

ABSTRACT

Expression is a human communication tool to express emotional feelings. Currently, facial expression recognition technology continues to be developed by research to improve the quality of the technology. With this, existing models will be developed in order to predict human decisions based on facial expressions.

This final project uses the modified VGG16 architecture as a facial expression classification model. The data set used for classification is FER-2013 Modified into five expressions, namely angry, disgusted, happy, neutral, and surprise with a total data of 23910. The model used to read the jury's facial expressions is through a video prediction model. The result of the expression that is read will be calculated using Fuzzy Logic in determining the jury's decision with the result of 'yes' or 'no'.

The results of testing the Modified VGG16 Architecture using the best combination of parameters were obtained with epoch 100, batch size 32, learning rate 0.0001, and data split 10% for validation to obtain training accuracy of 93% and validation accuracy of 86%. The model is evaluated by testing data of 10% outside of the training data, obtaining a test accuracy of 85%. The classification report from the evaluation obtained a precision of 84%, recall of 82%, and an f1-score of 83%. The resulting model has a good performance in classifying facial expressions compared to VGG16. The results of the judge's decision prediction using fuzzy obtained a correct prediction of 20:20 from the number of test samples.

Keywords : *Accuracy, Expression, Fuzzy, F1-Score, Prediction, VGG16*