UNIVERSITI TEKNOLOGI MARA CAWANGAN PULAU PINANG

CLASSIFICATION OF POTENTIAL DYSGRAPHIA SYMPTOMS USING CNN MODEL BASED ON HANDWRITING IMAGES

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Dysgraphia is a subnet of Dyslexia, a learning disorder that significantly impacts learning other subjects like reading and arithmetic making it more difficult to understand. Dysgraphia is difficult to write which can make an individual academic and professional development. This disorder can be cured if detected early, especially for children where parents can give different methods or get specialized education. This study aims to develop a CNN-based classification model for identifying low and high-potential dyslexia symptoms from handwriting images. Secondly, to validate the effectiveness of the CNN model in accurately classifying low and high potential dyslexia symptoms using handwriting images. By enabling early detection and intervention where the study will support dyslexic students and enhance their academic success and overall well-being. The study was conducted using a dataset of 249 handwriting samples from individuals involve varying levels of dyslexia symptoms. The images were pre-processed through normalization and resized to 256x256 pixels. The CNN model was built with six layers, including convolutional, pooling, and fully connected layers, and was optimized using the Adam optimizer. The results showed that the CNN model performed classify low- and high-potential dyslexia symptoms. This highlights the effectiveness of deep learning techniques in identifying dysgraphia and dyslexia early. Such advancements have the potential to pave the way for timely interventions, offering valuable support to students with dyslexia and helping them succeed academically while improving their overall well-being. By identifying dyslexia symptoms early, this approach can help students get the support they in term of education and making learning easier and more effective. The success of this model could even be a stepping stone for recognizing other learning challenges, improving how we support students with real needs. The technology to create better, support educational environments, encourage all students to reach their full potential.

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