IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 2, July 2023

Transfer Learning and Tuning of Deep Pre-trained Architecture for Face Recognition

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Abstract: *Automatic Image Identification is one of the interests of software developers with the application of machine and deep learning methods. With the incorporation of Transfer Learning and Tuning in pre-trained architecture, a substantial increase in the model's performance is evident. This paper performs face recognition using an image identification and recognition approach. Feature extraction was performed using ResNet50 pre-trained architecture with Support Vector Machine as a classifier. Initial evaluation was made to generate a precision of 62.50%, recall of 65.55%, and f1-score of 63.99%. With this poor performance of ResNet50, the hyperparameters were tuned using transfer learning and tuning. After several times of manual experiments, a significant increase in precision is 93.75%, recall is 94.36%, and f1-score is 94.05%. Based on the remarkable yield of 35.25% for accuracy, 38.79% for recall, and an f1-score of 30.06%, it is advisable to apply the model for image identification and recognition*

Keywords: CNN Architectures, Transfer Learning, Image Identification, ResNet50

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