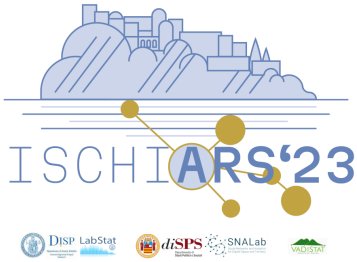

Contribution ID : **46** Type : **Contribution in Organized Session**

Modifying Vector Autoregressive model using Latent Position Model for count data

martedì 2 maggio 2023 16:00 (15)

We introduce a new approach that unifies models for multivariate time series with the Latent Position model (LPM) to model networks from count data. The proposed model provides a hierarchical framework with the Poisson processes. Our framework consists of two well-known models: the log-linear vector autoregressive (VAR) model prominent in the literature of multivariate count time series and the Projection model, a popularly known latent variable model. We integrate the Projection model approach into a matrix of autoregressive coefficients of VAR to study the strength of complex interactions among multiple nodes. Estimation and inferential procedures are performed using the Hamiltonian Monte Carlo procedure. We demonstrate the merits of our model through a simulation study. We also examine empirically the behavior of the model via application to the real datasets. The canonical design of this model provides a clear understanding of the temporal and contemporaneous relationship in multivariate time series data, describes the network's global topology, identification of hidden patterns, and forecasts the data.

Keywords

Log-linear VAR(multivariate) model, Latent position model, count data, stationarity, interactions

Topics

- Statistical methods and models for network analysis

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