Abstract

The use of convolutional neural networks has been applied to various applications. Such as image classification, object detection and recognition, and others. One of the most popular uses for neural networks is image classification. Image classification mainly identifies and categorizes images according to the specified group. One application is to distinguish between one type of dog to another. Classification of dog breeds has its challenges because several kinds of dogs have similar physical characteristics, especially those that belong to the same group. This study explains how to develop a dog breed classification system from a sporting group using a residual neural network (ResNet). The system's goal is to make it simpler for people to identify the dog breed. Five types of dog breeds were used, which were obtained from the Tsinghua Dogs dataset. In its implementation, two variants of CNN are used to be compared, ResNet 50 and ResNet 101, using the same configuration. Based on the research results, ResNet 101 shows better macro average f1-score results while maintaining high accuracy. The ResNet 50 produces an f1-score of 84%, while ResNet 101 makes an f1-score of 86%.

Keywords: convolutional neural network, dog breeds, image classification, residual network