

PROBABILITY MATCHING PRIORS FOR PREDICTING A DEPENDENT VARIABLE WITH APPLICATION TO REGRESSION MODELS

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Abstract. In a Bayesian setup, we consider the problem of predicting a dependent variable given an independent variable and past observations on the two variables. An asymptotic formula for the relevant posterior predictive density is worked out. Considering posterior quantiles and highest predictive density regions, we then characterize priors that ensure approximate frequentist validity of Bayesian prediction in the above setting. Application to regression models is also discussed.

Key words and phrases: Bayesian prediction, frequentist validity, highest predictive density region, noninformative prior, posterior quantile, regression, shrinkage argument.