

## ABSTRACT

# CLASSIFICATION TAXONOMIES GENUS OF 90 ANIMAL USING TRANSFER LEARNING RESNET 152

By

Satria Nur Saputro 19102296

*Image classification is a Machine Learning or Artificial Intelligence method used to detect images quickly and accurately. It mimics the human brain's ability to understand and recognize information in digital images, so from the Machine Learning results, the computer can recognize and distinguish objects in images like a human. In the field of biology, students usually must memorize, especially sub-chapters of taxonomy related to the classification of vertebrate animals. The process of learning theory and the limited ability to remember something about everything, especially foreign languages, often cause students to have difficulty understanding the lesson, especially in determining the type of animal and taxonomy. In this study, the classification of 90 animal taxonomies will be done using Transfer Learning ResNet 152. This study aims to analyze the performance of Transfer Learning ResNet 152 against a dataset of 90 animals. The testing be done using 2 architectures, namely architecture A (Freeze all layers) and architecture B (Freeze all layers except for the last 3x block). In the testing, various Batch sizes 4,8,16, 32 and dropout 1-8 with early stopping value 2 are used. Model A resulted in the highest evaluation value of 0.9222 on Batch size 4 with Dropout 6, 0.9241 on Batch size 8 with Dropout 7, 0.9259 on Batch size 16 with Dropout 1, and 0.9296 on Batch size 32 with Dropout 4 and Dropout 7. Meanwhile, on model B, the highest evaluation values obtained are respectively 0.7611 on Batch size 4 with Dropout 8, 0.8713 on Batch size 8 with Dropout 2, 0.8852 on Batch size 16 with Dropout 1, and 0.9204 on Batch size 32 with Dropout 3.*

**Keywords:** *Classification, Deep Learning, Residual Network 152, Taxonomy of Animals, Transfer Learning*