



THE UNIVERSITY OF
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Department of Statistics

MASTER'S THESIS PRESENTATION

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Clustering Multiple Time Series Based on Trend Parallelism

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ABSTRACT

In this thesis, we review a hypothesis testing method to cluster time series based on assessing if they follow the same nonparametric trend. We first construct test statistic based on the L-2 distance between nonparametric trend estimator and their average. Then, the asymptotic properties and simulation-based approximation to the distribution of the test statistic is presented. Last, the test is applied to devise a clustering algorithm analogous to the backward variable selection for regression models. As an application, We apply this test-based clustering algorithm to a dataset including average monthly temperature across 50 states (except for Hawaii) in the United States. Also, to test the finite sample performance of the test procedure, a simulation study is performed.

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