



Working Group on Statistical Learning Seminar

Title: Multivariate Conway-Maxwell-Poisson Distribution: Sarmanov Method and Doubly-Intractable Bayesian Inference

Speaker: Luiza Piancastelli (University College Dublin)

Date: Mon 29th November 2021 at 12:00PM

Location: Online

Abstract: A multivariate count distribution with Conway-Maxwell (COM)-Poisson marginals is proposed having desirable features such as (i) it admits a flexible covariance matrix allowing for both negative and positive non-diagonal entries; (ii) it overcomes the limitation of the existing bivariate COM-Poisson distributions in the literature that do not have COM-Poisson marginals; (iii) it allows for the analysis of multivariate counts. Inferential challenges for this model arise from its intractable likelihood that is based on the Sarmanov (1966) method. We handle Bayesian inference for the resulting doubly-intractable posterior with an approximate exchange algorithm specification and a Grouped Independence Metropolis-Hastings. The proposed model is applied to model a real data application on the numbers of goals scored by the home and away teams in the Premier League (2018 to 2021), illustrating the potential of the MultCOMP model and providing insight on the effect of a lack of crowds during the COVID-19 pandemic on the home team advantage.

Reference: Piancastelli, L.S.C., Friel, N., Barreto-Souza, W. and Ombao, H. (2021). Multivariate Conway-Maxwell-Poisson Distribution: Sarmanov Method and Doubly-Intractable Bayesian Inference. ArXiv link: <https://arxiv.org/abs/2107.07561>

Join the Zoom call: <https://ucd-ie.zoom.us/j/68316324831>