

Research Overview

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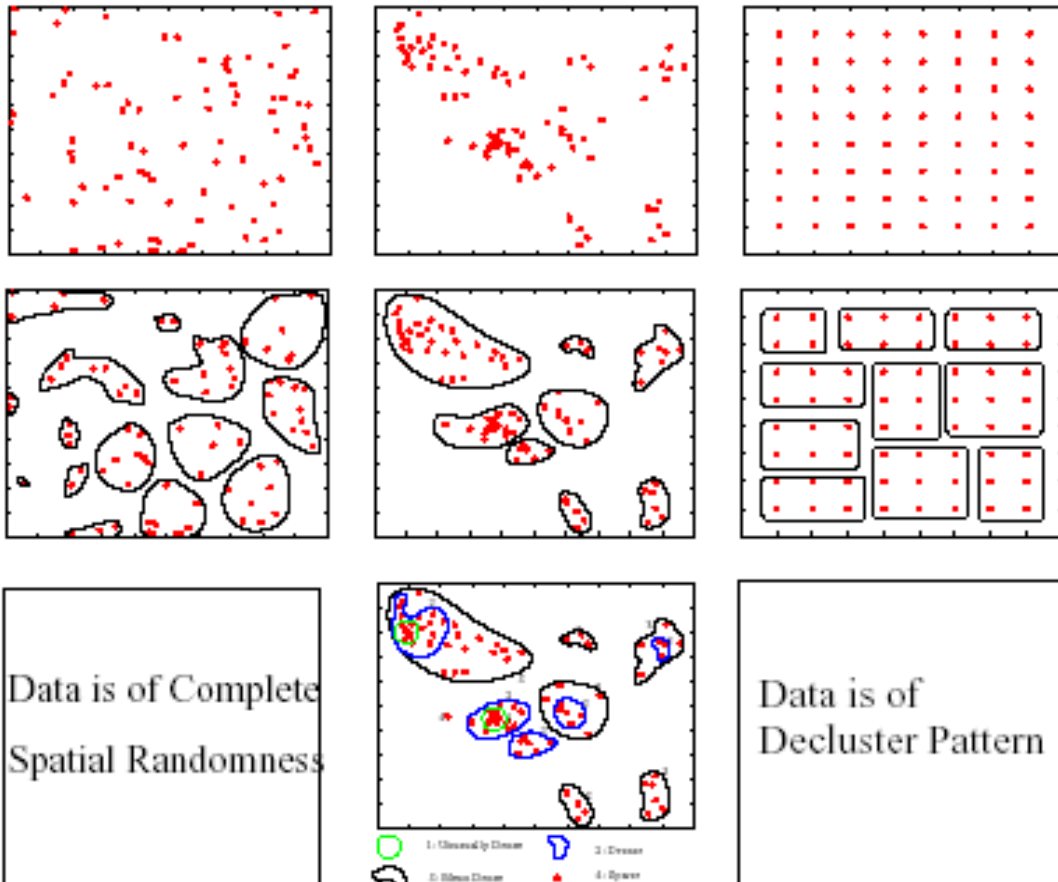
University of Minnesota – 01/17/2017

Collaboration Objective

- Early career researcher, looking to collaborate with domain scientists
- Specifically: Context-aware spatial data mining.

Limitations of Traditional Techniques

- Many traditional clustering techniques does not eliminate chance patterns
 - For example: K-Means finds chance clusters in complete spatial randomness (CSR)



Classical
Clustering

Spatial
Clustering/Hotspot
Detection

Solution:
Spatial Hotspot Detection



Spatial Context-Aware Hotspots

Spatial Theories

- Evasion: No activities near the source e.g. disease – spread latency
- Diffusion: Less activities with distance e.g. disease – initial interaction decrease
- Circles → Rings

Geographic features e.g., rivers, streams, roads

- Hotspots → Hot Geographic Features (e.g. hot routes)

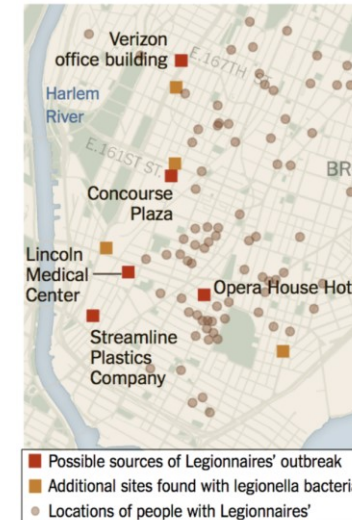


N.Y. / REGION

34 COMMENTS

Hotel That Enlivened the Bronx Is Now a 'Hot Spot' for Legionnaires'

By WINNIE HU and NOAH REMNICK AUG. 10, 2015

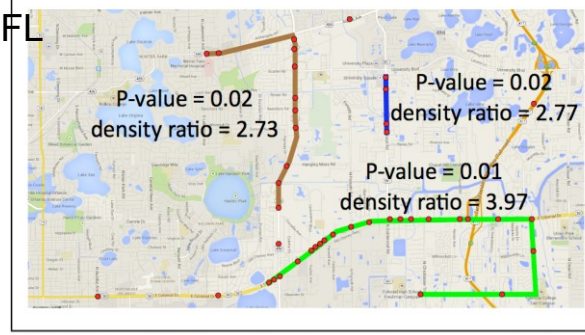


(a) Legionnaire's in New York (2015)

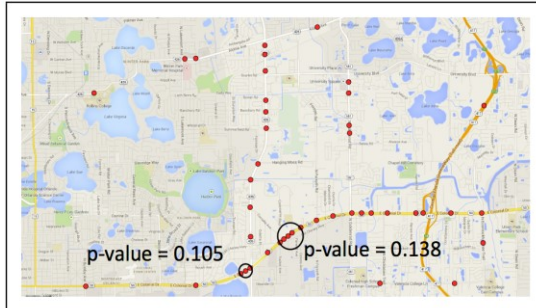
Pedestrian fatality data from Orlando, FL



(a) Input



(d) SRM_TBD with dynamic segmentation



(b) SaTScan