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IDENTIFIABILITY AND ESTIMATION OF RECURSIVE MAX-LINEAR MODELS

Abstract: We address the identifiability and estimation of recursive max-linear structural equation models represented by an edge weighted directed acyclic graph (DAG). For estimation, standard likelihood theory cannot be applied because the corresponding families of distributions are not dominated. Given the underlying DAG, we present an estimator for the class of edge weights and show that it can be considered a generalized maximum likelihood estimator. In addition, we develop a simple method for identifying the structures of the DAGs. With probability tending to one at an exponential rate with the number of observations, this method correctly identifies the class of DAGs and, similarly, exactly identifies the possible edge weights.

This talk is based on joint work with Nadine Gissibl and Claudia Klüppelberg.

References:

- [1] N. Gissibl and C. Klüppelberg and S. Lauritzen. Identifiability and estimation of recursive max-linear models. (2019). arXiv:1901.03556.