

## Statistics and Data Science Seminar

### *Scaling the Gibbs posterior*

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**Abstract:** In some applications, the relationship between the observable data and unknown parameters is described via a loss function rather than likelihood. In such cases, the standard Bayesian methodology cannot be used, but a Gibbs posterior distribution can be constructed by appropriately using the loss in place of a likelihood. Inference based on the Gibbs posterior is not straightforward, however, because the finite-sample performance is highly sensitive to the scale of the loss function. In this talk, I will propose a Gibbs Posterior Scaling (GPS) algorithm that adaptively selects the scaling in order to calibrate the corresponding Gibbs posterior credible regions. Two examples, namely, classification and quantile regression, are used to demonstrate that the Gibbs posterior with scale chosen by GPS produces valid interval estimates which are at least as efficient those obtained from other methods.

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