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Supplementary Materials for

A brain-plausible neuromorphic on-the-fly learning system implemented with magnetic domain wall analog memristors

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Supplementary Material

A simulation of three successive pattern recognitions by the feed-forward neuronal network is presented in the supplementary material. The three patterns shown in fig. S1 (a) are fed into the same feed-forward neuronal network described in the main text (25 input neurons, 500 synapses, and 20 output neurons) at 0 ns, 65ns, and 130 ns. Each pixel of the pattern is encoded as 8 spikes with 6 ns interval. The learning result is shown in fig. S1 (b). The neuron 9, 16, and 17 learned the first pattern; the neuron 13 and 15 learned the second pattern; the neuron 7 and 12 learned the third pattern.

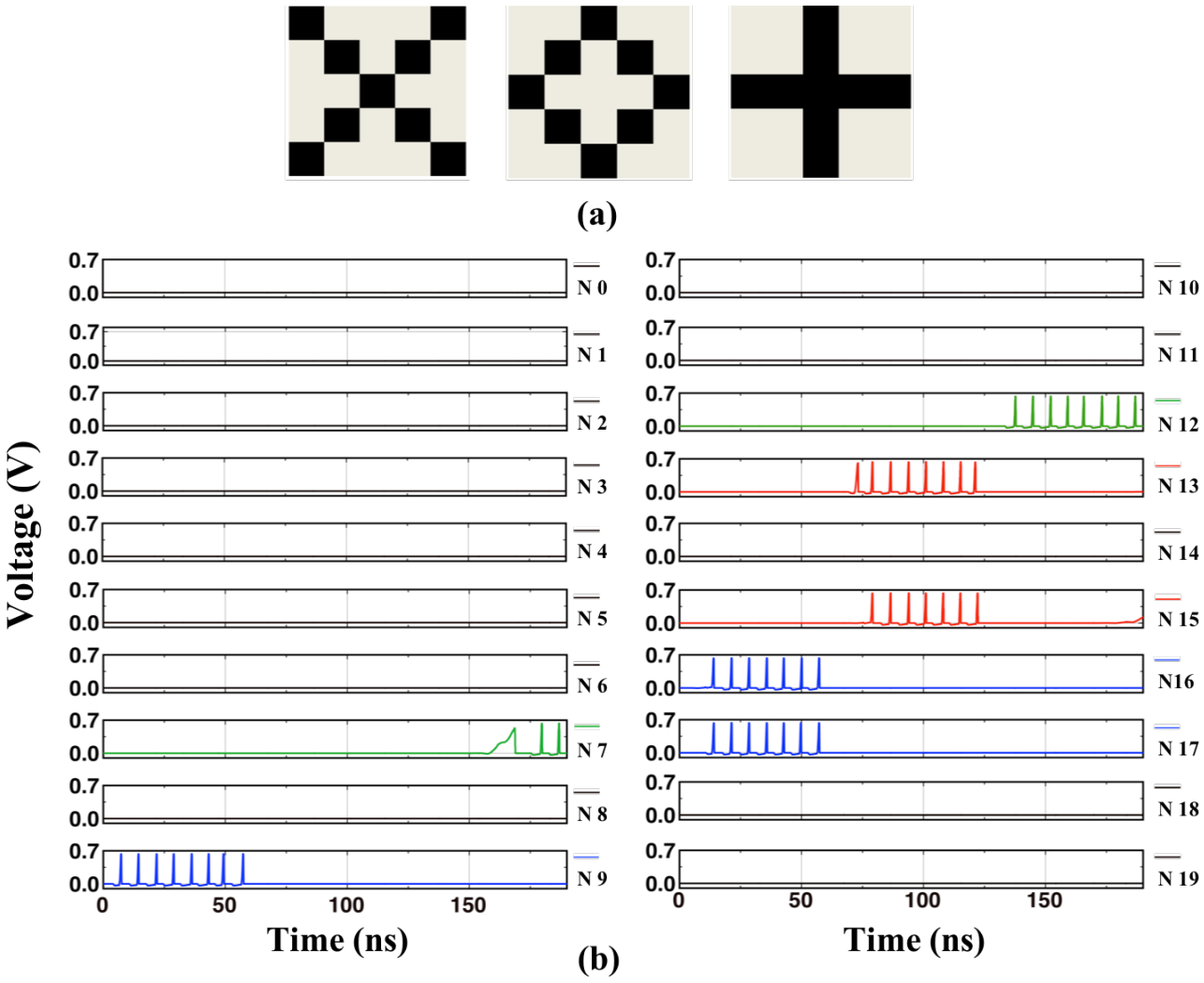

Fig. S1. Simulations results of the successive pattern recognit ions. (a)The three patterns fed into the feed-forward neuronal network. (b) The 20 output neurons response during the on-the-fly learning process of the three successive patterns.