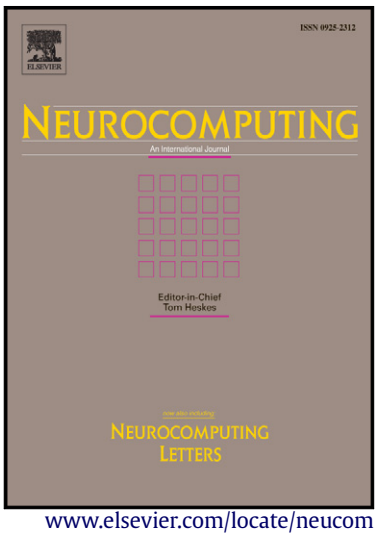

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Random combination for information extraction in compressed sensing and sparse representation-based pattern recognition

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Abstract

In compressed sensing and sparse representation-based pattern recognition, random projection with a dense random transform matrix, is widely used for information extraction. However, the complicated structure makes dense random matrices computationally expensive and difficult in hardware implementation. This paper considers the simplification of the random projection method. First, we propose a simple random method, random combination, for information extraction to address the issues of dense random methods. The theoretical analysis and experimental results show that it can provide comparable performance to those of dense random methods. Second, we analyze another simple random method, random choosing, and give its applicable occasions. The comparative analysis and experimental results show that it works well in dense cases but worse in sparse cases. Third, we propose

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