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Computational Modeling and Statistical Analysis: Discovering Simplicity in Complexity

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Deadline for manuscript submissions:
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Message from the Guest Editor

In a broad context complexity implies that certain emergent properties of a system are difficult to predict even when underlying governing rules are known. As a bottom up approach, computational modeling elucidates how a relatively small number of rules adhered by the constituents of a system locally can produce collective global response. The response may be in the form of spatial pattern formation and/or temporal event cascades. Employing statistical analysis as a top down approach often reveals complexity exhibits statistical properties with certain structure, such as scaling laws associated with heavy tailed distributions with power-law decay.

This thematic topic aims to uncover simplicity in complexity through computational modeling and statistical analysis, including the control of complex systems. Contributions to this special issue involving complexity defined by physical-based models, agent-based modeling or adaptive interactions in intelligent systems are welcomed.

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Message from the Editor-in-Chief

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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