

On the Implementation of The Pulse Coupled Neural Network (PCNN) in the Vision of Cognitive Systems

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Abstract : One of the great challenges of the 21st century is to build a robot that can perceive and act within its environment and communicate with people, while also exhibiting the cognitive capabilities that lead to performance like that of people. The Pulse Coupled Neural Network, PCNN, is a relative new ANN model that derived from a neural mammal model with a great potential in the area of image processing as well as target recognition, feature extraction, speech recognition, combinatorial optimization, compressed encoding. PCNN has unique feature among other types of neural network, which make it a candid to be an important approach for perceiving in cognitive systems. This work show and emphasis on the potentials of PCNN to perform different tasks related to image processing. The main drawback or the obstacle that prevent the direct implementation of such technique, is the need to find away to control the PCNN parameters toward perform a specific task. This paper will evaluate the performance of PCNN standard model for processing images with different properties, and select the important parameters that give a significant result, also, the approaches towards find a way for the adaptation of the PCNN parameters to perform a specific task.

Keywords : cognitive system, image processing, segmentation, PCNN kernels

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