

Thesis Title	The Recognition System of Currency Note
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Candidate	Mr. Adisorn Leelasantitham
Supervisors	Assoc. Prof. Dr. Kosin Chamnongthai Dr. Bundit Thipakorn
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Abstract

Normally, the recognition and inspection of currency note is performed not only by external features such as picture, texture, color, number etc., but also by water mark which is hidden, and can be seen as a shadow image by the light shining to the back side. In this thesis, the recognition system of currency note is proposed. This system used a backpropagation neural network, and an image which is merged by external currency note image and the shadow image of water mark. In this system, the binary edge image of currency note which is constructed by reflecting light is determined in the first step. In the second step, the hidden water mark image which is constructed by the light shining at the back is processed into binary edge image. Then the binary edge image of currency note is merged by the binary edge image of water mark image. The merged image is normalized into the same standard and fed into a 3-layers backpropagation neural network for training and testing. The backpropagation neural network consists of 5000 input nodes, 6 nodes in the hidden layer and 5 output nodes.

To evaluate the system mentioned above, the experiments are performed by eighty samples of five different Thai currency notes (B20, B50, B100, B500, B1000) for training, and fifty samples of each type for testing. The average of recognition rate from backpropagation neural network used for both verifying and classifying the currency note is 100 percent.

Keywords : Backpropagation Neural Network / Currency Note / Training /
Water Mark