

9 Power-Expected-Posterior Priors in Generalized Linear Models

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The Power-Expected-Posterior (PEP) priors have been developed for variable selection in normal regression models; they combine ideas from the power-prior and expected-posterior prior relying on the concept of random imaginary data. In this work the PEP methodology is extended to Generalized Linear Models (GLMs). Furthermore, we consider mixtures of PEP priors in a similar manner to the hyper-g prior. We define the new class of PEP priors under the GLM setting and we present various posterior representations which can be used for model-specific posterior inference or for variable selection. Finally we consider possible extensions of the methodology to large p small n settings by appropriately specifying the baseline prior. The method is implemented to a Poisson log-linear and a logistic regression example.