

**ANOMALY DETECTION IN CLUSTERED MULTIPLE TIME SERIES**

A thesis presented by

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## Abstract

*A nonparametric test procedure based on the bootstrap for detecting structural change in clustered multiple time series data is proposed. Simulation studies indicate that the test is correctly sized in stationary time series and that when locally, the time series does not manifest non-stationarity. The test is powerful specially if all time series exhibit structural change, and when the change happened towards the more recent realization of the time series. Power is still high even when structural change occurred only in some clusters provided that change occurred in greater magnitude.*

**Keywords:** nonparametric test, block bootstrap, backfitting algorithm, multiple time series, structural change