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Touchless Anthropometric Measurements by Neural Network-Based Prediction Models for Malaysian Children Clothing Industry

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ABSTRACT

In a recent Coronavirus outbreak (COVID-19), one should avoid physical contact. The virus can be transmitted through direct contact with an infected person and touching surfaces contaminated with the virus. Therefore, manual anthropometric measurements and try-on clothes are less practical. Aware of the situation, children’s anthropometric measurements have been chosen in this study since they have progressive physical development and always outgrow clothes very fast. Their body sizes are not like adults, which the size selection of clothing is usually determined by purchasing records. The anthropometric measurements prediction model is expected to resolve the issues. This model was developed based on the Neural Network, and improvised by the Principal Component Analysis (PCA). The PCA was applied prior the Backpropagation Neural Network by extracting 49 anthropometric measurements into two components, namely length and girth. Height and weight have been used to predict the components respectively. The study found that the improvised model predicted better results compared to BPNN and other methods. At the end of this paper, several recommendations have been made for reference of the future scholars.

Keywords: *Anthropometric Measurements; Backpropagation Neural Network; Children Clothing; Principal Component Analysis; Touchless*