2022년 제 15회 통계세미나

고려대학교 통계연구소와 BK21 통계학교육연구팀, 그리고 DS+가 다음과 같이 공동으로 세미나를 개최하오니 많은 참여 바랍니다.

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Kurtosis test of modality
for rotationally symmetric distributions on hyperspheres

<Abstract>

A test of modality of rotationally symmetric distributions on hyperspheres is proposed. The test is based on a modified multivariate kurtosis defined for directional data on S^d. We first reveal a relationship between the multivariate kurtosis and the types of modality for Euclidean data. In particular, the kurtosis of a rotationally symmetric distribution with decreasing sectional density is greater than the kurtosis of the uniform distribution, while the kurtosis of that with increasing sectional density is less. For directional data, we show an asymptotic normality of the modified spherical kurtosis, based on which a large-sample test is proposed. The proposed test of modality is applied to the problem of preventing overfitting in non-geodesic dimension reduction of directional data. The proposed test is superior than existing options in terms of computation times, accuracy and preventing overfitting. This is highlighted by a simulation study and two real data examples.

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