No. Research talk

Nonparametric *f*-Divergence Estimation and its Application to Eliminating Harmful Variables

Yung-Kyun Noh

Hanyang University / Korea Institute for Advanced Study

Nearest neighbor methods are well-regarded for their simplicity and scalability, allowing parallel computation without extensive implementation effort. This research explores advancements in nearest neighbor methods tailored for *f*-divergence estimation and their applications in adjusting deep learning models for trustworthiness. I will introduce a systematic non-plug-in method using *k*-nearest neighbors to construct a nonparametric estimator for a target *f*-divergence. The proposed method leverages the inverse Laplace transform, offering a contrast to previous plug-in methodologies, which have theoretical shortcomings when using a fixed *k*. Applications of these methods will be briefly discussed to address various challenges confronted in artificial intelligence, such as handling imperfect information, ensuring fairness, and eliminating artifacts in simulated data.