

Revisiting Bayesian hierarchical models, a tool to approach many highly complicated real systems

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In this talk, we will review one of the most important tools of Bayesian analysis, namely the Bayesian hierarchical models. This kind of models are becoming so popular when one has to deal with many real situations such as those appearing in the omics fields, Epidemiology, where it can be natural to have tens or hundreds of thousands of variables to be analysed. Bayesian hierarchical models have been used largely but now they have become kind of necessary in all those practical complex situations because of their ability to deal with them. After reviewing the models, we will show some of the numerical approaches that have been introduced to deal with them (simulation methods such as MCMC, or Laplace approximations, such as INLA), and finally some examples of their applications in various practical settings will be presented.