

**IMPLEMENTATION OF CONVOLUTIONAL NEURAL NETWORK  
IN KANJI CHARACTER EDUCATIONAL GAMES**

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**ABSTRACT**

*The complexity of understanding Kanji characters often discourages individuals from learning the Japanese language. Considering the high demand for Japanese language proficiency today, research is conducted to help address the challenges in learning Kanji characters. This research aims to develop an Android-based educational game for Kanji characters. The game is expected to serve as an innovative learning tool for individuals studying the Japanese language. The main feature of this game is predicting the 118 N5 kanji characters drawn by the player. To predict Kanji characters in the game, a Convolutional Neural Network (CNN) model called AlexNet is utilized. This model was tested using the confusion matrix method and achieved an F1-score of 99.24%. The implementation of the model into the Android game application created in Unity has proven successful, with all functionalities meeting the target as assessed by black-box testers. To evaluate the success of this game as an educational tool for Kanji characters and to gather user feedback, a user acceptance test was conducted. The results of this testing yielded a success rate of 85%, indicating that the integration of educational value into this game can be considered a success.*

**Keywords:** *Convolutional Neural Network, AlexNet, Japanese language, kanji, educational games*