Abstract

As a medical imaging technique, computed tomography (CT) is very useful for doctors to analyze the pathological changes of the biological organs. Medical image processing can play an important role in early diagnosis. However, because of the complicated texture and low gray differences in liver CT images, for some early local pathological changes, such as liver cancers, hepatic abscess, etc., the changes of gray level are to small to be noticed.

In this Final Project is implemented liver CT image enhancement process that aims to improve contrast. Image enhancement process have two main steps that must be done. The first step is liver region is segmented from the whole liver CT image with a simple segmentation method. Then, segmented liver CT image is processed by Direct stretching with the linear relationship, Linear stretching According to the Fitting Curve, Nonlinear stretching with the logarithmic transformation dan Selective histogram equalization. The result of this process, the focus of the liver can really be distinguished from normal liver tissue.

To evaluate performance of the applied methods, contrast value for each method is calculated. The best method will have the highest contrast value. In this application, Selective Histogram Equalization method with the highest contrast value compared with Direct Stretching method using the Linear
Relationship, Linear Stretching According to the Fitting Curve method and Nonlinear Stretching with the Logarithmic Transformation method. Therefore it can be concluded that the Selective Histogram Equalization method is the best method in this application.

Keywords : CT liver, direct stretching, linear stretching, nonlinear stretching, selective histogram equalization, image segmentation, image enhancement.