IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 2, April 2024

Real Time Text Detection for Blind People

Prof. Kshirsagar R. A[1], Abhishek B Chandgude[2], Harshada J Chavan[3], Akshada S Phadatare[4]
Professor, Department of Computer Science and Engineering[1]
Students, Department of Computer Science and Engineering[2,3,4]
Navsahyadri Education Society's Group of Institutions, Polytechnic, Pune, Maharashtra, India

Abstract: *This paper introduces a novel real-time text detection system tailored for the visually impaired, incorporating an audio conversion feature to facilitate seamless accessibility. The system harnesses cutting-edge computer vision algorithms to swiftly detect and extract text from the surroundings using a smartphone camera. Upon detection, the system employs an advanced audio conversion mechanism to instantly convert the detected text into spoken words, providing auditory feedback through a mobile application. Through rigorous testing and optimization, the system achieves high accuracy in text recognition and delivers clear and concise audio output, enhancing comprehension and usability for users with visual impairments. The integration of audio conversion significantly improves accessibility, empowering individuals to effortlessly interact with printed text in their environment, thereby fostering greater independence and inclusivity. Experimental evaluations demonstrate the efficacy and practicality of the proposed system, highlighting its potential to positively impact the lives of visually impaired individuals by facilitating real-time access to textual information.*

Keywords: OCR, Anaconda

I. INTRODUCTION

Real-time text detection for blind people is a revolutionary technology that utilizes computer vision algorithms to recognize and interpret text from the physical environment in real-time. By leveraging the power of smartphones or wearable devices equipped with cameras, this technology enables blind individuals to access printed text around them instantaneously. It works by capturing the live feed from the camera, processing the image to detect text regions, and then converting the detected text into speech or Braille output, which is then relayed to the user via audio or tactile feedback. This breakthrough innovation empowers blind individuals to independently navigate and interact with their surroundings, opening up a world of opportunities for enhanced accessibility and inclusion. Visual impairment is a significant barrier to accessing printed text, making daily tasks such as reading signs, labels, or documents challenging for individuals with visual impairments. While advancements in assistive technology have provided solutions like optical character recognition (OCR) and text-to-speech systems, many existing solutions lack the ability to operate in real-time, hindering the user's ability to navigate their environment efficiently.

II. LITERATURE SURVEY

A common theme in the surveyed literature is the integration of accessibility features tailored for visually impaired users. These features include audio feedback for text recognition, user-friendly interfaces, and mobile device compatibility, aiming to enhance accessibility and usability for individuals with visual impairments. Researchers have explored a range of methodologies for real-time text detection, with an emphasis on deep learning techniques due to their high accuracy and efficiency. Differentiable binarization, lightweight deep learning models, and advanced image processing algorithms are among the techniques employed to achieve real-time performance. Real-time text detection systems have been applied in various scenarios to assist visually impaired individuals in accessing printed text from their surroundings. These scenarios include reading signs, labels, documents, and other printed materials encountered in daily life, both indoors and outdoors. Several studies emphasize the importance of user experience and usability in the design and implementation of real-time text detection systems for visually impaired individuals.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 2, April 2024

III. OBJECTIVE

1. Develop a real-time text detection system for visually impaired individuals.
2. Enable timely and accurate detection of printed text using computer vision techniques.
3. Implement accessibility features such as audio feedback for converting text to speech.
4. Design a user-friendly interface tailored to the needs of visually impaired users.
5. Ensure high accuracy and robustness across various environmental conditions.

IV. PROPOSE METHODOLOGY

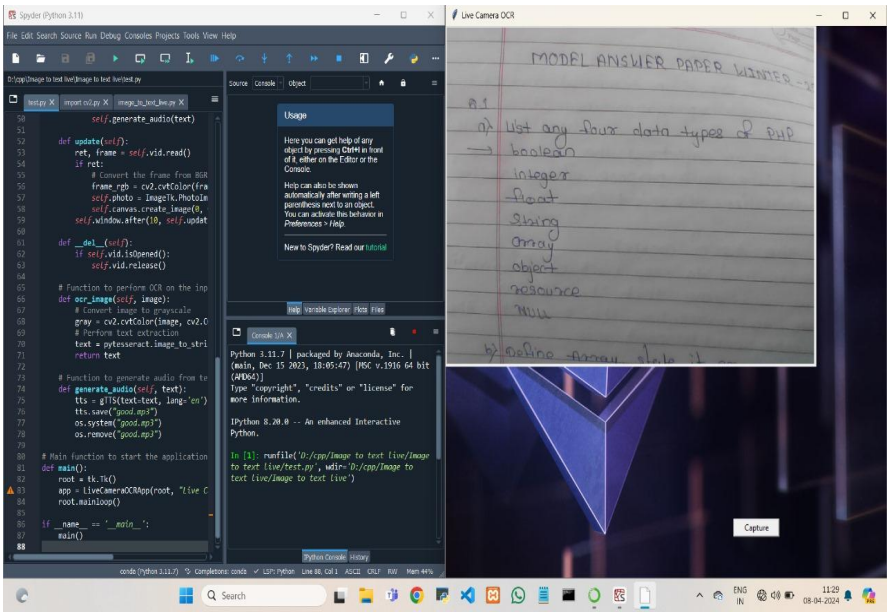
Capture live video feed using the smartphone camera, ensuring adequate resolution and frame rate for real-time processing. Apply preprocessing techniques such as resizing, grayscale conversion, and noise reduction to enhance the quality of the captured images and improve the performance of subsequent processing steps.
Implement text localization algorithms to identify potential regions of text within the image.
Utilize techniques such as sliding window, connected component analysis, or region proposal networks to locate candidate text regions.
Employ segmentation techniques to separate text regions from the background. Utilize thresholding, edge detection, or deep learning-based segmentation models to extract text regions accurately.

Text Recognition:

Implement text recognition algorithms to convert the segmented text regions into machine-readable text.
Utilize optical character recognition (OCR) techniques, such as convolutional neural networks (CNNs) or recurrent neural networks (RNNs), to recognize individual characters and words.
Apply post-processing techniques to refine the detected text regions and improve recognition accuracy.

V. OUTPUT

5.1 Output



IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 2, April 2024

VI. ADVANTAGES AND APPLICATIONS

6.1 ADVANTAGES

1. Independence
2. Instantaneous access to printed text
3. Enhanced accessibility
4. Flexibility with integration into devices
5. Improvement in quality of life
6. Privacy
7. Empowerment
8. Cost-effectiveness

6.2 APPLICATION

The system can be used for the blind peoples in various situations.

VII. CONCLUSION AND FUTURE SCOPE

The conclusion of real-time text detection for blind people highlights its effectiveness in providing instant access to printed text, enhancing their independence and accessibility. Future scope involves refining accuracy, expanding language support, integrating with wearable technology for seamless use, and exploring applications in diverse environments beyond just printed text. Additionally, advancements in artificial intelligence and machine learning could further improve recognition capabilities, making it even more valuable for the visually impaired community.

Real-time text detection for blind people presents a promising solution to enhance accessibility and independence. By leveraging advancements in technology such as machine learning and computer vision, text detection systems can interpret visual information and convert it into auditory or tactile feedback, enabling individuals with visual impairments to access printed text in real-time. However, ongoing research and development are crucial to improving the accuracy, speed, and usability of these systems, ensuring they effectively meet the diverse needs of blind users in various environments and scenarios. With continued innovation and collaboration, real-time text detection holds significant potential to empower individuals with visual impairments and foster greater inclusivity in society

REFERENCES

[1]. https://chat.openai.com/share/15c6bab6-27e6-4d52-b82b-a700598cdeb6
[2] https://ieeexplore.ieee.org/document/7877741
[3] R. Manduchi and J. Coughlan, "(Computer) vision without sight," Commun. ACM, vol. 55, no. 1, pp. 96–104, 2012, doi: https://doi.org/10.1145/2063176.2063200. Google ScholarCrossref PubMed