
Abstract

Aircraft types vary in shape, size, and intended use, making them difficult to classify and presenting a challenge, particularly in the development of image processing technology. In this study, the Convolutional Neural Network (CNN) algorithm with a Residual Network (ResNet) architecture was used to develop an aircraft image classification system. The model was built and evaluated using a private dataset consisting of 4,520 images across eight aircraft type classes. Models were trained under two scenarios (with and without augmentation) and two batch sizes (16 and 32), combined with three variants of ResNet layers (50, 101, 152), resulting in twelve models. Evaluation results showed that the best model, ResNet-152 with augmentation, achieved an f1-score of 0.954, proving that the developed CNN-ResNet model can effectively classify aircraft images. However, errors still occurred in visually similar classes, so further experiments are needed to test more optimal combinations of architectures and training parameters to improve the model's accuracy and generalization capabilities.

Keywords: Classification, Image, Aircraft, CNN, ResNet, Augmentation
