

ABSTRACT

Human emotional condition can be seen directly from changes in human facial expressions. The presence of an emotion detector can make it easier to monitor a person's emotional state. But to use an emotion detector, it must be with high accuracy to classify human emotions correctly. Therefore, this study discusses the implementation of machine learning for emotion detection tools so that the resulting emotion classification is accurate or close to the user's original emotional condition. In this research, the concept of IoT is also applied. In addition to detecting emotions, the results of emotion detection are also used as a controller for room lighting and room temperature whose adjustments are based on the user's emotional condition.

The emotion detection tool is made using the Arduino UNO Microcontroller. In the machine learning implementation, the CNN method is used to train the emotion classification dataset. The data that has been trained is then applied to the program for emotion detection devices and then forwarded to the controller system to control the lighting and room temperature.

The results of model testing that have been trained using the CNN algorithm with Deep CNN architecture show an average precision of 67%, recall 62%, accuracy 68% and F1 score 63%. The results of testing the emotion detection tool in this study obtained an average value of the level of compatibility of the test sample with the model that had been trained at 70.03%. The results of the QoS calculation for video streaming when transmitting data from a smartphone camera to an emotion detection device using the TCP protocol with an average throughput value of 9168.1 Kb/s. Meanwhile, packet loss is 0.002% and the average delay value is 0.89960339 ms.

Keywords: Emotion, IoT, Machine learning.