

Collections of Points of Interest: How to Name Them and Why it Matters

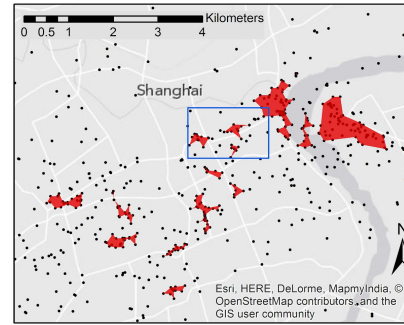
Workshop at GIScience 2018
Melbourne, Australia

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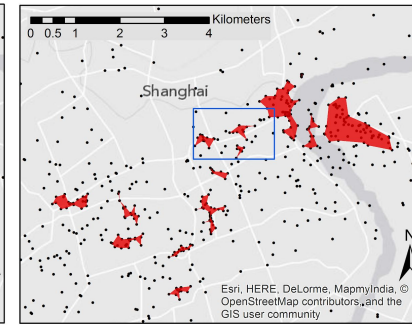
Gengchen Mai

http://www.geog.ucsb.edu/~gengchen_mai/

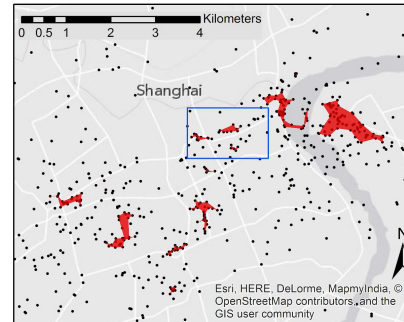
- Ph.D. Student at STKO Lab, UC Santa Barbara, CA, USA
- Research Interests
 - Geographic IR & QA, Knowledge Representation
 - Spatial Data Mining



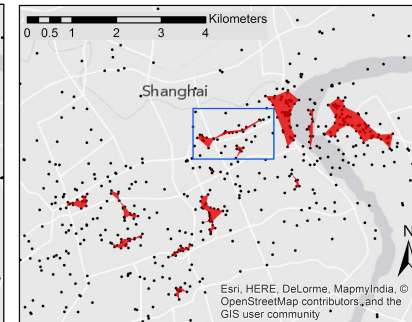
DBSCAN



OPTICS



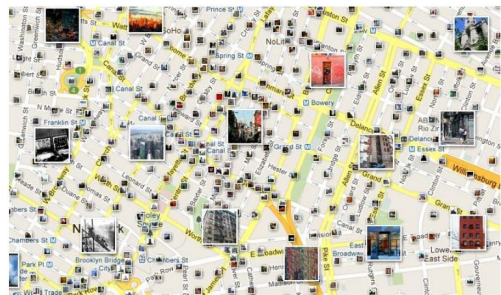
ADCN-Eps



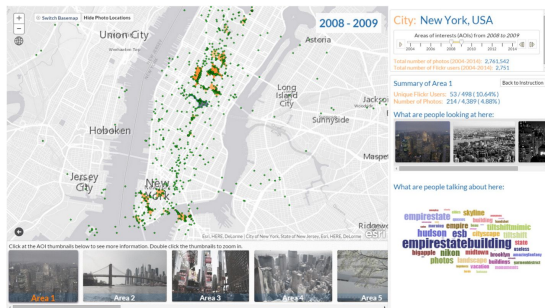
ADCN-KNN

Collections of POIs

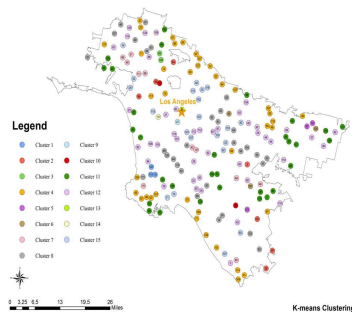
- Social sensing techniques have been widely applied to study how humans behave towards POIs
- Collections of Points of Interest can be used as a proxy to describe regions
 - Characterize neighborhoods by POI types and their frequency
 - Extract spatial footprints



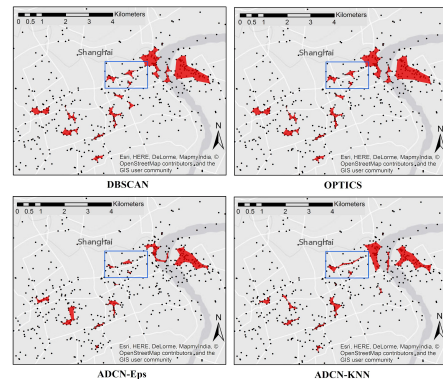
Jiajun Liu et al, 2012



Yingjie Hu et al, 2015



Song Gao et al, 2017



Gengchen Mai et al, 2018

Area of Interest

- The term **Area of Interest (AOI)** has been used to describe areas that attract and support various human interests and activities
- Is the concept of an AOI simply an extension of the term POI? If not, why do we need it?
- What is the relation (similarities and differences) between AOI and other concepts such as neighborhood, functional region, vague cognitive region, and so on.
- Understanding the relations among different concepts is beneficial in multiple ways, i.e. data sets selection, method selection, and so on.

A comparison among different related concepts

	Consensus	Footprints	Boundary	Relatively static	Spatial Interaction	Named Place
Administrative Region	Semantics and footprints	Polygons	Crispy	Y	N	Y
Point Of Interest	Semantics and footprints	Points	-	Y	N	Y
Vague Cognitive Region	Semantics	Polygons	Vague	Y	N	Y
Functional Region	Applications dependent	Polygons	Crispy/Vague	Y/N	Y	N
Neighborhood	Applications dependent	Polygons	Crispy/Vague	Y/N	N	Y/N
Region Of Interest	Applications dependent	Polygons	Crispy	-	N	N
Area Of Interest	Applications dependent	Polygons	Vague	N	N	N

Difference:

- AOs do not necessarily have names (v.s. VCR)
- AOs do not necessarily focus on spatial interactions (v.s. functional regions)
- AOs have dynamic patterns (v.s. with neighborhoods)