Parallel Thinning by a Recurrent Neural Network*

Rei-Yao Wu and Wen-Hsiang Tsai#

Department of Computer Science and Information Engineering
National Chiao Tung University
Hsinchu, Taiwan 300, R.O.C.

#Department of Computer and Information Science
National Chiao Tung University
Hsinchu, Taiwan 300, R.O.C.

A 3-layer recurrent neural network is proposed for parallel thinning. This network iteratively removes the contour points of an object shape by template matching. After the neural network converges, a perfectly 8-connected skeleton is derived. The set of templates which the neural network tries to match is specially designed for a one-pass parallel thinning algorithm. The proposed neural network is shown both theoretically and experimentally to do the same work as the one-pass parallel thinning algorithm.

Keywords: parallel thinning, recurrent neural network, template matching, excessive erosion

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