Kernel Based Approaches for Change-Point Detection

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Using penalized contrasts for the change-point problem.

Anirudhan J. Rajagopalan, ajr619

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1 Experiments for finding changepoints using spectral density

We generate a sample time series signal which is a linear combination of four frequencies in the range of $\alpha, \beta, \delta, \theta$ frequencies. We have also added some gaussian noise to the time series.

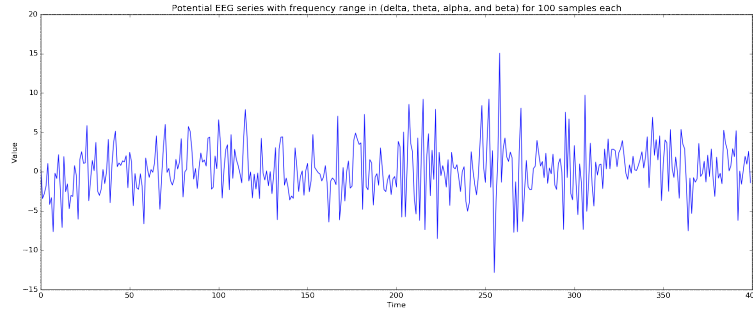The timeseries is as given in figure 1

Figure 1: Time series formed by linear combination of sinusoidals with same frequency as that of brain signals.

The data is sampled at 50 samples per second.

The code for finding the changepoints can be found in `https://git.io/vr2B3`. The code consists of mainly three parts

1. Contrast function

2. Dynamic programming module to find the all possible change point paths.

3. Model selection function that given a change point number, K, gives the indexes of change point in the time series data.

The given timeseries has change points at point 500, 1000, 1500. The algorithm gives change point values at **506, 985, and 1519**.