

ABSTRACT

Hiragana is one of the basic alphabets used in Japanese. Hiragana is a phonetic symbol, each letter represents one syllable. Hiragana letters are formed from curved lines and strokes. However, the detection of hiragana letters causes many errors because people still rely on their vision to detect the hiragana letters, especially for people who are familiar with hiragana letter for the first time, it will be difficult and not very clear to read the letters. Therefore, the Convolutional Neural Network (CNN) method will be used to detect handwritten hiragana letters and help people who first get to know hiragana letters when the letters are too difficult to detect by the human eyes.

This final project research uses the YOLOv8 model as a handwritten hiragana letter detection algorithm. YOLOv8 model is one of the newest algorithm models from YOLO and widely used because it has the advantages of faster speed in real-time applications and more accurate than previous models. The hiragana letters to be detected are basic letters in total 46 characters.

This research uses the YOLOv8 model run on Google Collaboratory with the Ultralytics library version 8.0.20 using the Python programming language, the dataset used is a dataset collected from the internet which is annotated using the Roboflow framework. From the test results, the best model is YOLOv8l using SGD optimizer and learning rate 0.01 with a precision value is 98.5%, recall value is 95.7%, f1-score value is 97.1% and mAP value is 95.5%.

Keyword: Hiragana Characters, *YOLOv8*, *Convolutional Neural Network (CNN)*, *Python*, *mAP*, *Recall*, *F1score*, *precision*