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Classical and Bayesian prediction for multivariate simple regression model

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SUMMARY

Both Beyesian and classical approaches are used to derive the prediction distribution of a set of future responses, conditional on another set of independent realized responses, from the multivariate simple regression model in this paper. The errors from both the performed and future experiments are assumed to be identically and independently distributed as multivariate normal variables. Conditional on the realized responses, the future unrealized responses follow a matrix T distribution. The shape parameter of the prediction distribution depends on the size of the realized sample, and the dimension of the regression parameters in the model. The prediction distribution obtained by both the classical method and Bayesian method under uniform prior is the same.

Keywords and phrases: Multivariate normal and Student-t distributions; matrix normal, matrix gamma and matrix T distributions; matrix integration; invariant differentials; uniform prior; and prediction distribution.

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