

SEMINAR TALK “Exchangeable models for bipartite ecological networks”

Tâm Le Minh*

*Univ. Grenoble Alpes, Inria, CNRS, Grenoble INP, LJK, 38000 Grenoble, France

This is the abstract of a talk given at the Statistics seminar of Université d’Évry Paris-Saclay in 2024. It is based on my doctoral thesis [2], and an unpublished work.

In ecology, the analysis of survey data (presence-absence, abundance, species interactions) often relies on the use of null models. However, these models have limitations that are frequently overlooked in ecological studies. Using plant-pollinator interaction networks as an example, we introduce the BEDD model (Bipartite Expected Degree Distribution), a null model that addresses several of these limitations by leveraging the assumption of species exchangeability.

The properties of exchangeable models allow for the use of inference methods based on U -statistics, a class of statistics particularly well-suited to this type of data structure. I will describe some opportunities offered by U -statistics for analyzing bipartite networks [3, 5, 4], especially in the context of ecological interactions [1]. Through examples using both simulated and real-world data, I will highlight the potential of this approach while discussing its limitations, particularly those stemming from the assumption of exchangeability.

References

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