

Clustering of Time Series using Wavelet Transformations as a Feature Extraction Mechanism

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UCSC Extension - 30164:(003) Machine Learning and Data Mining

May 23, 2015

1 Introduction

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2 Wavelet transformation background

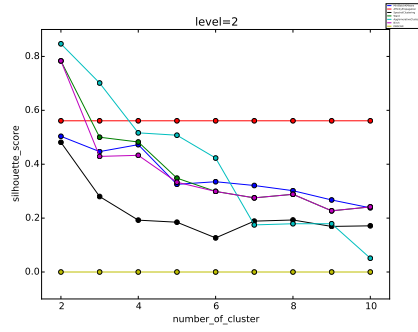
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3 Wavelet-based feature extraction

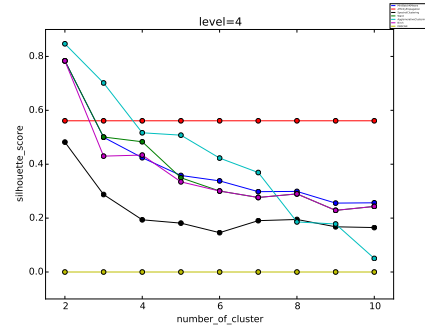
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4 Experimental evaluation

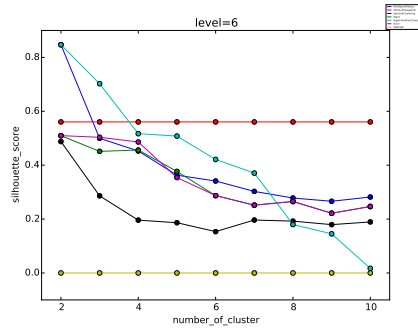
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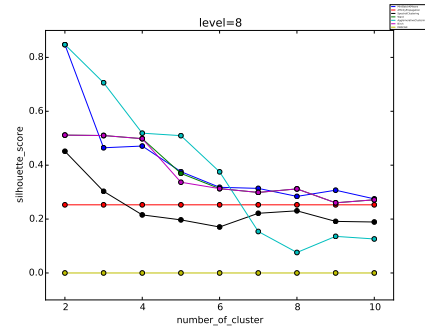
(a) Level 2



(b) Level 4



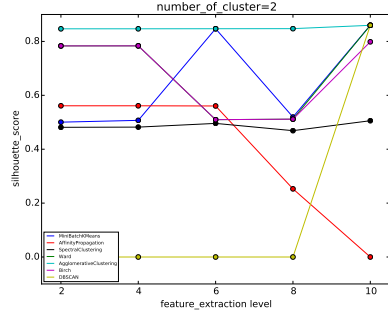
(c) Level 6



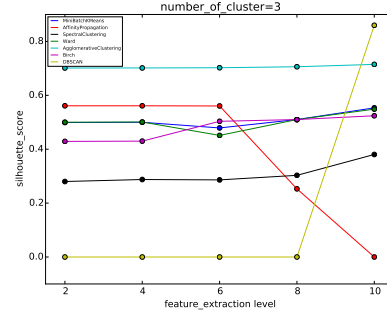
(d) Level 8

Figure 1: Silhouette score for various clustering levels.

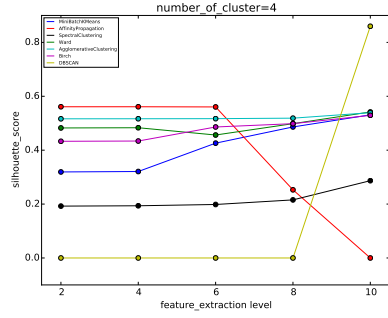
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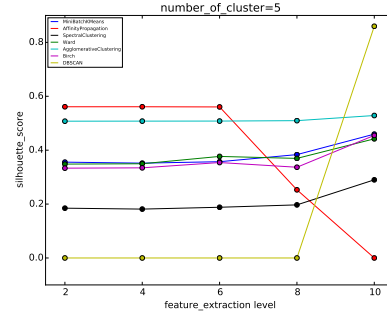
(a) Two clusters



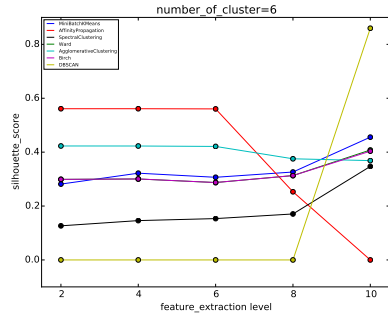
(b) Three clusters



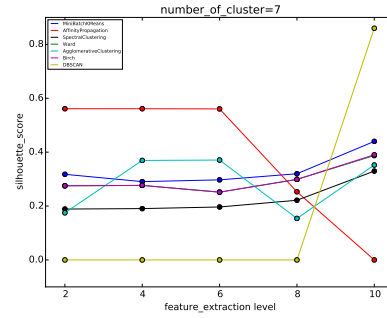
(c) Four clusters



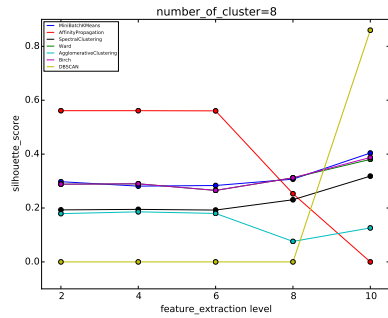
(d) Five clusters



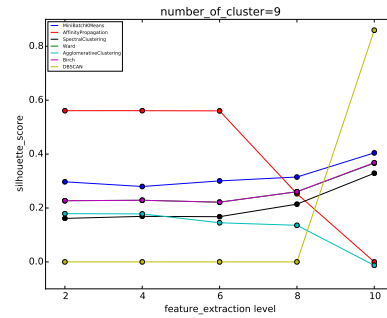
(e) Six clusters



(f) Seven clusters



(g) Eight clusters



(h) Nine clusters

Figure 2: Silhouette score for various clustering levels.

4.1 Evaluation criteria

4.2 Data description

4.2.1 Stock closing prices

4.2.2 Historic exchange rates

4.2.3 Historic earthquake data

4.3 Performance evaluation

5 Conclusions

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