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Analysis of Optimizers on AlexNet Architecture for Face Biometric Authentication System

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Abstract
Nowadays, biometric authentication is more important than a password or token-based authentication. There have been many techniques suggested for biometric authentication algorithms, however, it can be observed that the Deep Learning approach is significantly more effective and secure than other methods, specifically Convolutional Neural Networks (CNN) with AlexNet architecture for face recognition. However, an optimization technique is crucial in the Deep Learning models so, this paper will analyze the best optimizers for AlexNet architecture which are SGD, AdaGrad, RMSProp, AdaDelta, Adam, and AdaMax by using the proposed face dataset includes 7 celebrity classes, each with 35 images obtained from Google Images. To enhance the size of the dataset, data augmentation was employed before it was fed into the AlexNet model. The experiment shows AdaMax performs well when compared to the other optimizers on the proposed dataset. © 2022 IEEE.

Author Keywords
Convolutional Neural Networks; Deep Learning Optimizers; Face Biometric Authentication

Index Keywords
Architecture, Authentication, Biometrics, Convolution, Deep learning, Face recognition, Learning systems, Network architecture; Authentication algorithm, Biometric authentication, Biometric authentication system, Convolutional neural network, Deep learning optimizer, Face biometric authentication, Face biometrics, Learning approach, Optimization techniques, Optimizers; Convolutional neural networks

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