Universiti Teknologi MARA

Melanoma Skin Cancer Recognition Using Negative Selection Algorithm

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ABSTRACT

This project presents a novel intelligence that inspired by immune system or specifically the Artificial Immune System. The Negative Selection Algorithm has been successfully applied in several application areas such as fault detection, virus detection and data integrity protection. This study proposed and focused on the development of a prototype that uses the Negative Selection Algorithm to classify the input image whether it is belongs to melanoma skin cancer or benign mole. The criteria of the skin image that takes into account are Asymmetric Index, Border Irregularity, Color Invariant and Diameter of the lesion. This technique inspired by the ABCD rule where it is adopted as the standard rule to diagnose the skin cancer. This study has shown how the Negative Selection Algorithm can diagnose the skin cancer based on the input image and extracted data that has been provided. This study has been conducted with 30 data which are the skin images is divided into 20 training and 10 testing data for the proposed algorithm. The result of the evaluation analysis conducted in this study shown that accuracy of the result is 60%, the specificity obtained is 75% and sensitivity obtained is 50%. Hence, the proposed algorithm is capable to classify the skin image whether it is melanoma or benign mole based on the given data. For future enhancement of the prototype such as enhance the features extraction technique and hybrid the existing algorithm with another AIS algorithm can be conducted in order to obtain higher accuracy of the result gained.

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