Special Issue

Brain Connectivity and Information Theory

Message from the Guest Editors

Describing how different brain structures are related to each other has played a significant role in our understanding of brain functions. Not surprisingly, several brain connectivity measures were proposed in the literature with a priori little relationship with each other. This abundance of methods created a paradox in which, despite the number of studies exploring brain connectivity increasing considerably, most of them are not readily comparable. A general and common framework is necessary to fix this situation. Information theory is the natural candidate framework to unify the different connectivity measures and concepts introduced in the literature. This Special Issue explores how information theory can lead us to a comprehensive understanding of connectivity in the brain. We are particularly interested in studies showing the relationship between information theoretical quantities and well-known connectivity measures in the literature. Studies comparing different connectivity measures with an emphasis on information theory are also welcome.

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The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

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