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# Universiti Teknologi MARA

# Identification of Adolescent Idiopathic Scoliosis Using Image Processing

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# SUPERVISOR APPROVAL


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This thesis was prepared under the supervision of the project supervisor, Madam Nurbaity Binti Sabri. It was submitted to the Faculty of Computer and Mathematical Sciences and was accepted in partial fulfillment of the requirements for the degree of Bachelor of Computer Science (Hons).


Approved by




Madam Nurbaity Binti Sabri
Project Supervisor


JANUARY 03, 2020

# STUDENT DECLARATION

I am certify that this thesis and the project to which it refers is the product of my own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledge in accordance with the standard referring practices of the discipline.

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# ABSTRACT

Scoliosis is a medical condition that causes the spine to bend sideways either to the left or right. Some of the scoliosis type have the same appearance as the normal spine which can confused surgeons, physiatrists and academician when seeing them. It took a lot of time and energy to manually detect Adolescent Idiopathic Scoliosis. The need for an application that can speed up the process and use a method that surgeons, physiatrists and academician would understand is certainly going to solve the problems. To overcome these problems, Identification of Adolescent Idiopathic Scoliosis application is built by using image processing. The technique used was by going through pre-processing, feature extraction and also classification as it is capable for the flow of the project. The pre-processing technique used are converting to grayscale image, implementing sharpening filter and median filter. As for feature extraction, gray level co-occurrence matrix is used. Ensemble classification, a model in which better predictive performance is achieved through the incorporation of the outputs of multiple classification models into a good classification process. The developed prototype is using 60 images. This system was tested for accuracy by calculating the percentage of the entire application accuracy. The result showed that the classification of ensemble would yield accurate result with the highest percentage of accuracy which is 86.67%. The research will help to identify more forms of Adolescent Idiopathic Scoliosis with a lot of data for the future work of the project. To help physicians and surgeons, computer-aided software will be built in the future for Adolescent Idiopathic Scoliosis.

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