APPLICATION OF ANN IN DISCRIMINATING SKIN LESIONS

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Tuan

PERLANTIKAN BAGI MENJALANKAN PENYELIDIKAN

Merujuk kepada perkara di atas, bersama-sama ini dimajukan salinan surat kelulusan menjalankan penyelidikan untuk pensyarah dari Fakulti Kejuruteraan Elektrik;

Tajuk Projek		**Application of Ann in Discriminating Skin Lesions**
Ketua Projek	:	Pn Rozita Jailani
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Jenis Geran	:	Geran Dalaman

Sekian, untuk tindakan pihak tuan selanjutnya.

Terima kasih.

Yang benar

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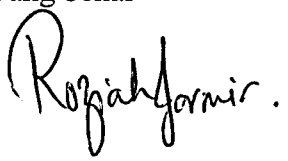
LAPORAN AKHIR PENYELIDIKAN "APPLICATION OF ANN IN DISCRIMINATING SKIN LESIONS"
KOD PROJEK: 10497

Merujuk kepada perkara di atas, bersama-sama ini disertakan 2 (dua) naskah Laporan Akhir Penyelidikan bertajuk "Application of ANN in Discriminating Skin Lesions".

Saya ingin mengambil kesempatan untuk mengucapkan ribuan terima kasih di atas geran penyelidikan yang telah diperuntukkan serta kerjasama yang diberikan oleh pihak IRDC sepanjang projek ini dilaksanakan.

Sekian, terima kasih

Yang benar



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ABSTRACT

This work describes the development of a novel non-invasive color based intelligent diagnosis model for plaque psoriasis lesion. The system which based on primary color model from images has used artificial neural network (ANN) as the decision model to discriminate plaque from other major psoriasis. This model known as multi color spectrum ANN was been designed to utilize all three RGB primary components. The optimized model was evaluated and validated through analysis of the performance indicators applied in medical research; sensitivity, specificity, clustering properties and discriminative power of the models by plotting the effects of threshold adjustment on their diagnostic accuracy, error and uncertainty (*DA*, *DE* and *DU*), and the optimum *Euclidean Distance* (*ED*) from the ideal point (1,0) in the receiver characteristics operating (ROC) plot. Other than that, the model's network structure was also considered.

Findings have showed that the uniqueness of ANN model in recognizing and relating the input-output pattern with no-prior knowledge about this relationship has made the multi color spectrum model to produce reliable dermatological diagnosis. This model, which based only on mean gradation indices ($\bar{x}$) of the three primary components (RGB) and reflecting only the location information of the lesion samples data histogram, produced high accuracy (75%) with a specificity (85.71%) and sensitivity of 88.10%. This model on the contrary, has one setback where it consumed large network size. If efficiency is preferred rather than cost, then this optimized model should be selected as the novel non-invasive color based intelligent diagnosis model for plaque psoriasis lesion. Finally, this work has contributed to a possible solution for the application of biomedical imaging in a medical profession.