SUMMARY

The purpose of research builds an application system for early skin cancer diagnosis based on image dermatoscopic. This application are built to support dermatologist as a tool for early diagnosis, patients indicated whether or not skin cancer. Traditionally, a dermatologist uses the image of the histopathology of biopsy samples to diagnose skin cancer and then dermatologist are studying the samples under a microscope and make diagnoses based on their experience. To get the diagnostic results from the lab generally require a long time. Therefore, the tool for early diagnosis is needed to diagnose skin cancer, so the medical treatment can do immediately. The sample of the research object is melanoma skin cancer. Melanoma is one of skin cancer and deadly dangerous. Early detection is necessary for the patient to get the right treatment. However, visual interpretation of the characteristics of the pigment is very difficult if done manually.

Stages of research are preprocessing, segmentation, feature extraction and diagnosis. The first year of research focused on developing methods and segmentation of objects preproses suspected melanoma skin cancer. In the second year focused on the extraction methods and diagnostic features. The preprocessing method use median filtering and principal component analysis. The proposed segmentation method is an improvement of the region growing method with fuzzy theory approach. And the feature extraction method is developed based on information Asymmetry, Border Irregularity, Color and Diameter (ABCD). Diagnostic methods of feature extraction are two approaches is the first approach based on the value of Total Dermatoscopic Value (TDV) and the second approach uses a combination of learning methods Support Vector Machine (SVM) and Boosting.

The result of research in the first year is preprocessing method, improvement segmentation method and feature extraction that it should be done in the second year. The result of proposed segmentation method is more accurate than region growing method. The result of feature extraction method is information of Assymetri, Border Irregularity, Color Variation and Diameter, and this feature is used to calculate TDV values. Form the TDV value can be done early diagnosis, and the accuracy result is about 85%. Therefore, another approach is needed to improve the accuracy such as machine learning approach that it will be done the second year.