

ABSTRACT

Fractures on the long bones or the pipe bone is the condition of bone is fractured so that needed connection . Bone fracture, especially on the diaphysis of long bones can be classified into spiral, transverse, oblique, segmental and comminuted. In the condition of tired, some medical personnel can not detect that type of fractures. So the need for a system that can classify the type of fracture automatically.

In this final project was designed a system to detect the type of fracture on long bones. In general of the system is divided into five parts, namely image pre-processing , fracture detection system (scanline algorithm), the bone amount detection systems, complex fracture detection system, and a single fracture detection system. Feature extraction can be measured by performing edge detection on the edge of the bone that is broken, then analyzed the differences between the types of long bone fractures.

The results were obtained in the preprocessing, edge detection using sobel operator produces a better image than the operator robert, prewitt, canny. The threshold value of 18 is the best value for detecting a bone fracture or normal and to obtained the coordinat position of bone fracture. On the classification of complex bone fractures using parameters number of fracture , the average fracture spacing, produces a very good measurement with an accuracy of 97,78%. Simple bone fracture classification produces accuracy is 91,46% . Comparative analysis of SVM parameters that affect the accuracy of SVM kernel only. The best accuracy for the classification of types of bone pipe is 89,10% . Total processing time average in this study is 2.15 seconds.

Keyword: long bone fracture,digital image processing, edge detection, Support Vector Machine