

ABSTRACT

One of globalization's effect is urgency to be fluent in languages other than our mother tongue for effective communication purpose. One of those languages is Japanese. For many purposes, there are more people interested in learn it. Due to its words shape that different from Roman and also different type of syllables, which are Hiragana, Katakana, and Kanji, learning Japanese needs well understanding of its letters. In the other hand, globalization's effect including technology development, such as Android as mobile phone's operating system. Its open source characteristic made Android's users able to add any application they needed. Therefore, user's mobility won't be disturb while running the application. To meet the demand of learning Japanese language with limitations of time and effort, one of alternatives that can be used is using translator application in mobile handset. But, this application is limited only to words being manually input by user. Therefore, user who doesn't know or unable to read Japanese letter will still having difficulties.

In this final assignment, a Japanese to Bahasa translator application is designed. Its basic principle using Optical Character Recognition (OCR) to recognize Japanese word that being captured by handset's camera. This image will be proceed and being extracted to get the features using Holistic Feature Extraction (HFE). The steps for HFE are Contour Extraction, Dot Orientation, and Vector Construction. The extraction process resulted in Directional Element Feature (DEF) which contains features from each one of 71 Hiragana and Katakana syllables. DEF then being compared with database using Euclidean Distance to get the value of Euclidean Vector. This vector shows which syllable's match. Then, the fully word gotten from this process is being compared again to the database to get the correct translation. Finally, application will display its translation in Bahasa for user.

The experiments held shows that the best parameters for the application are being used in image's resolution of 1632x1224 and 1920x1080 pixel and the input word consists of two or four syllables. The best accuration rate achieved is 80%. Experiments also shows that device's processor clock speed has linear correlation with system's response time. Beside that, from Beta Experiments existing of four points: application's display, system's response time, translation accuracy, and application's usefulness, respondents classifying the application being made as good.

Key words: Japanese language, Android, Optical Character Recognition, Holistic Feature Extraction, Euclidean Distance