Déconvolution non paramétrique avec distribution d'erreur inconnue

Aurore Delaigle*[1]

[1]Department of Mathematics and Statistics [Melbourne] – The University of Melbourne Parkville, VIC, 3010, Australie

Résumé

In the non-parametric deconvolution problem, to estimate consistently a density or distribution from a sample of data contaminated by additive random noise, it is often assumed that the noise distribution is completely known or that an additional sample of replicated or validation data is available. Methods also have been suggested for estimating the scale of the error distribution, but they require somewhat restrictive smoothness assumptions on the signal distribution, which can be difficult to verify in practice. We take a completely new approach to the problem, not requiring extra data of any type. We argue that data rarely come from a simple regular distribution, and that this can be exploited to estimate the signal distributions by using a simple procedure. Our method can be extended to other problems involving errors in variables, such as non-parametric regression estimation. Its performance in practice is remarkably good, often equalling (even unexpectedly) the performance of techniques that use additional data to estimate the unknown error distribution.

*Intervenant