Reading Technology for Blind People Using OCR and Neura Machine Learning Method

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Abstract:
This study focuses on the creation of a Neura Smart Book Reader that can help people who have visual impairments, especially those who are blind or have low vision and do not know Braille. The project uses IoT technology, which includes hardware, infrastructure, and services within the Internet of Things framework. The project primarily uses the energy-efficient Raspberry Pi device, which has machine-learning capabilities, making it adaptable. The Raspberry Pi computer is small and portable and operates on minimal power, showcasing advanced computing and Machine Learning algorithms. The system has a camera for capturing book pages, and the software performs Optical Character Recognition (OCR), combined with Machine Learning-driven character recognition. This improves the system's proficiency with each use. Once the image is recognized, the Neura Smart Book Reader converts it into audible text, allowing users to listen without tactile interaction. This proves how Machine Learning can improve accessibility. The device also offers online text-to-voice conversion via WiFi and 4G services and uses Machine Learning-based algorithms for enhanced linguistic articulation. This ensures a seamless reading experience for users across digital and hardcopy books. This amalgamation of IoT, Raspberry Pi, and Machine Learning technologies highlights the latest accessible reading solutions for visually impaired individuals,proving how Machine Learning can improve accessibility technology.

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Contents

This paper embarks on a transformative journey, guided by the imperative to empower the visually impaired in their pursuit of literature. At its core lies the creation of a Neura Smart Book Reader, meticulously engineered to transcend the constraints of Braille. This project embraces the paradigm-shifting potential of the Internet of Things (IoT) and the transformative capabilities of machine learning.