

A Comparative Analysis of Dog Emotion Prediction Using Full-Body and Facial Images with Transfer Learning

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Prediction and recognition of animal emotions has become an interesting and challenging problem. This study proposed a transfer learning approach using computer vision techniques to predict dog emotions by comparing the effectiveness of faced images versus full body images to predict emotions in dogs. In order to try this the performance of various pre-trained models utilizing distinct optimizers was assessed. Specifically, VGG16, InceptionV2, MobileNetV3, and ResNet50 were harnessed as feature extractors, while stochastic gradient descent (SGD), RMSProp, and Adam served as optimizers. Our assessment encompassed the evaluation of all four models under these three optimizers, utilizing datasets of facial images. The ultimate model selection was guided by accuracy, where MobileNetV3 with the SGD optimizer exhibited the highest performance, achieving a commendable 76% accuracy, whereas full-body images attained a 65% accuracy rate. By leveraging transfer learning techniques and computer vision algorithms, our results indicate that facial expressions provide the most accurate means of predicting emotion in dogs. This finding underscores the importance of prioritizing the dog's face as the primary input for emotion prediction. By harnessing the power of transfer learning and sophisticated computer vision techniques, we propose a compelling path forward for advancing our understanding of non-human emotional communication, ultimately enriching the interactions between humans and dogs in diverse contexts .

Keywords: *transfer learning, dog emotion prediction, full-body images, facial images, computer Vision*