The Chinese University of Hong Kong
Department of Statistics

Seminar

Multivariate Temporal Point Process Regression

By

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Abstract

Point process modelling is gaining increasing attention, as point process type data are emerging in numerous scientific applications. In this article, motivated by a neuronal spike trains study, we propose a novel point process regression model, where both the response and the predictor can be a high-dimensional point process. We model the predictor effects through the conditional intensities using a set of basis transferring functions in a convolutional fashion. We organize the corresponding transferring coefficients in the form of a three-way tensor, then impose the low-rank, sparsity, and subgroup structures on this coefficient tensor. These structures help reduce the dimensionality, integrate information across different individual processes, and facilitate the interpretation. We develop a highly scalable optimization algorithm for parameter estimation. We derive the large sample error bound for the recovered coefficient tensor, and establish the subgroup identification consistency, while allowing the dimension of the multivariate point process to diverge. We demonstrate the efficacy of our method through both simulations and a cross-area neuronal spike trains analysis in a sensory cortex study.

Date:	October 7, 2021 (Thursday)
Time:	9:00 a.m. - 10:00 a.m.
Venue:	via Zoom
Meeting ID:	606 898 8598
Passcode:	cuhkstat
Zoom link:	https://cuhk.zoom.us/j/6068988598?pwd=Q1VTL2MyWTNDWlhuVFAvQWx6dHkrUT09

ALL INTERESTED ARE WELCOME !!