Ayu Puspitawati, 2019. **Klasifikasi Age-Related Macular Degeneration dengan Pendekatan Regresi Nonparametrik berdasarkan Estimator Lokal Linier**. Skripsi dibawah bimbingan Dr. Nur Chamidah, M.Si dan Drs. Eko Tjahjono, M.Si Program Studi S1-Statistika, Departemen Matematika, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

ABSTRACT

The eye is one of the most perfect and complex sensory systems in the human body. One of the eye disorder is Age-related Macular Degeneration (AMD). There are two types of AMD, namely dry AMD and wet AMD. Classification of the types of AMD is important so the treatment can be given appropriately to prevent the blindness permanently. Classification of AMD types was previously carried out by using a computational mathematical approach. This study aims to classify the type of AMD in the retinal fundus image by using statistical approach. The steps taken in this paper are image processing with MATLAB software, dimension reduction by using Discrete Wavelet Transformation (DWT) method and Principal Component Analysis (PCA) method, and classifying retinal fundus images by using additive nonparametric logistic regression based on local linier estimator. The data used in this paper is obtained from the STARE web which consists of 25 dry AMD images and 25 wet AMD images. Based on these data, each of the 20 dry AMD images and wet AMD was used for insample, while each of the 5 dry AMD and wet AMD images was used for outsample. The response variable consists of two categories, there are dry AMD image (Y = 0) and wet AMD image (Y = 1), while the response variable is the result of the reduction dimention of image processing as many as 5 predictors. The results of classification accuracy in the insample data was 97.5%, in the outsample data was 80%, so the overall classification accuracy was 94% with a sensitivity value was 92.31%. Based on these results it can be concluded that the classification by using nonparametric logistic regression based on local linier estimators produces a good model and can be used to classify AMD types.

Keywords: Age-related Macular Degeneration, Discrete Wavelet Transformation, Principal Component Analysis, Local Linier Estimator