THE UNIVERSITY OF CHICAGO | DEPARTMENT OF STATISTICS

PHD DISSERTATION PROPOSAL PRESENTATION

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Novel Frameworks for Change Point Analysis Under Irregular Conditions

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Zoom information sent via email

ABSTRACT

Frameworks for classical change point analysis generally require regularity conditions for signals, such as piece-wise constant or piece-wise smoothness, as well as strong assumptions for noise processes like stationarity. I am interested in developing frameworks for change point analysis which are free of these strong assumptions. This problem is driven by detecting anomalies from real datasets in epidemiology and finance, where irregular signals and non-stationary noise are commonly observed. The frameworks will include statistical inference procedures for the existence of change point and change point locating algorithms with high precision. The locating algorithms are theoretically proved to be optimal (Op(1) error rate). Numerically, I will show its good performance in simulation study and how it can be applied to detect the early outbreak of COVID-19 as well as the early warning signals in financial market during global financial crisis 2007-2008.