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A novel neuroscience-inspired architecture: For computer vision applications (Conference Paper)

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Abstract

The theory behind deep learning, the human visual system was investigated and general principles of how it functions are extracted. Our finding is that there are **neuroscience** theories that are not utilized in deep learning. Therefore, in this work, **a novel** model utilizing some of those theories is developed. The new model addresses the parallel nature of the human brain compared to the hierarchal (serial) brain model that is followed by current deep learning systems. The validation of the proposed model was conducted using "Shape" feature dimension. The results show up to 2% accuracy rate compared to our implementation of DeepFace, **a** high performing face recognition algorithm that was developed by Facebook, is achieved under the same hardware/ software conditions; and we were able to speed up the training up to 21% per **a** training patch compared to DeepFace. © 2016 IEEE.

Author keywords

Computer vision; Deep learning; DeepFace; **Neuroscience**; Visual System

Indexed keywords

Engineering controlled terms: Brain models; Face recognition; Neurology

Computer vision applications; Deep learning; DeepFace; Face recognition algorithms; Feature dimensions; Human Visual System; **Neuroscience**; Visual systems

Engineering main heading: Computer vision

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