

## ABSTRACT

Facial expressions are a form of indirect communication in humans. A facial expression recognition system is a machine interaction with humans. Many studies are conducting research to develop facial expression recognition systems that are more sophisticated. At the talent show, the judges will express whether or not he is interested in the show. With this case, we will build and develop a facial expression recognition system that can predict the decision of the talent search jury.

The facial expression classification model used is Modified ResNet50 without zeropadding, maxpooling, and minimizing filters in each layer. The purpose of the modification is so that the size of the matrix shape is not too small when processed to the innermost layer so that the learning process can be more optimal. The Classification Model using the FER2013 Datasets was modified into five expressions, namely angry, disgusted, happy, neutral, and surprised. The results of reading facial expressions in the prediction model are entered into Fuzzy calculations to predict the judges' decisions based on facial expressions.

The best combination of parameters uses epoch 100, batch size 16, learning rate 0.0001 and data split 10%. The training accuracy is 92% and the validation accuracy is 84%. The training model was evaluated using 10% testing data to obtain a testing accuracy of 84% with 80% precision, 80% recall, and 80% f1-score. The prediction model using fuzzy is quite effective, based on testing 20 samples with correct prediction results of 20:20 from the number of test samples.

**Keywords:** *Classification, Facial Expression, Fuzzy, Prediction, ResNet50*