## *ABSTRACT*

*Tooth is one of the organs contained in the mouth with a texture that is the hardest. The roots of the teeth are covered gums, tooth enamel as a protector that prevents tooth decay, dentin as a layer under the enamel, and the pulp that contains nerves and blood vessels in the tooth. Not all parts of the teeth can be seen by naked eye. Dental health is directly related to the body's metabolic activity. Dental disease is one of the granuloma. Granuloma is an inflammatory disease that is located around the apex of the tooth. Granuloma disease is also difficult to be known by the general dentist.*

*The research purpose to detect the health of teeth and to detect how the dental health conditions using radiographs periapical based feature extraction method and using S-Transform, Principal Component Analysis, and Radial Basis Function classification. This research is to realize a program to detect granulomas disease through x-ray image.*

*The system is made to produce an accuracy rate of 85% for PCA extraction traits and 60% for feature extraction s-transform. PCA computation time for approximately 6.7144 seconds and s-transform for approximately 15.5092.*

*Conclusions from this research is detection system has been successfully designed granuloma through a system with feature extraction using s-transform, principal component analysis and radial basis function.*



***Keywords** : radiographs periapical, granuloma, S-Transform, Principal Component Analysis, Radial Basis Function*