Hebbian learning approaches based on general inner products and distance measures in non-Euclidean spaces

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Stellingen

behorende bij het proefschrift

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van

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1. Non-Euclidean approaches for Hebbian learning methods are a good alternative to the standard Euclidean variants and in many cases more suitable for specific problems.

2. Non-Euclidean unsupervised Hebbian approaches can be realized by general (semi)-inner product instead of the Euclidean inner product.

3. Non-Euclidean supervised Hebbian methods (LVQ) can be simply obtained by means of l_p-norms for $p \neq 2$.

4. The Hebbian learning matrix methods can process matrix data without a vectorization as a preprocessing step.

5. Matrix approaches for supervised Hebbian learning have a great potential, due to the more general algebraic structure of the dissimilarity measure.

6. Kernel PCA by Hebbian Learning in Reproducing Kernel Hilbert space (RKHS) is an appropriate preprocessing step for kernel ICA.

7. The brain produces a lot of mistakes, inadequacies ,and incomprehensible solutions. Probably a mathematically abstracted model will be never free of these things.

8. The large brain, like large government, may not be able to do simple things in a simple way. (Donald Hebb)