

Universiti Teknologi MARA

**Analysis of Dysgraphic Children Based
on Letter Position**

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ABSTRACT

This report will discuss about handwriting disability that is commonly known as dysgraphia. Currently, in Malaysia there are no system that can detect this disease automatically. This disease is detected when the teacher send the student to the occupational therapist when the student is having trouble in handwriting. This disease also cannot be cured or fixed. There are no medicine for dysgraphia and the children has to do therapy in order to get better. Dysgraphia cannot be detected easily by just looking at children handwriting because each child has a unique way of writing. The problem of lack of expert in Malaysia has made this disease is harder to detect. The objective for this project are to identify letter positioning features that can classify children with dysgraphia potential symptom. Another objective is to construct a prototype based on Kohonen (SOM) method to classify children with potential dysgraphia symptom whether it is high, medium or low potential. This project consists of six phases which are information gathering, data collection, preliminary data analysis, system design and development, performance evaluation and documentation. The data are collected from Sekolah Kebangsaan Bota Kanan, Bota Perak and Tadika Junior Cergas, Tangkak Johor. Through preliminary data analysis there are six features that has been detected which are overshooting, undershooting, over spacing, under spacing, inconsistent spacing and overlapping spacing. This features had been used in Kohonen algorithm to classify the children whether it is high, medium or low potential of dysgraphia. Based on the result, the system can classified the children same as what the expert are expected. There are many experiments that has been done in order to get a good classifying result. The experiments such as changing the learning rate and different type of activation function had been done in order to obtain the best result. It can be concluded that this prototype system can be a great help especially for identifying child with dysgraphia. The accuracy of the prototype are 60%. The researcher hope in the future this system can automatically detect full dysgraphia symptom.

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