

Third and fourth cumulants in search of independent components

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In independent component analysis it is assumed that the observed random variables are linear combinations of latent, mutually independent random variables called the independent components. In this talk projection pursuit is used to extract the non-Gaussian components and to separate the corresponding signal (non-gaussian) and noise (gaussian) subspaces. For early ideas on projection pursuit, see e.g. [1]. Our choice for the projection index is a convex combination of squared third and fourth cumulants and we estimate the non-Gaussian components either (i) one-by-one (deflation-based approach) or (ii) simultaneously (symmetric approach). The properties of the unmixing matrix estimates are considered in detail through the corresponding optimization problems, estimating equations, algorithms and asymptotic properties. The talk is based on the papers [2, 3].

References

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