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**Study of Adam and Adamax Optimizers on AlexNet Architecture for Voice Biometric Authentication System**
(2023) *Proceedings of the 2023 17th International Conference on Ubiquitous Information Management and Communication, IMCOM 2023*, .

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**Abstract**
Biometric authentication has surpassed password or token authentication in significance. Even though several methods for biometric authentication systems have been developed, the Deep Learning method is considered to be significantly more efficient than the other methods, especially Convolutional Neural Network (CNN). For this paper, the CNN architecture that was evaluated is AlexNet since it is compatible with a small dataset. Considering optimization techniques are important in Deep Learning method, this research will use the proposed voice dataset to determine if Adam or AdaMax is the optimal optimizer for the AlexNet architecture. The proposed dataset consists of seven celebrity classes, with 20 audio files in each class that is collected from Google and Youtube. In improving the model's accuracy, k-fold with cross-validation approach was selected. The experiment proved that the AdaMax optimizer outperforms Adam on the proposed dataset. © 2023 IEEE.

**Author Keywords**
Adam Optimizer;  Adamax Optimizer;  AlexNet Architecture;  Voice Biometric Authentication System

**Index Keywords**
Biometrics, Computer architecture, Convolutional neural networks, Deep learning, Learning systems, Network architecture; Adam optimizer, Adamax optimizer, Alexnet architecture, Biometric authentication system, Convolutional neural network, Learning methods, Optimizers, Voice biometric authentication system, Voice biometrics; Authentication

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