ConvNet for Finger Vein based Personal Authentication

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Abstract: *The human brain, can easily perceive and differentiate the objects in an image. Subsequently the field of computer vision intent to mimic / simulate the human vision system. Finger vein-based user authentication has been used to control access and maintaining privacy of confidential data. The main challenges in the finger vein verification are the quality of an acquired images due to uneven illumination of light, quality of sensor, positional variation and environmental condition. In this article, we used Wiener filter, to improve the quality of finger vein images. These noise free images are provided for training to popular pretrained ConvNet architecture for user verification using finger vein biometric. Then we analysed the performance of ConvNet (convolutional neural networks) such as Alex Net, Squeeze Net, Google Net, Shuffle Net, Efficient Net, Mobile Net, Res Net, Dense Net and NASNet for the finger vein based personal authentication to secure confidential data and maintain privacy. The finger vein images from Kaggle database is used for this research work. The experiment exhibits the outstanding performance of resnet101 with the 97.64% accuracy over its peer networks.*

Keywords: Convolutional Neural Network, Finger Vein Authentication, Transfer Learning, Accuracy

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