or the client to perceive what is been composed on the screen. Also when outwardly disabled individual composes something what's more, in the event that the screen peruser thinks that its off-base, at that point he would press erase to annihilate it. The significant issue that emerges from this framework is that it can peruse just content and not a picture. Therefore the screen peruser recognizes character which utilizes a sounding gadget that numerous individuals think that its troublesome and complex. Along these lines to correct and conquer the issues and outcomes from the prior framework an OCR is created utilizing neural OCR in open PC vision. One of the significant point is to peruse the archive and recognize the content also, later the picture is been caught utilizing webcam which later pursues picture handling. The later is then perceived utilizing help of speaker which causes the client to peruse the content. The whole procedure starts with the picture catching where an inbuilt camera catches the brings input.

Unique care ought to be taken to guarantee the picture is clear. This progression is trailed by pre-handling where various procedures are utilized for slant identification like slant recognition, linearization what's more, commotion evacuation. This procedure checks whether the point of direction misleads a degree 15 degrees which guarantees a slant recognized picture and utilized for further handling.

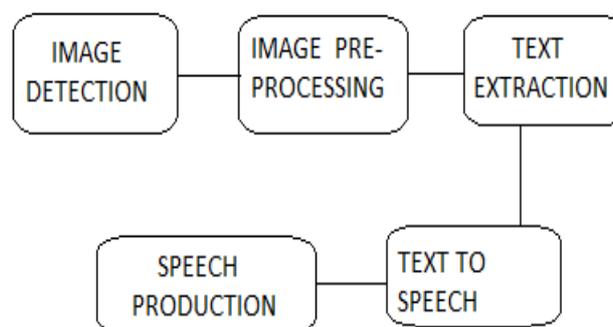


Figure1. System flow process

Once the pre-preparing is done the filtered archive is brought to division process. This procedure brings about a breakdown of a checked picture to assist basic characters. Further the picture is binarized and the separating is checked. A basic passage is first recognized different lines which thusly is separated into numerous words and at long last to different characters. The component extraction process of glyph is likewise done to guarantee the consistency. A glyph is a well-characterized image which has a remarkable measurement. Subsequently its acknowledgment assumes a significant job in picture and content acknowledgment. At long last the last stage incorporates the component extraction of the checked and pre-prepared picture which utilizes tesseract OCR motor that separates between different characters lastly the outwardly matched individual can defeat their troubles utilizing content to discourse acknowledgment.

The accompanying framework proposes the acknowledgment of different characters, math articulations that incorporates different administrators. Especially, there is a requirement for a compact scanner that would be reasonable and effectively. This paper gives the complete acknowledgment of characters with the numerical issues and its answer intended for the outwardly tested people. The framework comprises of a webcam interfaced with raspberry pi which acknowledges a page of transcribed content in checked record or the math articulation composed by the client. Optical Character Recognition is performed with content to discourse acknowledgment procedure. A picture with manually written content composed by client gets changed over with every pixel changed over with parallel "0" and "1" transformation, marking and division, Synthesizer, the aftereffect of math articulation which is perceived by the OCR instrument is later changed over with discourse which is heard by outside speaker. Controller coding for the Raspberry pi is done through PYTHON language. The sound yield is picked up once the aftereffect of math articulation is recognized and afterward changed over to discourse. Raspberry pi has the sound port where the yield can be heard through the earphone or the speaker. When we get the aftereffect of our math articulation, the raspberry pi will take few milli seconds to change over it as a discourse. The proposed framework is approved with both reenactment and exploratory confirmation it accomplishes the written by hand report is changed over with discourse for the utilization of outwardly weakened individuals. Optical Character acknowledgment is helpful for outwardly weakened people who can't peruse Text record, however need to get to the substance of the Text reports. It is utilized to get the arrangement of numerical issues just by composing the math articulation on a paper. This paper is on Strategy of a camera based gadget that can be utilized by individuals to peruse any written by hand report or Text archive.

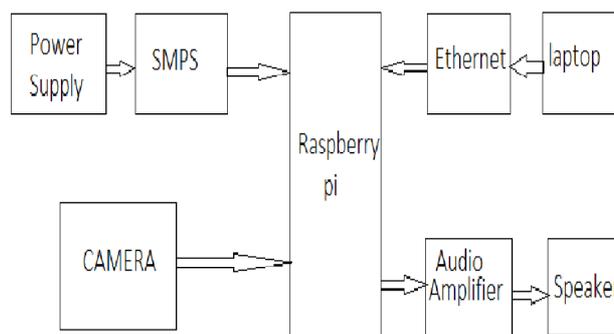


Figure 2. Architecture diagram

The web camera is associated with raspberry pi. The raspberry pi has a working framework considered RASPION that procedure the changes. The sound yield is gotten from sound jack of the raspberry pi. The changed over discourse yield is at that point enhanced utilizing a sound intensifier. The Internet is associated through the Ethernet port in. The page which is to be distinguished is put on a specific base and the camera is centered to catch the picture with ideal and perfect conditions. The caught picture is prepared by the optical character acknowledgment programming which is introduced in raspberry pi. The caught picture is later changed over to content by the pre-preparing steps. The content is changed over into discourse by the Text to discourse motor. The last yield is given to the sound enhancer that is associated with speaker.

The speaker can likewise be traded by an earphone for comfort or outside speaker.



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III.CONCLUSION

As described, a quantitative evaluation of character recognition using OCR technology is presented with mathematical equation solver and text to speech method is used for the results. OCR system can be effectively used to speed up the translation of image based documents into structured documents that are currently easy to discover, search and process. The recognition of new font characters by the system is very easy and quick. The result of mathematical equations can be calculated very quickly and these results will be converted to speech easily.

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