

Integrated Nested Laplace Approximations For Quantile Regression

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Abstract : The asymmetric Laplace distribution (ADL) is commonly used as the likelihood function of the Bayesian quantile regression, and it offers different families of likelihood method for quantile regression. Notwithstanding their popularity and practicality, ADL is not smooth and thus making it difficult to maximize its likelihood. Furthermore, Bayesian inference is time consuming and the selection of likelihood may mislead the inference, as the Bayes theorem does not automatically establish the posterior inference. Furthermore, ADL does not account for greater skewness and Kurtosis. This paper develops a new aspect of quantile regression approach for count data based on inverse of the cumulative density function of the Poisson, binomial and Delaporte distributions using the integrated nested Laplace Approximations. Our result validates the benefit of using the integrated nested Laplace Approximations and support the approach for count data.

Keywords : quantile regression, Delaporte distribution, count data, integrated nested Laplace approximation

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