Special Issue

Machine Learning and Data Analysis in Bioinformatics

Message from the Guest Editor

The field of biological research is generating vast amounts of high-dimensional data that require sophisticated analytical tools to uncover the hidden patterns and causal relationships that underlie biological processes. Unsupervised machine learning methods, such as clustering and dimensionality reduction techniques, have been widely used to identify subgroups within large datasets and to visualize complex data structures. Recently, topological data analysis (TDA) has emerged as a powerful tool to analyze high-dimensional data and extract meaningful features. By focusing on the shape and structure of the data, rather than just the individual data points, TDA can identify topological features and structures in the data that traditional statistical methods may miss. Deep learning techniques have also shown great promise in identifying subtle patterns and relationships within large datasets. In this Special Issue, we invite researchers to submit their original research articles, reviews, and perspectives on unsupervised machine learning methods, topological data analysis, and deep learning in the context of biological data.

Guest Editor

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The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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