

Modelling conflicting information using subexponential distributions and related classes

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Abstract In the Bayesian modelling the data and the prior information concerning a certain parameter of interest may conflict, in the sense that the information carried by them disagree. The most common form of conflict is the presence of outlying information in the data, which may potentially lead to wrong posterior conclusions. To prevent this problem we use robust models which aim to control the influence of the atypical information in the posterior distribution. Roughly speaking, we conveniently use heavy-tailed distributions in the model in order to resolve conflicts in favour of those sources of information which we believe is more credible. The class of heavy-tailed distributions is quite wide and the literature have been concerned in establishing conditions on the data and prior distributions in order to reject the outlying information. In this work we focus on the subexponential and \mathcal{L} classes of heavy-tailed distributions, in which we establish sufficient conditions under which the posterior distribution automatically rejects the conflicting information.

Keywords Bayesian robustness · Conflicting information · Regularly varying distributions · Subexponential distributions