

## **ABSTRACT**

*Digital image processing is growing and continues active time to time. Various systems and applications are made for specific interests such as detection, classification, security, and health. A variety of intelligent systems with certain scientific methods applied to achieve good accuracy. One of the most frequently studied is the facial image. The face itself has characteristics that are very complex and contain a wealth of information that can be explored such as race, gender, age, emotional expression and so forth.*

*In this research designed a system that able to detect human age groups based on features that is geometry features and wrinkle features. The system is designed using edge detection and 2D Gabor wavelet filter for feature extraction and and K-Nearest Neighbor algorithm for classification. The input images is a stationary image of the front face of each image there is only one face.*

*Based on the research results obtained the highest accuracy when the system is using 32 features using a method of measuring the similarity with Euclidean Distance,  $k = 3$ , , amounting to 79% and average of 70,00%. Accuracy decreases when the input system uses facial with glasses, veil and abnormal face. Face with the glasses obtained was 60%, veil 25% and 25% for abnormal face. Average computing time obtained by 0,319 seconds using 32 features and 0,383 seconds using 42 features.*

*Keywords: image processing, age groups, Gabor wavelet filter 2D, K-Nearest Neighbor*