Waseda Seminar on Time Series & Statistics

Date: November 15, 2019

Venue: Waseda University, Nishi-Waseda Campus Building 63 – 1 Meeting Room (Access map: https://www.waseda.jp/top/en/access/nishiwaseda_campus)

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Talk (I) 14:15 – 15:15

Title: Statistical Inference for Persistence Landscapes of the Granger Causality

Speaker: Yan Liu, Waseda University, Institute for Mathematical Science

Abstract: We propose a topological approach to statistically analyzing the Granger causality. Granger introduced his celebrated new measure of causality in the sense of prediction errors of multivariate time series 50 years ago. We localize his idea and construct a theory based on locally stationary processes for its alternative version, a natural refinement for stationary processes by Hosoya. To construct the theory, we utilize the seminal work by Chernozhukov, Chetverikov and Kato (2014) to provide a Gaussian approximation of suprema of empirical spectral processes. Especially, the local extension of the theory serves for the statistical inference for the Granger causality curve. In addition, we provide a bootstrap procedure for the approximation to construct confidence bands. Finally, we discuss the persistence diagrams and persistence landscapes for the causality curves and numerically construct some examples of locally stationary processes for our simulation studies.
(Joint work with Akitoshi Kimura, Masanobu Taniguchi and Hernando Ombao)

Talk (II) 15:30 – 17:00

Title: Change point problems for diffusion processes and time series models

Speaker: Ilia Negri, University of Bergamo, Department of Management,
Information and Production Engineering

Abstract: We present a general, unified approach, based on some partial estimation functions which we call "Z-process", to the change point problems for ergodic models as well as some models where the Fisher information matrix is random and inhomogeneous in time. Applications to some diffusion process models and time series models are also discussed.
(Joint work with Yoichi Nishiyama)

17:30 – Buffet Party