NO ROUNDING REVERSE FUZZY MORPHOLOGICAL ASSOCIATIVE MEMORIES

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Abstract: The fuzzy morphological associative memories (FMAM) have many attractive advantages, but their recall effects for hetero associative memories are poor. This shortcoming impedes the application of hetero-FMAM. Aiming at the problem, and inspired by the unified framework of morphological associative memories, a new method called no rounding reverse fuzzy morphological associative memories (NR^{2}FMAM) is presented by the paper. The value of the new method lies in hetero associative memories. Analyses and experiments show that, it has significantly affected hetero associative morphological memories and with a certain noise robustness. In some cases, it can work more effectively with greater correct recall rate than FMAM. The paper analyzes the reason that NR^{2}FMAM is sometimes better than FMAM, and thinks that no rounding neural computing is one of passable reasons. At the same time, the condition that the recall rate of NR^{2}FMAM is greater than FMAM is given by the corresponding theorem in this paper. The NR^{2}FMAM not only enriched the theory of the morphological associative mnemonic framework, but also helps contribute to the solution of the hetero associative mnemonic problem which is incomplete. At the same time, it can serve as a new identification technology in social networks.

Key words: *fuzzy morphological associative memories, framework, hetero association, incomplete recall, no rounding*

1. Introduction

Associative memories (AM) are one of the functions of the human brain, also the source of thinking and innovation. Using computers to realize the simulations for associative memories is one of our pursuits of goals. In 1982, Hopfield proposed the famous Hopfield neural network [9], and opened a new era of simulating associative memories. However, the Hopfield network requires orthogonal input patterns.

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