

성균관대학교 응용통계연구소 세미나 안내

응용통계연구소 세미나를 다음과 같이 개최합니다.

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■ 발표 제목 : Scalable and optimal Bayesian inference for sparse covariance matrices via screened beta-mixture prior

Abstract: In this paper, we consider a high-dimensional setting where the number of variables p can grow to infinity as the sample size n gets larger. We assume that most of off-diagonal entries of the covariance matrix are zero. Several Bayesian methods for sparse covariance matrices have been proposed, but their computational speed is too slow, making them almost impossible to apply even to moderately high dimensions (e.g., p ≈ 200). Motivated by this, we propose a scalable Bayesian method for large sparse covariance matrices. The main strategy of the proposed method is as follows: we first safely reduce the number of effective parameters in a covariance matrix, and then impose shrinkage priors only for selected nonzero off-diagonal entries. To this end, we suggest using the sure screening by keeping only the off-diagonal entries whose absolute sample correlation coefficients are larger than a threshold and furnishing the rests with zeros. It turns out that the proposed prior achieves the minimax or nearly minimax rate for sparse covariance matrices under the Frobenius norm. Therefore, it is not only computationally scalable but also optimal in terms of posterior convergence rate.

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