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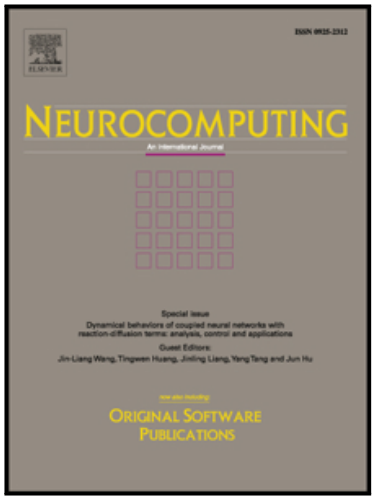

Riemannian Competitive Learning for Symmetric Positive Definite Matrices Clustering

Ligang Zheng, Guoping Qiu, Jiwu Huang

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Highlights

- This paper successfully extends the framework of conscious competitive learning to the Riemannian manifold of the SPD matrices. In the new framework, the weights space of the neural network is Riemannian manifolds and the weights of the neural network are updated through operating on the intrinsic geometric structure.
- rFSCL inherits the online nature of competitive learning making it capable of handling very large data sets
- rFSCL inherits the advantage of conscious competitive learning which means that it is less sensitive to the initial values of the cluster centers and that all clusters are fully utilized without the "dead unit" problem associated with many clustering algorithms
- As a intrinsic Riemannian clustering method, rFSCL operates along the geodesic on the manifold and the algorithms is completely independent of the choice of local coordinate systems.
- The extensive experiments show that our method has a very good clustering performance when compared with the conventional SPD matrices clustering algorithms.

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