

## ABSTRACT

Print media is a valuable source of information and knowledge. However, for people with visual impairments, the print media that can be accessed is limited because not all of them are printed in braille. To overcome this, we need a system that can recognize print media letters to facilitate the reading process, especially for people with visual impairments.

Therefore, in this final project, a system is designed that can recognize letters in words and sentences on printed media through technology *optical character recognition*. Histogram of Oriented Gradient method was used to extract images and Random Forest Classifier for classification and letter recognition processes.

The letter image capture process is carried out using a Raspberry Pi 4 Model B camera which is integrated into a pair of glasses. The result of letter recognition is converted into an output in the form of sound that can be heard through *headphones* by utilizing *text to speech technology*.

Based on tests conducted on Arial, Calibri, and Times New Roman fonts with a size of 26pt, the average accuracy of this tool is 74.10% in lowercase letters and 89.74% in capital letters. In the test of letter recognition in words, Arial typeface has the highest accuracy with 91.75% in lowercase letters and 97.83% in capital letters. In the test of letter recognition in sentences, the highest accuracy with a value of 90.47% is in the lowercase Calibri and 96.41% in the uppercase Arial

**Keywords:** *histogram of oriented gradient, optical character recognition, random forest classifier.*