The Pharma Innovation Journal 2019; 8(3): 570-573

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.03
TPI 2019; 8(3): 570-573

www.thepharmajournal.com
Received: 26-01-2019
Accepted: 28-02-2019

Akhil Kumar Sharma
Assistant Professor, Computer Science & Engineering, Lingaya's Vidyapeeth, Faridabad, Haryana, India

Correspondence
Akhil Kumar Sharma
Assistant Professor, Computer Science & Engineering, Lingaya's Vidyapeeth, Faridabad, Haryana, India

Advancements in optical character recognition for enhanced text digitization

Akhil Kumar Sharma

DOI: https://doi.org/10.22271/tpi.2019.v8.i3j.25394

Abstract
This study goal is to provide a means of bridging the language division between countries and between states within a country. The code mentioned above will handle the application's numerous features. To communicate in an expressive manner, the application recognizes text images in one language and converts them to another user-defined language. It has three modules that comprise text recognition, translation, and audio of the translated language. In addition, the application receives typed content and translates it into the required language. The application can detect text in images saved in the system or shot with a camera, translate the text into the required language, and display the translation result on the system's screen.

Keywords: Ocr, text-to-speech, translation, deep learning, image recognition

Introduction
Optical Character Recognition, or OCR, is a technique that recognizes text within pictures, photos, and scanned documents [1]. Almost any image with text (printed, typed, or handwritten) can be converted into machine-readable text using this powerful technique. It is being employed in a variety of businesses for a variety of objectives. In our project, we have added some more features like translation and speech output seeing the present-day requirements [2].

Literature survey
Existing System
In the modern world, users are becoming more and more dependent on converting their printed documents into electronic ones in order to protect their data [3]. In order to make data on paper into computer-processable documents that can be edited and reused, the fundamental OCR system was created. That is, the current system handles character recognition in single languages or in a homogenous manner [4].

Proposed System
Our suggested system is a character recognition system called OCR on a grid infrastructure, which can recognize characters from a variety of languages [5]. Additionally, the suggested system can predict texts from images and translate them into speech. It can even translate a specific text from images into multiple languages [6].

Methodology
Feature identification
- The process of transferring handwritten or printed text into a digital format is known as optical character recognition, or OCR. The idea behind OCR is simple to understand. However, there are a number of factors, like the variety of fonts or the methods used for letter formation, that can make its implementation difficult [7].
- Our team's concept is based on the OCR, that will be easily accessible to the people [8]. Not only the OCR, but our team has also embedded other features as well such as language translation and text to speech. This concept not only helps in detection of the image but also converting the texts into other languages and into the speech as well, that will be really helpful for the traveler's and visually impaired peoples respectively [9].

Literature Review Summary

Year	Event type	Technology	Details
1885	Invention	Image scanner	Paul Nipkow invents the Nipkow disk, an image scanning device that later will be a major breakthrough both for modern television and reading machines.
1912	Product	Text-to-speech	Edmund Fournier d'Albe develops the Optophone, a handheld scanner that when moved across a printed page, produces tones that corresponded to specific letters or characters, so as to be interpreted by a blind person.
1921	Invention	Text-to-tactile sensations	Italian professor CiroCodelupi envisions the "Reading machine for the blind", capable of transforming luminous sensations into tactile sensations.
1931	Patent	Text-to-telegraph	Abraham Goldberg, an Israeli inventor and physicist, receives a patent for his "Statistical machine" (US Patent 1838389), which IBM eventually purchased. It could read characters and translate them into telegraph code, according to the description..
1951	Invention	Text & Morse-to-speech	David H. and other American cryptoanalysts invented the "Gismo" machine. Shepard and Cook Jr., Harvey. Can understand Morse code (U.S.) and read aloud letters one by one. S. 2,663,758 is the patent.).
1962	Invention	Portability	Stanford professor John Linvill creates Optacon, the first portable reading aid for the blind.
1966	Invention	Handwriting scanner	The first scanner that can read any handwritten number is the IBM 1287, which was developed by the IBM Rochester lab.
1968	Invention	Typefaces	OCR-A and OCR-B are typefaces that are intended to simplify OCR processes. Adrian Frutiger, a Swiss designer, and the founders of American Type introduced them.
1971	Application	Postal scanner	The postal service provider, Canada Post, has begun employing optical character recognition (OCR) technology to print barcodes using UV ink (U. S. A patent is S. Patent 5420403.
1974	Company	Omni-font	American inventor Ray Kurzweil established Kurzweil Computer Products Inc. created the first optical character recognition (OCR) software that could read printed text in nearly any font.
1977	Company	Commercialisation	Robert Noyce created the first portable OCR reader for sale and founded the Caere Corporation, which is now Nuance Communications.
1984	Product	Passport scanner	The U.S. State Department uses the first passport scanner created by Caere Corporation..
1987	Application	Price tag scanner	OCR is first used by US retailers J.C. Penney, Kmart, and Sears to scan price tags..
2000	Application	Online service	OCR technology paves the way for mobile applications such as real-time smartphone translation of foreign-language signs, cloud computing environments, and online as a service (WebOCR).
2005	Application	Software	A cross-platform, free optical character recognition engine called Tesseract was created by the University of Nevada, Las Vegas and Hewlett Packard.
2011	Application	Word-frequency lookup	To graph word frequencies in any printed source from 1950 to 2008, the Google Ngram Viewer was developed.
2015	Application	Open access	Google provides free OCR tools in more than 200 languages to scan any Google Drive file.

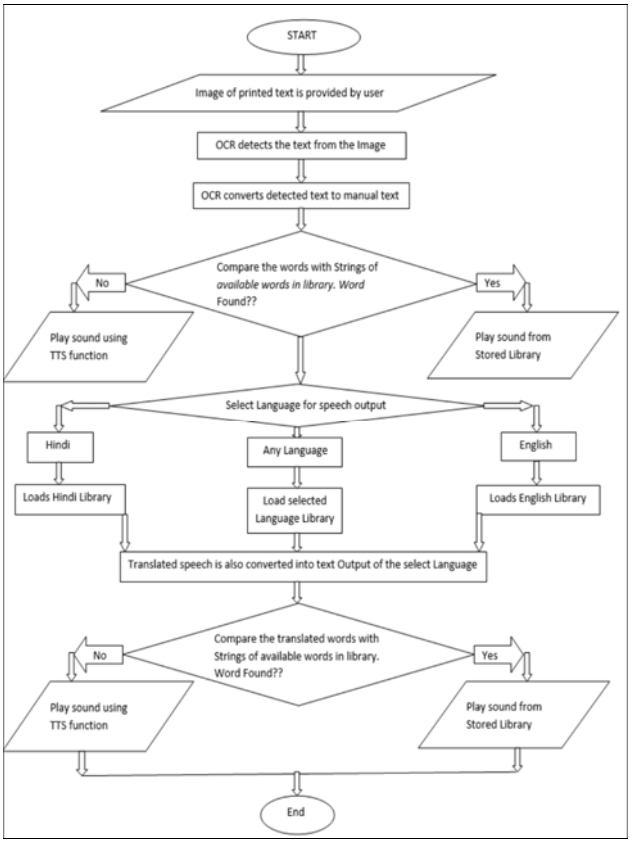

Fig 1

Constraints

- Structuring the Data - For example, It takes several steps to extract and organize the data when users snap a picture of a document using their webcam or smartphone. The necessary accuracy won't be achieved by simple OCR without the use of additional AI or technology designed to recognize different types [10].
- Images with Colored Backgrounds Can Be Difficult to OCR –- OCR must take a color or grayscale photo and convert it to plain black and white in order to reduce blurry text and better separate black and white text from its background. These practical restrictions on data extraction from document images frequently surpass the original OCR design. Sadly, OCR is typically not configured to handle these situations, which restricts its usefulness as a stand-alone engine [11].

Design Analysis

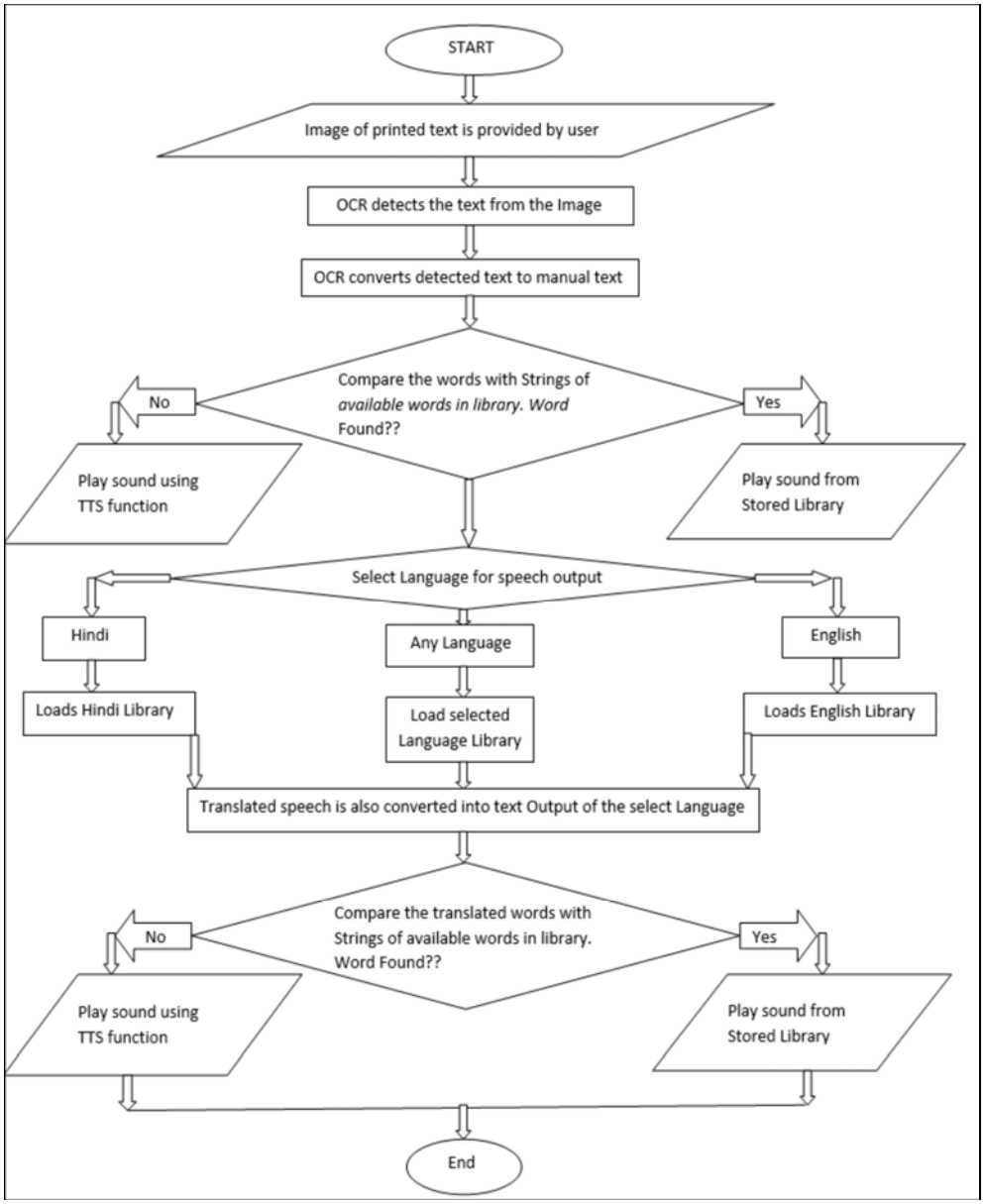

Fig 2

Conclusion

With sufficient investment in research and development as well as entrepreneurial designers, OCR has the potential to become a powerful tool for data entry applications in the future. But in a capital-poor economy, the limited amount of money available could prevent the technology from developing further. On the other hand, the OCR system can yield substantial benefits with the correct encouragement and assistance. They are:

- One of the most enticing labor-saving technologies is OCR's automatic data entry.
- The system has an easy time identifying new font letters.
- Beyond editing and searching, software extensions will be the subject of future research.

The Optical Character Recognition system was developed using Grid infrastructure, which could be efficiently utilized to expedite the transformation of image-based documents into structured documents that are now simpler to find, search.

References

1. Google Ngram Database Tracks Popularity of 500 Billion Words Huffington Post, 17 December 2010, webpage: HP8150.
2. History of Caere Corporation – Funding Universe. www.fundinguniverse.com. Retrieved 2016-09-23.
3. Understanding Optical Character Recognition (PDF). Bar Code & Data Acquisition. Retrieved 18 September 2016.
4. d'Albe EE. Fournier. On a Type-Reading Optophone. Proceedings of the Royal Society of London A: Mathematical, Physical and Engineering Sciences. 1914;**90**(619):373-375. Bibcode:1914RSPSA..90..373D. doi:10.1098/rspa.1914.0061. ISSN 1364-5021.
5. Fournier EE. The Type-Reading Optophone, Our Surplus, Our Ships, and Europe's Need, and more, in Scientific American, vol. 123, nº 19, New York, Scientific American Publishing Co., 1920, p. 463-465.
6. Frutiger, Adrian. Type. Sign. Symbol. ABC Verlag, Zurich, 1980, p. 50
7. Scott Hauger J. Reading Machines for the Blind, Blacksburg, Virginia, Faculty of the Virginia Polytechnic Institute and State University, 1995, p. I-II, 11-13.
8. Jacobson Gary. No grudges, Bill Moore says, but he still seeks justice. Dallas News. Retrieved 18 September 2016.
9. Kaushik P, Yadav R. Reliability design protocol and block chain locating technique for mobile agent Journal of Advances in Science and Technology (JAST). 2017;14(1):136-141. https://doi.org/10.29070/JAST
10. Macchina per leggerepeiciechiin La scienza per tutti, Year XXVIII, nº 2, Milano, Casa EditriceSozogno, 15 January 1921, p. 20 (italian)
11. Schantz HF. The history of OCR: optical character recognition, Recognition Technologies Users Association, 1982.