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Título: Likelihood Inverse Covariance Matrix Estimation.

Resumen: We establish necessary and sufficient conditions for the existence of inverse covariance matrix estimates obtained by minimizing the negative Normal log-likelihood plus a weighted ridge or weighted L1 penalty. The existence of such estimates is proven to be equivalent to the completion of a positive definite matrix. An algorithm to solve this optimization with the weighted ridge penalty is developed and its convergence is established. Numerical experiments show this algorithm is superior to its only competitor and that ridge penalization is useful within quadratic discriminant analysis. This is a joint work with Adam Rothman.