

Image enhancement techniques using local, global, bright, dark and partial contrast stretching for acute leukemia images

Abstract

Leukaemia is a malignant disease (cancer) that affects people in any age either they are children or adults over 50 years old. Nowadays, there are screening system guidelines for leukaemia patients. The screening result from looking at a sample of patient blood, can determine the abnormal levels of white blood cells, which may suggest leukaemia for further diagnostic stage. Therefore, medical professional using medical images to diagnose leukemia. However, there are blurriness and effects of unwanted noise on blood leukaemia images that sometimes result in false diagnosis. Thus image pre-processing such as image enhancement techniques are needed to improve this situation. This study proposes several contrast enhancement techniques which are local contrast stretching, global contrast stretching, partial contrast stretching, bright and dark contrast stretching. All techniques are applied on the leukaemia images. The comparison for all the proposed image enhancement techniques was carried out to find the best technique to enhance the acute leukaemia images. The results show that the partial contrast stretching is the best technique that helps to improve the image quality.

Keywords — Image enhancement, local contrast, global contrast, partial contrast, bright contrast, dark contrast, Acute Leukemia