

Constructing Novel Nonparametric Estimators for f-divergences and Its Applications to High-energy Physics

Wednesday, 15 November 2023 14:00 (1 hour)

Nonparametric methods, such as nearest neighbor and kernel methods, can offer simple and parallelizable algorithms without the need for manual structure tuning. However, these methods may suffer from severe performance degradation due to biases from the high-dimensionality of data. I will introduce recently derived equations for understanding and addressing the high-dimensional bias and present some principled algorithms. These algorithms can be used to estimate the f-divergences, which can be employed in objective functions to select important features or decorrelate information that should be irrelevant. Examples of the applications in high-energy physics and other fields will be provided.

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Session Classification: Machine Learning