



De: CRM crm@crm.umontreal.ca
Objet: ***AUJOURD'HUI*** : CSMQ-McGill = Richard Samworth
Date: 1 décembre 2016 09:25
À: activites@CRM.UMontreal.CA

COLLOQUE DES SCIENCES MATHÉMATIQUES DU QUÉBEC - Montréal (McGill University)
<http://www.crm.umontreal.ca/Colloques/index.html>

DATE :
Le jeudi 1 décembre 2016 / Thursday, December 1, 2016

HEURE / TIME :
15 h 30 - 16 h 30 / 3:30 p.m. - 4:30 p.m.

CONFERENCIER(S) / SPEAKER(S) :
Richard Samworth (University of Cambridge)

TITRE / TITLE :
High-dimensional changepoint estimation via sparse projection

LIEU / PLACE :
Room 1205, Burnside Hall, 805 Sherbrooke West

RESUME / ABSTRACT :
Changepoints are a very common feature of Big Data that arrive in the form of a data stream. We study high-dimensional time series in which, at certain time points, the mean structure changes in a sparse subset of the coordinates. The challenge is to borrow strength across the coordinates in order to detect smaller changes than could be observed in any individual component series. We propose a two-stage procedure called 'inspect' for estimation of the changepoints: first, we argue that a good projection direction can be obtained as the leading left singular vector of the matrix that solves a convex optimisation problem derived from the CUSUM transformation of the time series. We then apply an existing univariate changepoint detection algorithm to the projected series. Our theory provides strong guarantees on both the number of estimated changepoints and the rates of convergence of their locations, and our numerical studies validate its highly competitive empirical performance for a wide range of data generating mechanisms.

Responsables :
Olivier Collin (UQÀM)
Henri Darmon (Université McGill)
Dimitris Koukoulopoulos (Université de Montréal)
Iosif Polterovich (Université de Montréal)
David Stephens (Université McGill)
Hugh Thomas (UQÀM)