

# On Global-local shrinkage priors for count data

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Global-local shrinkage prior has been recognized as useful class of priors which can strongly shrink small signals towards prior means while keeping large signals unshrunk. Although such priors have been extensively discussed under Gaussian responses, we intensively encounter count responses in practice in which the previous knowledge of global-local shrinkage priors cannot be directly imported. In this work, we discuss global-local shrinkage priors for analyzing sequence of counts. We provide sufficient conditions under which the posterior mean keeps the observation as it is for very large signals, known as tail robustness property. Then, we propose tractable priors to meet the derived conditions approximately or exactly and develop an efficient posterior computation algorithm for Bayesian inference. The proposed methods are free from tuning parameters, that is, all the hyperparameters are automatically estimated based on the data. We demonstrate the proposed methods through simulation and an application to a real dataset.

This talk is based on the following working paper.

- Hamura, Y., Irie, K. and Sugasawa, S. (2019). On Global-local Shrinkage Priors for Count Data. *arXiv*.