Attention, Memories, and Behavioral Data-driven Study

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Abstract (300 word limit)

Statement of the Problem: Circular search patterns, encoding information in atomic structures have been described in [1]. This multidimensional scaling property of the atomic structure has been derived by the Theory of Stochastic Resonance Synergies. In this research, internal states of networked neural system is compared by its interaction with the environment via coupled information propagation.

Methodology & Theoretical Orientation: Scaling multidimensional information with stochastic resonances gives in theory an answer to the emergence of periodic tables of the atomic elements. The clusters of information arranged by the nucleons derives a modeling approach to attention and memory, within a behavioral experiment. This modeling approach applied to the neuroimaging data is used as a basis for building a datamining analysis tool.

Findings: Initial findings have been reported in [1]. We have shown that the intensity-independent auditory distance feature detectors, along with the tonotopic map of the auditory cortex, result from the information flow in the brain.

Conclusion & Significance: We propose a genotype information flow processing in brain scans that do not directly apply temporal dynamics. Neuroimaging and dynamical brain maps source localization have shown potential in clinical applications that in can be used in diagnosis, analysis and monitoring, as well as treatment of disordered neural states.

Image

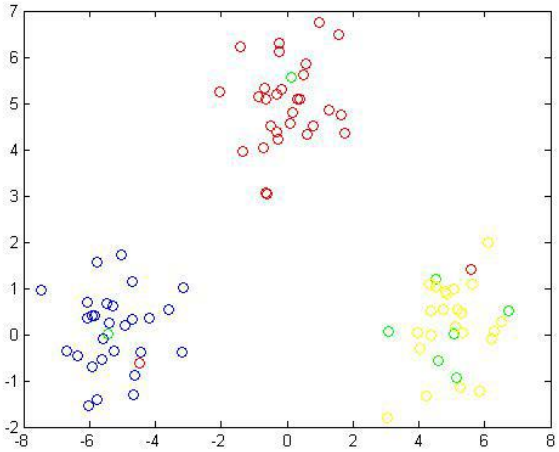


Figure 1: A circular search pattern encoded by the quadrupole decomposition, in 2D.

Recent Publications (minimum 5)

1. Jovovic, M., Stochastic Resonance Synergetics – Quantum Information Theory for Multidimensional Scaling, Journal of Quantum Information Science, 5/2:47-57, 2015.
2. Jovovic, M., G.Fox, Multi-dimensional data scaling – dynamical cascade approach, Indiana University, 2007.
3. Jovovic, M., H. Yahia, I. Herlin, Hierarchical scale decomposition of images – singular feature analysis, INRIA, AIR Lab 2003.
4. Jovovic, M., Space-Color Quantization of Multispectral Images in Hierarchy of Scales, Int. Conf. on Image Processing, Thessaloniki, Greece, pp. 914-917, 2001.
5. Jovovic, M., S.Jonic, D.Popovic, Automatic synthesis of synergies for control of reaching – hierarchical clustering. Medical Engineering and Physics 21/5:325-337, 1999.
6. Jovovic, M., A Markov random fields model for describing unhomogeneous textures: generalized random stereograms, IEEE Workshop Proceedings on Biomedical Image Analysis, Seattle 1994.

Photograph



Biography (150 word limit)

Dr. Jovovic has written the stochastic resonance synergetics theory in scaling multidimensional information, This quantum information theory derives the scale-space computing paradigm with the wave information propagation. It has been applied for the analysis and study of complex networked dynamics.
His current research interests include neural data science and quantum computing.

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Notes/Comments: