Density Based Anomaly Detection Technique for Commercial and Residential Buildings

INDRAPRASTHA INSTITUTE of INFORMATION TECHNOLOGY DELHI

Haroon Rashid, Pushpendra Singh
Indraprastha Institute of Information Technology Delhi

ITRA | Information Technology Research Academy

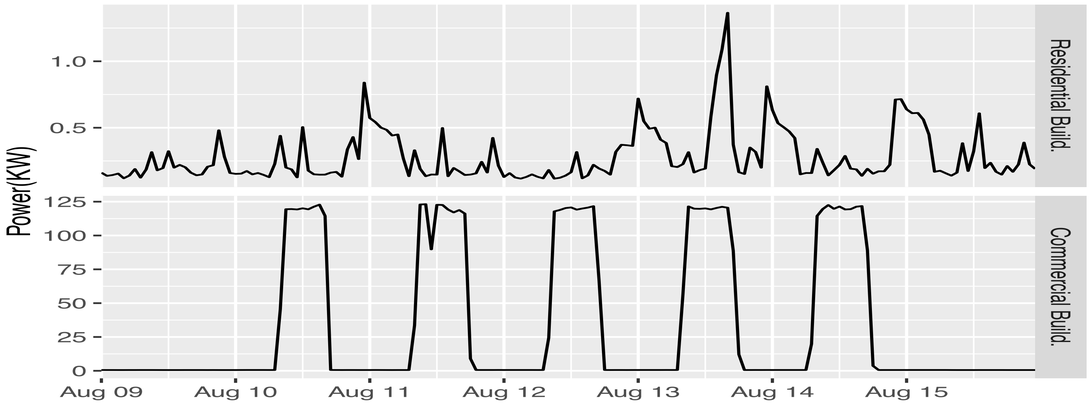
1 Anomaly/Outlier

An outlier is an observation which deviates so much from other observations as to arouse suspicion that it was generated by different mechanism [1]

2 Motivation

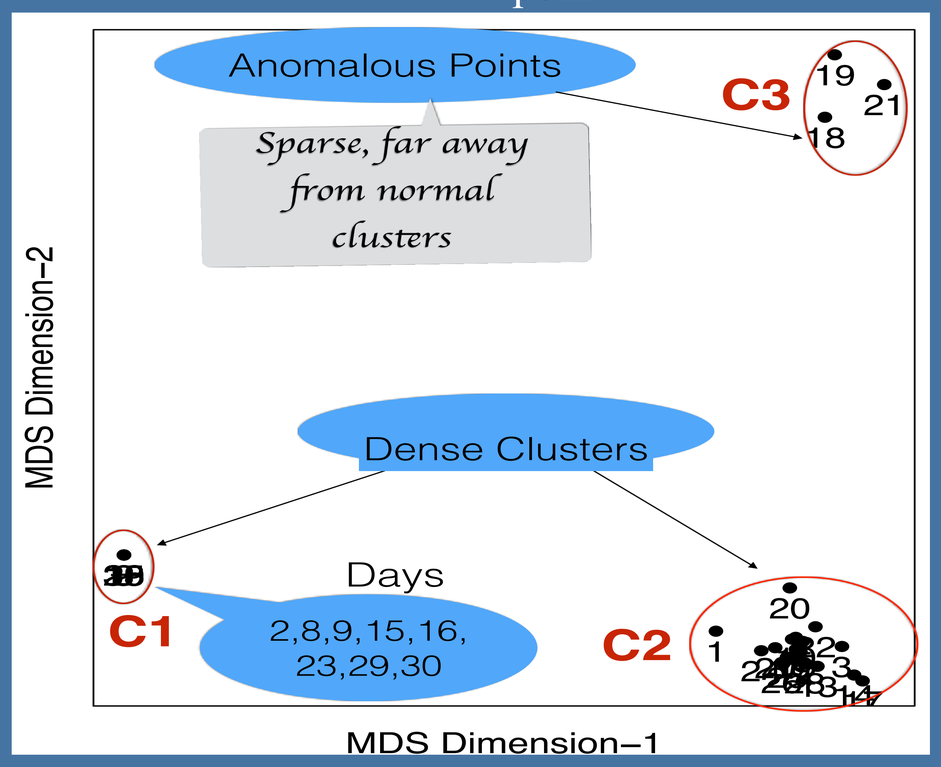
Mostly, energy data is collected without ground truth information, hence we need un-supervised, automatic anomaly detection techniques to detect anomalous events

3 Data - Energy data from commercial and residential buildings at IIIT-Delhi Campus

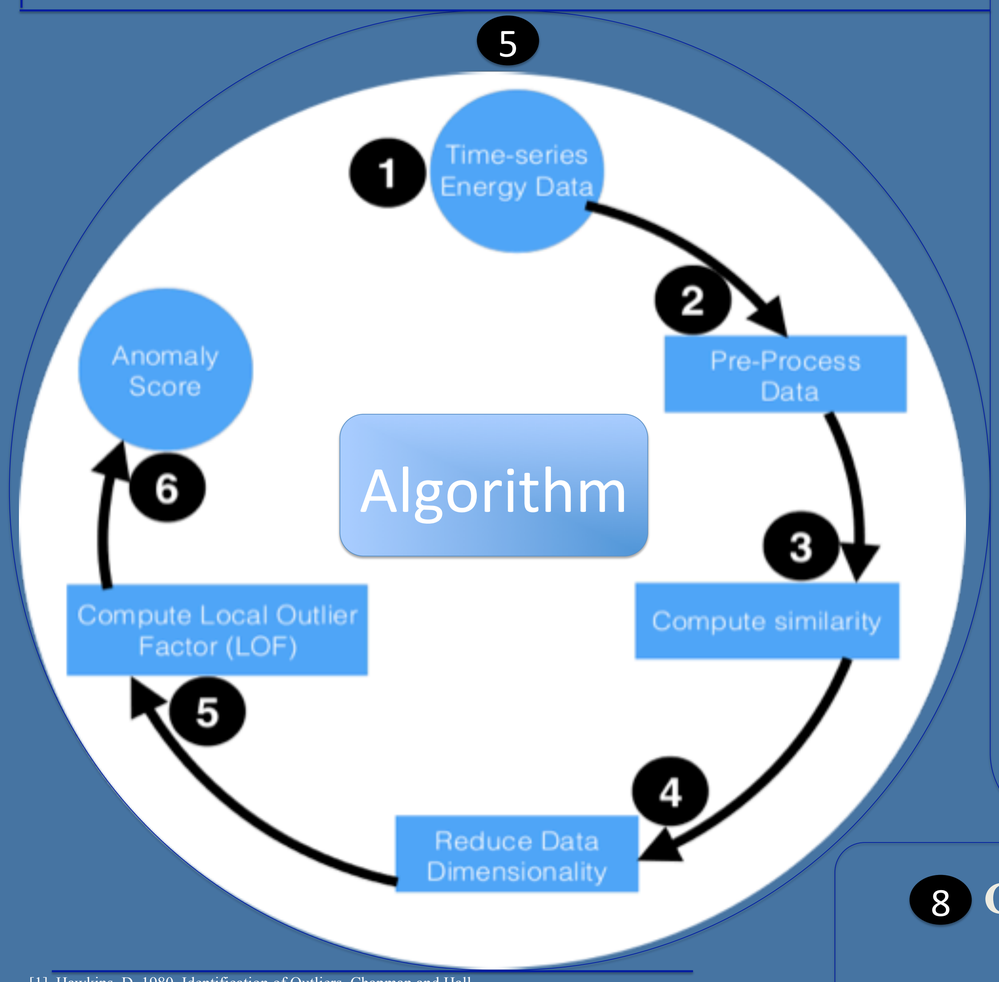


4 Density Approach Intuition

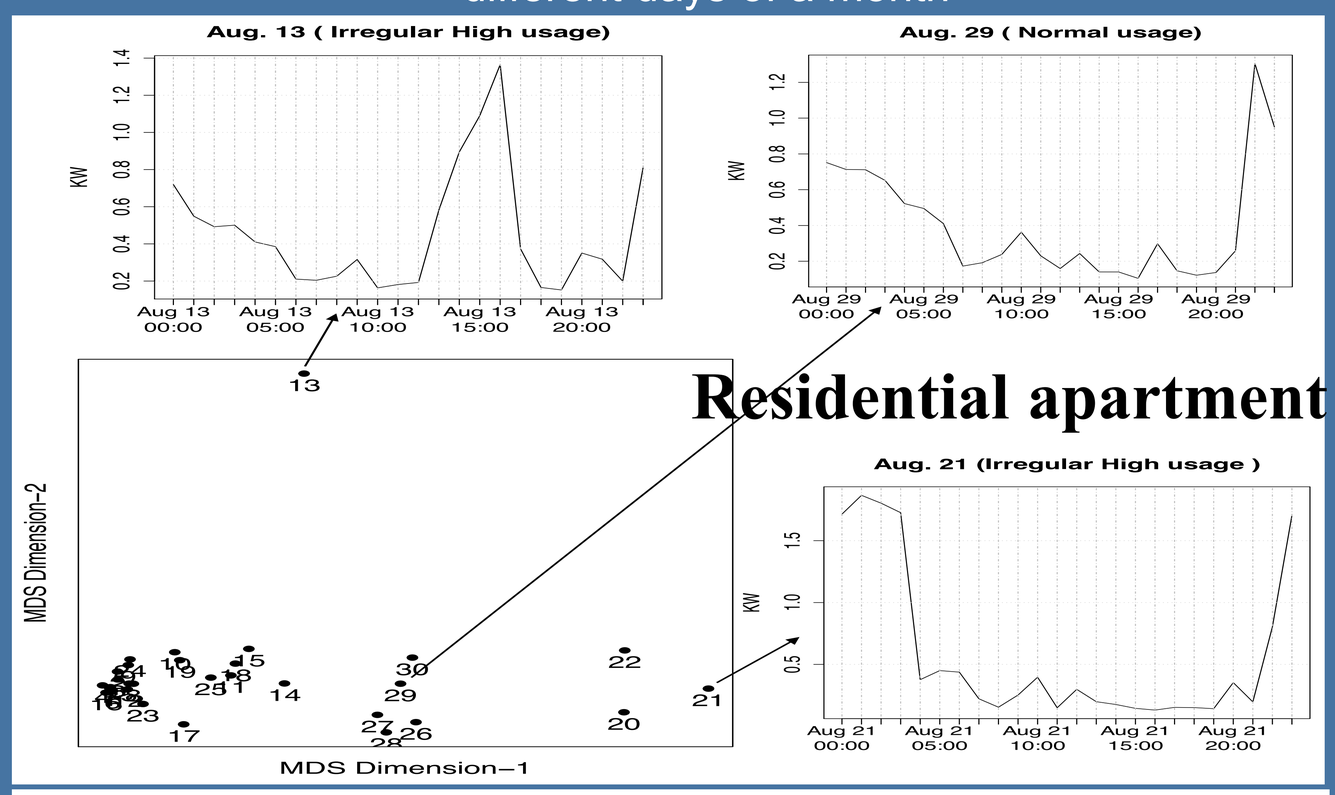
Large distance from neighbors → possibly anomalous data point



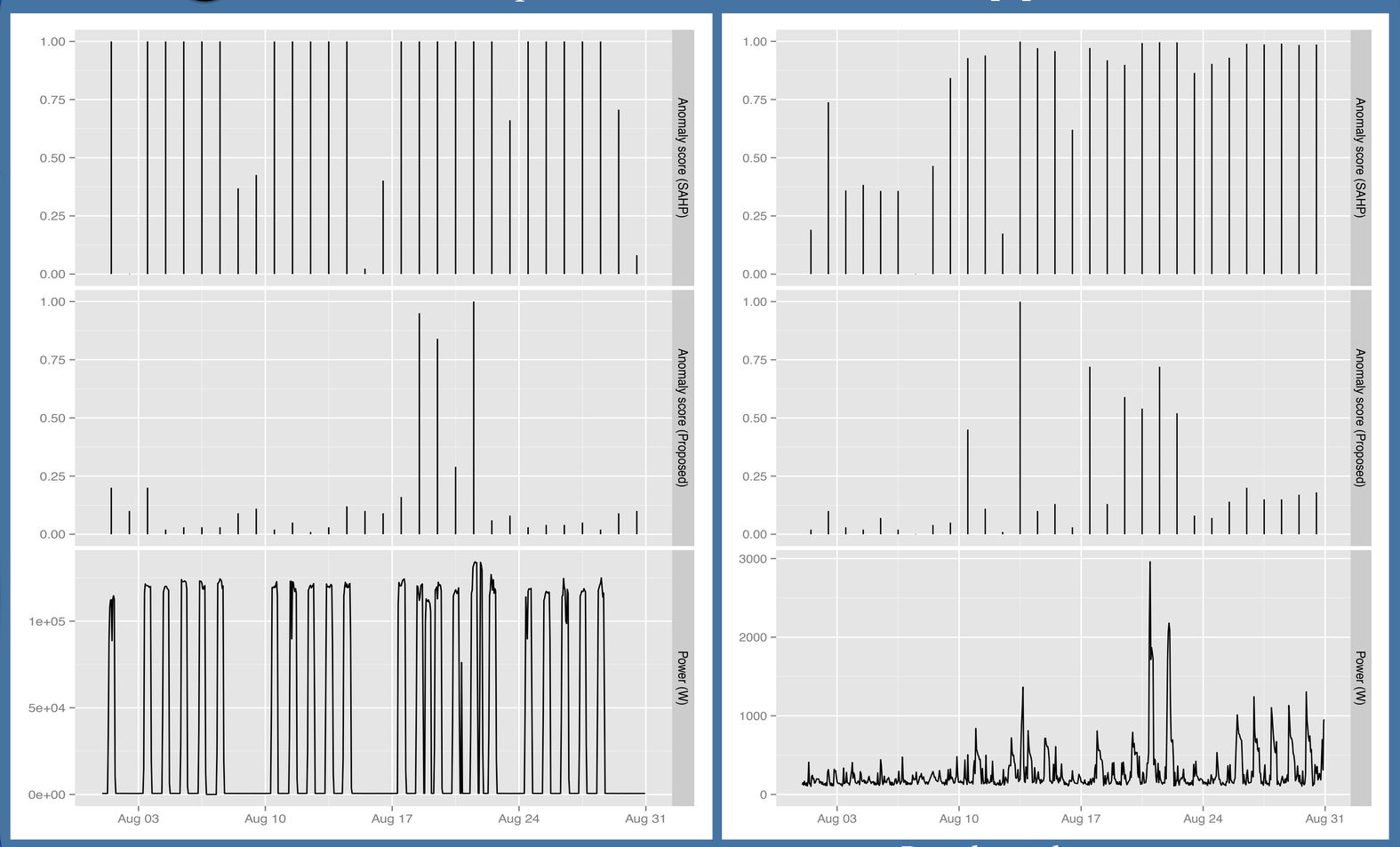
5



6 MDS plots showing relative power consumption on different days of a month



7 Results - Compared with a baseline method [2]



Commercial Building *Residential apartment*

8 Conclusion - Proposed algorithm identifies the anomalous days accurately and reduce the false positive rate (FPR) to 0 as compared to the baseline method

[1] Hawkins, D. 1980. Identification of Outliers. Chapman and Hall.
[2] G. Bellala et al. Towards an understanding of Campus-Scale Power Consumption, BuildSys, 2011.