

ABSTRACT

When humans interact with each other, the communications that happen between them are verbal and non-verbal. Non-verbal communications occur through facial expressions that contain emotions, human facial expressions contain a lot of information about their current state. This is because that facial expression is a spontaneous response to the event or circumstances that they are in. There are six basic emotions that create facial expressions: anger, disgust, fear, sadness, happiness, and surprise.

A machine learning model with convolutional neural network-based algorithms and residual network architecture can train the dataset and identify human facial expressions. The system that I created will take the input in the photo of facial expressions and then try to detect the facial expression in the input photo. In this final project, the dataset that I use is FER 2013 with 30.000 pictures split into train, test, and validation. This dataset also splits the data into subfolders of seven facial expressions including neutral.

In this final project, I implemented the convolutional neural network algorithm with residual network architecture to the FER 2013 dataset. The accuracy of train data is 72,06%, the accuracy of validation is 64,34% and the accuracy of test data is 64.47%. The model I create successfully detects the expression of anger, disgust, fear, happiness, neutral, sad, and surprise from the total dataset of 35.887photo.

Keywords: *Facial Expression Recognition, Convolutional Neural Network, Deep Learning.*