# **FACIAL EXPRESSIONS RECOGNITION USING BACKPROPAGATION NEURAL NETWORK FOR MUSIC PLAYLIST ELECTIONS**

## aSetiawardhana, bNana Ramadijanti, cPeni Rahayu

a,b,cPoliteknik Elektronika Negeri Surabaya

Jl. Raya ITS, Kampus PENS, Surabaya 60111

E-Mail: a[setia@eepis-its.edu](mailto:setia@eepis-its.edu)

Abstract

*The objective of the research is to detect facial expression as indicator to cast a music playlist. Facial expression detection system input is performed offline by taking photograph of a subject with nearest position from the camera and facial position should not be tilted. The image is identified as a combination of color and feature extraction is performed based on location of eyebrow, eye, and mouth. Facial expression is detected with Artificial Neural Network Backpropagation method. The output data is an index, which automatically select and play the music. In this way, the music is modified according to the changes of facial expression. The system is designed to detect three facial expressions: normal, angry, and happy expression. The similarity between features values from each expression influence the ability to differentiate each expression. Offline system evaluation is performed with backpropagation neural network method,for learning process, it reaches convergent value with lowest error value when using 10 unit neuron on hidden layer, learning rate value is 0.0625325 and mean square error value is 0.0135.*

*Keywords: Facial Expression, Backpropagation, Music Playlist.*