Character Recognition for Visually Impaired People Using OCR and Raspberry Pi

Abhishek. S. Swami[1], Samarth. G. Kulkarni[2], Sohan. S. Mali[3], Yogesh. R. Patil[4], Dr. D.B. Kadam[5]

[1, 2, 3,4] Students, Department of Electronics and Telecommunication Engineering,

[5]Faculty, Department of Electronics and Telecommunication Engineering

Padmabhooshan Vasantraodada Patil Institute of Technology (PVPIT), Budhgaon, Sangli

Abstract: *In a world increasingly reliant on textual information, access to printed content remains a challenge for visually impaired individuals. This paper presents the design and implementation of a cost-effective, portable smart assistive device using Raspberry Pi, camera module, Optical Character Recognition (OCR), and Text-to-Speech (TTS) conversion to empower blind and low-vision users. The system captures printed text via a camera, processes it using Tesseract OCR, and outputs speech using eSpeak or gTTS. Designed for offline use with minimal interaction, the system provides a robust solution for reading printed documents in real-time and under varying lighting conditions. Extensive testing confirms the device's utility in daily activities, education, and public engagement. The project aims to provide real- time, offline, and easy-to-use access to textual information, promoting independence and inclusivity for the visually impaired community.*