



Image Recall from Partial Characteristic using Partitioned Hopfield Neural Network

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Abstract

Memory mechanism of the human brain is one of interesting high-functional information processing. The memory mechanism of the human brain can recall the whole image from the partial image. We consider that such memory mechanism can be represented by Hopfield Neural Network (HNN) [1] operating for associative memory. However, the HNN recalls a similar pattern to the whole input image from some stored images.

In this study, we propose Partitioned HNN (PHNN) to realize the memory mechanism of the human brain. The PHNN is realized by arranging cell which has a small HNN in the whole image regularly without overlap. By computer simulations, we confirm that the PHNN recalls the whole image from the partial characteristic of the stored images.

REFERENCES

- [1] J.J. Hopfield, "Neural Networks and Physical Systems with Emergent Collective Computational Abilities," *Proceedings of the National Academy of Sciences of the United States of America*, vol. 79, pp. 2554-2558, 1982.