統計科學研究所
INSTITUTE OF STATISTICAL SCIENCE

學　術　演　講

講　題：Species distribution modeling based on gamma-divergence

講　者：Prof. Osamu Komori
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時　間：2024年3月4日(星期一)，10:30-12:00

地　點：統計所B1演講廳

Abstract

Species distribution modeling is widely used in ecology to estimate the relationship between target species and environmental variables associated with the species' habitat. To estimate the habitat map, Maxent is recognized as one of the most powerful tools, in which the model's parameters are estimated by sequentially maximizing the likelihood. However, computing the likelihood becomes extremely expensive when the number of locations in the study area is large. Therefore, we propose a new species distribution modeling approach based on gamma-divergence, in which the normalization term in the gamma-loss function is approximated using cumulant coefficients for the study area. This results in a computationally efficient estimation of the model's parameters, as well as high estimation accuracy. Moreover, by using the cumulant-based approximation, we show that the estimation of Maxent is equivalent to Fisher linear analysis when the normality assumption holds. We demonstrate the proposed method using simulation studies and a dataset of Japanese vascular plants.

※ 茶　會：10：10開始。

※ 實體與線上視訊同步進行。