

## Local Image Features Emerging from Brain Inspired Multi-Layer Neural Network

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**Abstract :** Object recognition has long been a challenging task in computer vision. Yet the human brain, with the ability to rapidly and accurately recognize visual stimuli, manages this task effortlessly. In the past decades, advances in neuroscience have revealed some neural mechanisms underlying visual processing. In this paper, we present a novel model inspired by the visual pathway in primate brains. This multi-layer neural network model imitates the hierarchical convergent processing mechanism in the visual pathway. We show that local image features generated by this model exhibit robust discrimination and even better generalization ability compared with some existing image descriptors. We also demonstrate the application of this model in an object recognition task on image data sets. The result provides strong support for the potential of this model.

**Keywords :** biological model, feature extraction, multi-layer neural network, object recognition

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