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A Fused Latent and Graphical Model

Abstract:

One of the main tasks of statistical models is to characterize the dependence structures of multi-dimensional distributions. Latent variable model takes advantage of the fact that the dependence of a high dimensional random vector is often induced by just a few latent (unobserved) factors. In this talk, we present several problems regarding latent variable models. When the dimension grows higher and the dependence structure becomes more complicated, it is hardly possible to find a low dimensional parametric latent variable model that fits well. We enrich the model by including a graphical structure on top of the latent structure. Thus, the main variation of the random vector remains governed by the latent variables. The graph captures the remaining dependence. I will also present some examples in which both the latent variable and the conditional graph have practical interpretations.