Hierarchical models in Stan: varieties, optimizations & nuances

StanCon 2023

mc-stan.org

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Course description

This session seeks to serve as an introduction to hierarchical models and their implementation in Stan. Building from simpler pedagogical models to those of more realistic complexity, this session will explore key model structures and evolutions thereof to build a useful (if not comprehensive) repertoire for those seeking to advance from non-hierarchical modelling. Where hierachical data and the models thereof often involve relatively large numbers of parameters, high volumes of data, or both, options for faster compute through implementation optimization will be discussed. Hierarchical models also add conceptual complexity, and the session will cover use of the Principled Bayesian Workflow to guard against consequent complexity-induced pitfalls. Interfacing with Stan will be primarily achieved through CmdStanR (and thereby easy translation to CmdStanPy), with BRMS-equivalent expressions noted where they exist.

Course length: 1/2 day