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Detection of screw implant on x-ray images using morphology technique

Abstract

Bones make up the skeleton of the body by attachment points for muscles, which allows human to run, jump, and do actions. It also protects organs from potential damages. Fracture is a medical term for a broken bone when bone has an outside force exerted upon it, there is possibility that the bone cannot withstand the amount of force and break it. These fractures can treat by implanting internal fixations at the fractures such as screw and plates. To diagnose the fractures and follow up the treatment, x-ray taken at the fractured area. X-ray image is one of the oldest photographic films that is mostly used in medical diagnosis and treatment. X-ray image is a very useful modality for the physicians and doctors to determine and analyse the bone fracture, which is an important symptom used for diagnosis, therefore x-ray produce only medium quality image, which will normally affect the information of the image. This paper aims to use a new method to detect the screw implants on human bone by using image binarization technique. Image binarization is the process of separating pixel values into a couple of groups, black as foreground and white as background. Image binarization is an important step in image thresholding. The main objective is to find a new method of image thresholding to of object detection. The method is by developing a new algorithm of image thresholding by making the already exist algorithm as references. The resulting method was analysis based on accuracy, sensitivity, and specificity.