

Address, City, State, and/or Zip

3405 Michigan Union 530 S. State Street

Current City

-  Ann Arbor, Michigan  
51,001 like this · 752,64...
-  Lake Ann, Michigan  
785 like this · 8,350 wer...
-  Saint Ann'S Bay, Saint A...  
742 like this · 3,583 wer...
-  Saint Ann, Missouri  
533 like this · 3,920 wer...

Location   
Where in the world are you?

家乡 :

-  安庆
-  安顺
-  安康

SKYHOOK  
WIRELESS



YAHOO!  
BOSS

Google  
Developers

# Positioning

Spatial Computing – University of Minnesota



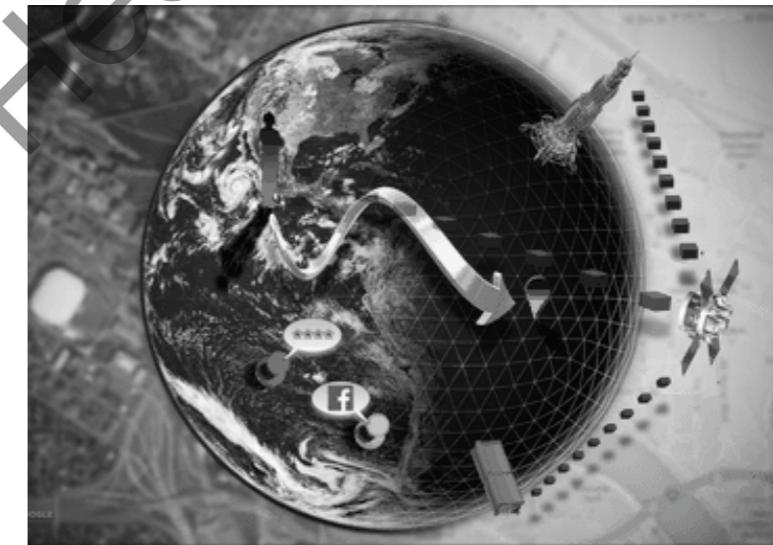
We'll cover the following content-based positioning-related topics:

- 1 **Geoparsing:** Extracting place names from natural language text
- 2 “Home Locations”: The dynamics of location fields in user profiles (and more)

# Geographic Information Retrieval (GIR)



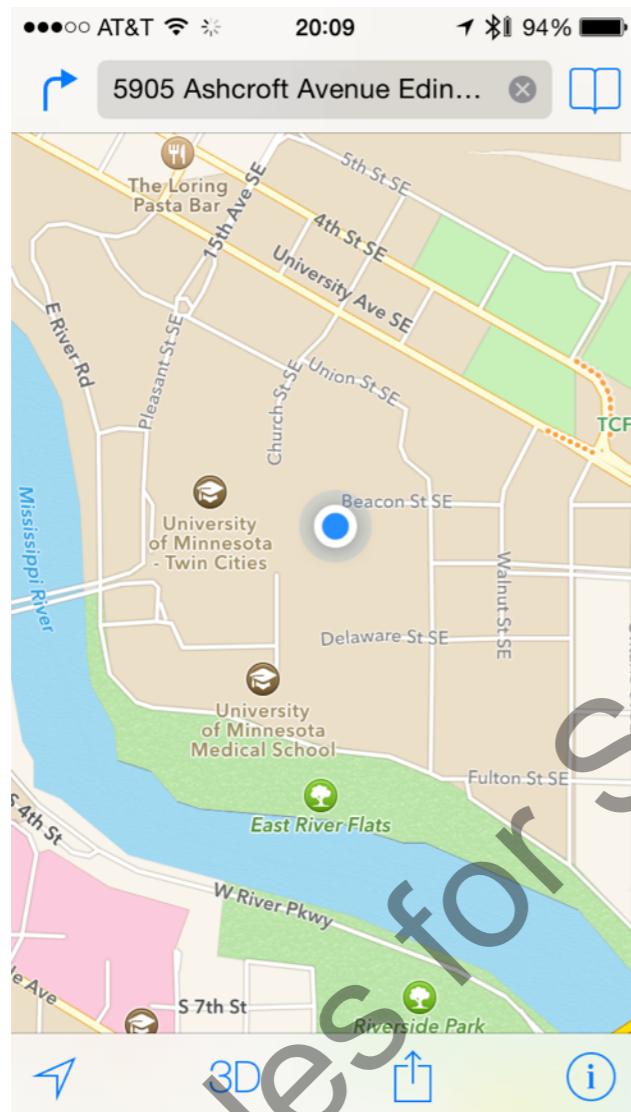
Search



Spatial  
Computing

(By +  
Brent Hecht)  
Spatial Computing MOOC

# Geoparsing and geocoding are useful for both...



...positioning for **users**

The news article discusses the proposal for Minneapolis to become a sister city to Bosaso, Somalia. It quotes Council Member Abdi Warsame and provides context about the relationship between the two communities.

**Minneapolis could be the first with a sister city in Somalia**

Article by: ERIN GOLDEN, Star Tribune | Updated: October 7, 2014 - 7:54 PM

If City Council approves, it would be a first for any U.S. city.

**Headed to apple pick #seventies**

Somali leaders in Minneapolis will ask the City Council this week to consider adding a Somali community to its list of sister cities — a move that would be a first for any American city.

The proposal, which has support from a long list of Somali business, cultural and community groups, along with local elected officials, calls for Minneapolis to partner with Bosaso, Somalia's third-largest city. It's a diverse port city on the northern end of the country, home to people who have fled other areas during Somalia's civil war — and a large number of residents with connections to Minnesota.

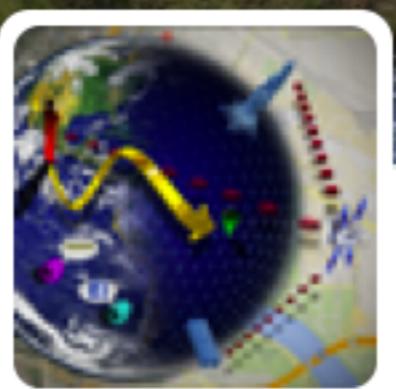
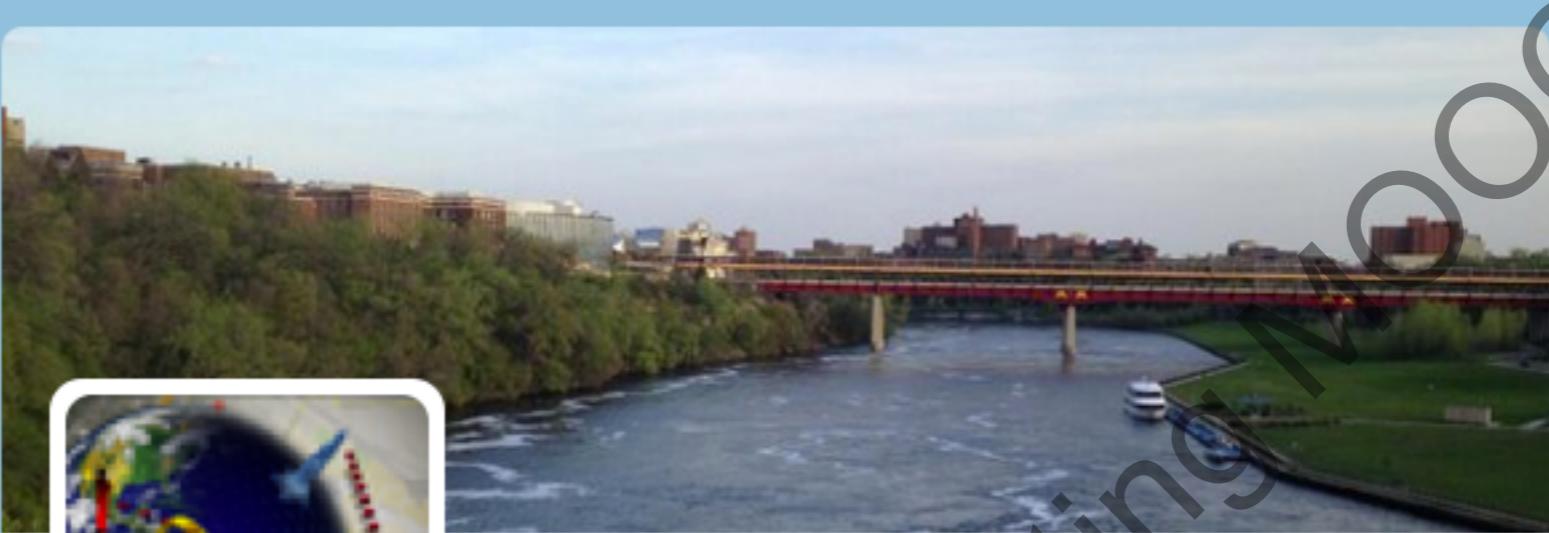
Council Member Abdi Warsame, the first Somali-American elected in Minneapolis, said a sister-city arrangement would formalize the many informal relationships that already exist between the two communities. Several local business owners also have businesses in Bosaso and many of the items in the Somali Artifact and Cultural Museum, near E. Lake Street and Bloomington Avenue S., are from the region.

Perhaps even more importantly, Warsame said, a sister-city agreement would help raise Somalia's status in the United States and the rest of the world.

"I think it will galvanize the Somali community in the United States as a whole," he said.

Bosaso would be Minneapolis' 10th sister city.

...positioning for **documents**



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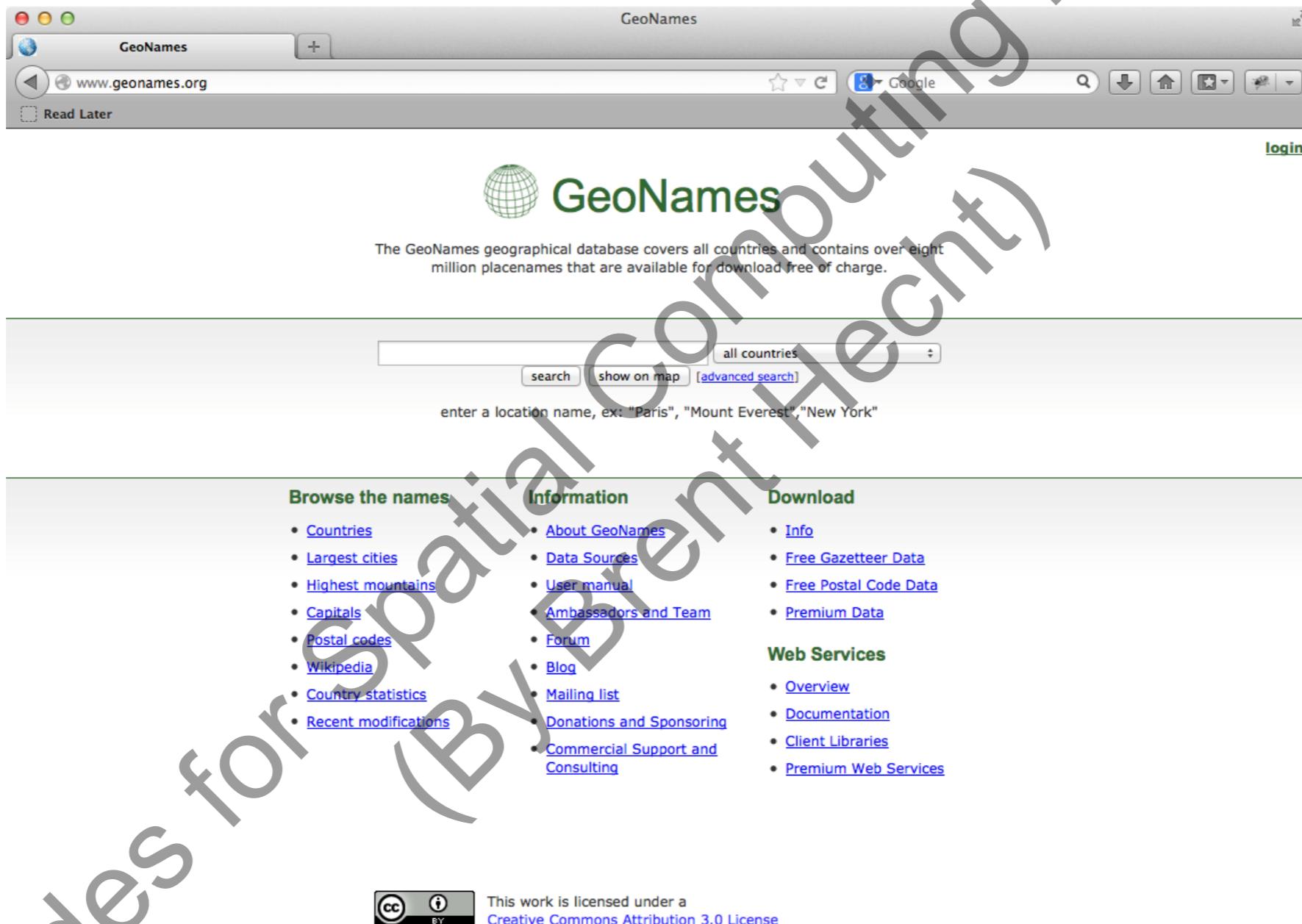
Headed to Washington to do some  
apple picking, jamming out to Chicago!  
**#seventiesmusic #itsraining**



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# Gazetteers



The screenshot shows the homepage of the GeoNames website. At the top, there is a navigation bar with a globe icon, the text "GeoNames", and a search bar containing "www.geonames.org". Below the search bar are links for "Read Later" and "login". The main content area features a green globe icon and the text "GeoNames". A subtext states: "The GeoNames geographical database covers all countries and contains over eight million placenames that are available for download free of charge." Below this, there is a search interface with a text input field containing "all countries", a "search" button, a "show on map" button, and a "advanced search" link. A placeholder text "enter a location name, ex: "Paris", "Mount Everest", "New York"" is displayed below the search fields. On the left, there is a sidebar titled "Browse the names" with links to "Countries", "Largest cities", "Highest mountains", "Capitals", "Postal codes", "Wikipedia", "Country statistics", and "Recent modifications". In the center, there is a column titled "Information" with links to "About GeoNames", "Data Sources", "User manual", "Ambassadors and Team", "Forum", "Blog", "Mailing list", "Donations and Sponsoring", and "Commercial Support and Consulting". On the right, there is a column titled "Download" with links to "Info", "Free Gazetteer Data", "Free Postal Code Data", and "Premium Data". Below these columns is a section titled "Web Services" with links to "Overview", "Documentation", "Client Libraries", and "Premium Web Services". At the bottom, there is a Creative Commons Attribution 3.0 License logo and the text "This work is licensed under a Creative Commons Attribution 3.0 License".

[geonames.org](http://geonames.org)

# Gazetteers

<place name,  
spatial footprint (**x**)>

<place name,  
spatial footprint (**x**)>

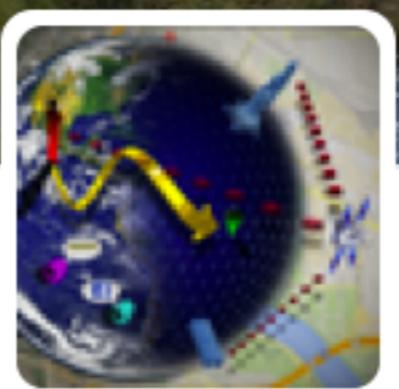
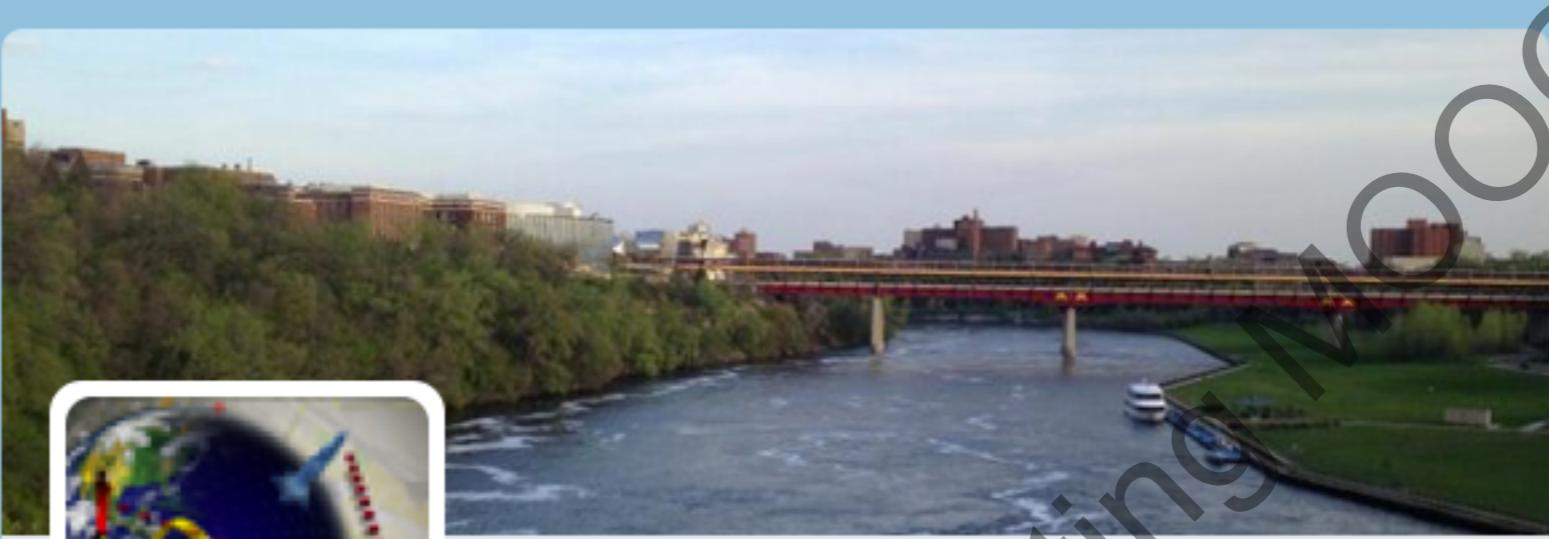
<place name,  
spatial footprint (**x**)>

<“Minneapolis, MN”  
(44.9833, -93.2667)>

<“McCarthy, AK”,  
(61.4328° N, -142.9108)>

<“Riga, Latvia”,  
(56.9489, -24.1064)>

Slides for Spatial Computing MOOC  
(By Brent Hecht)



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# Ambiguity

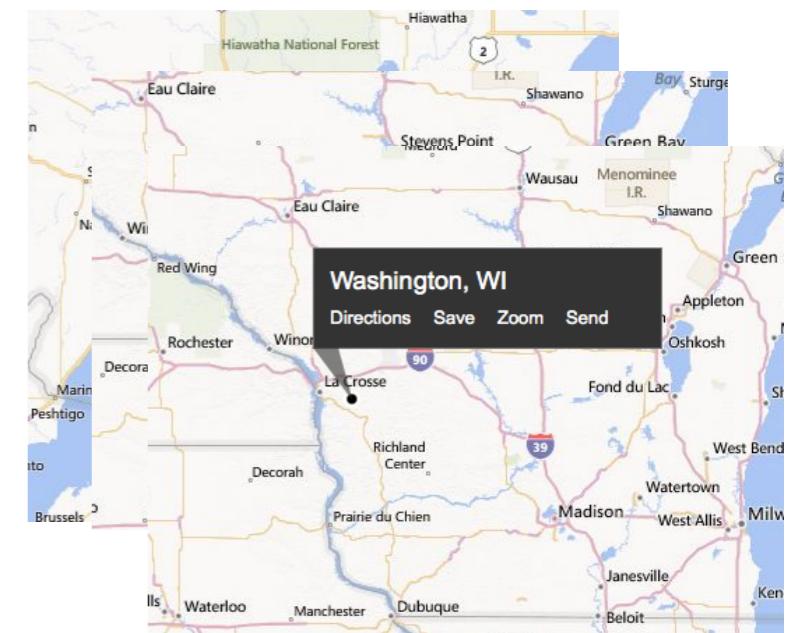
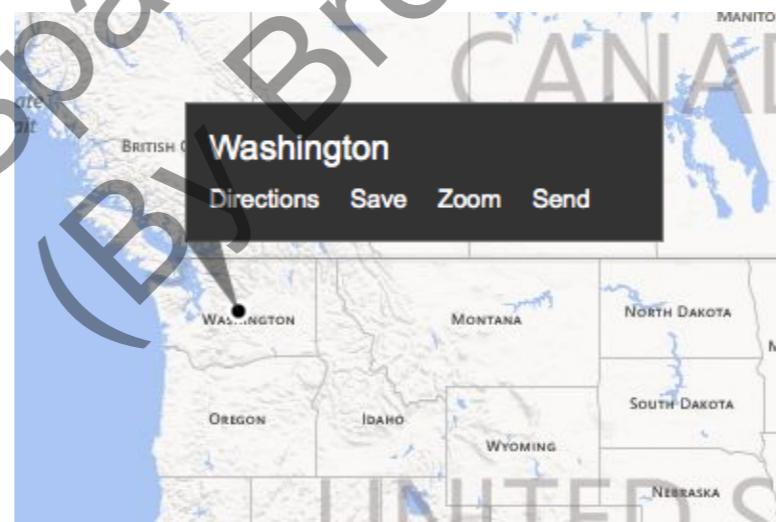
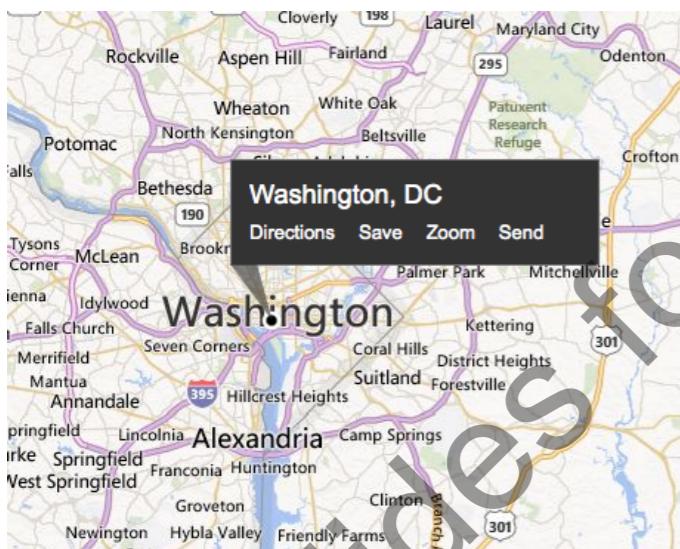
**Ambiguity** is a fundamental problem in  
geographic information retrieval  
(and information retrieval and natural language  
processing more generally)

Slides for Spatial Computing (Hecht)  
BY-BE  
Computing MOOC

# Geo/Geo Ambiguity

one place name (*toponym*) → more than one place

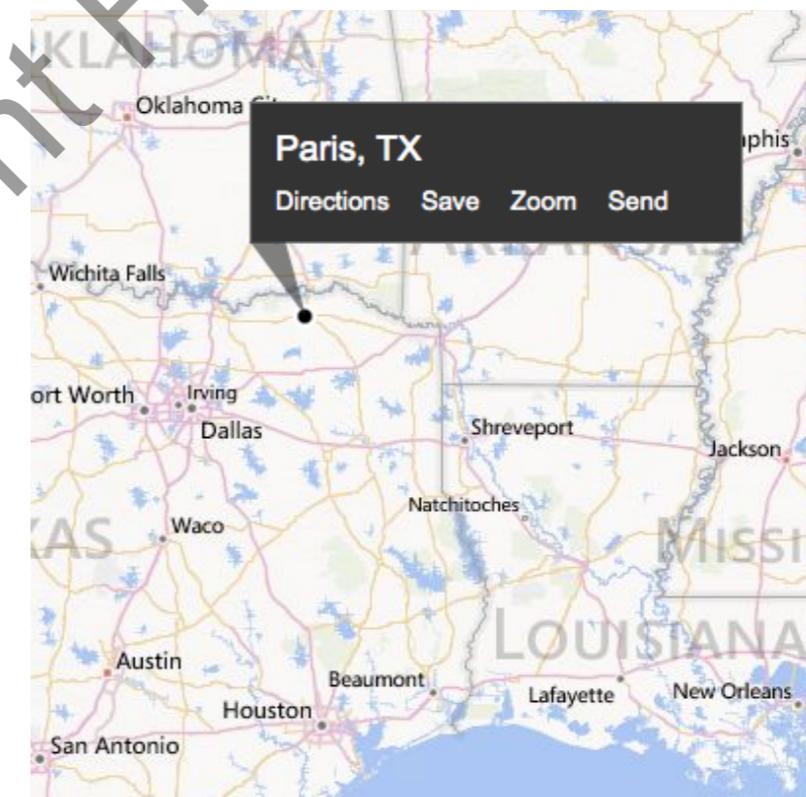
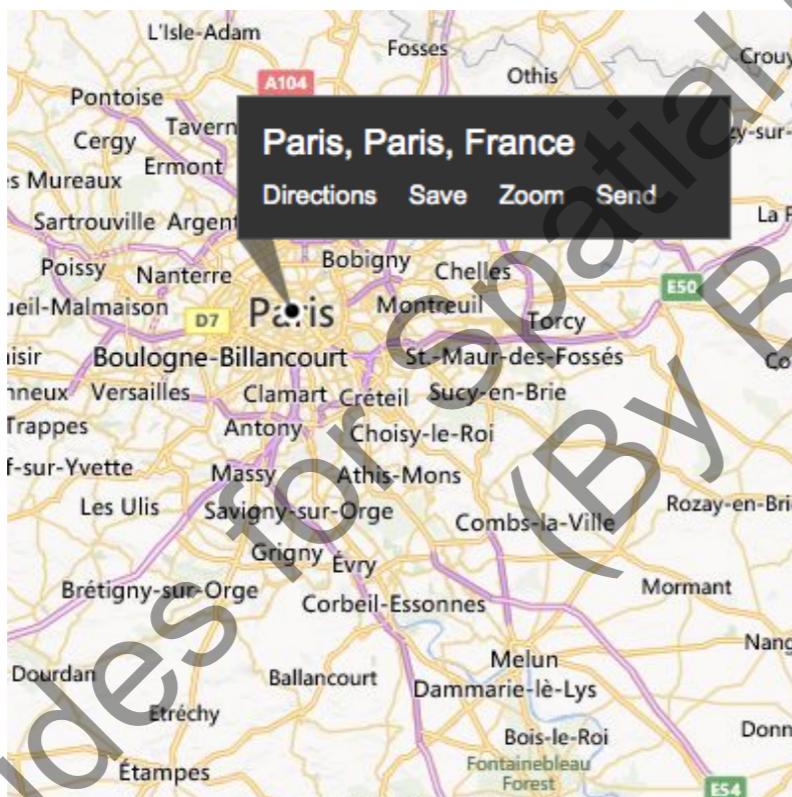
“Washington”



# Geo/Geo Ambiguity

one place name (*toponym*) → more than one place

“Paris”

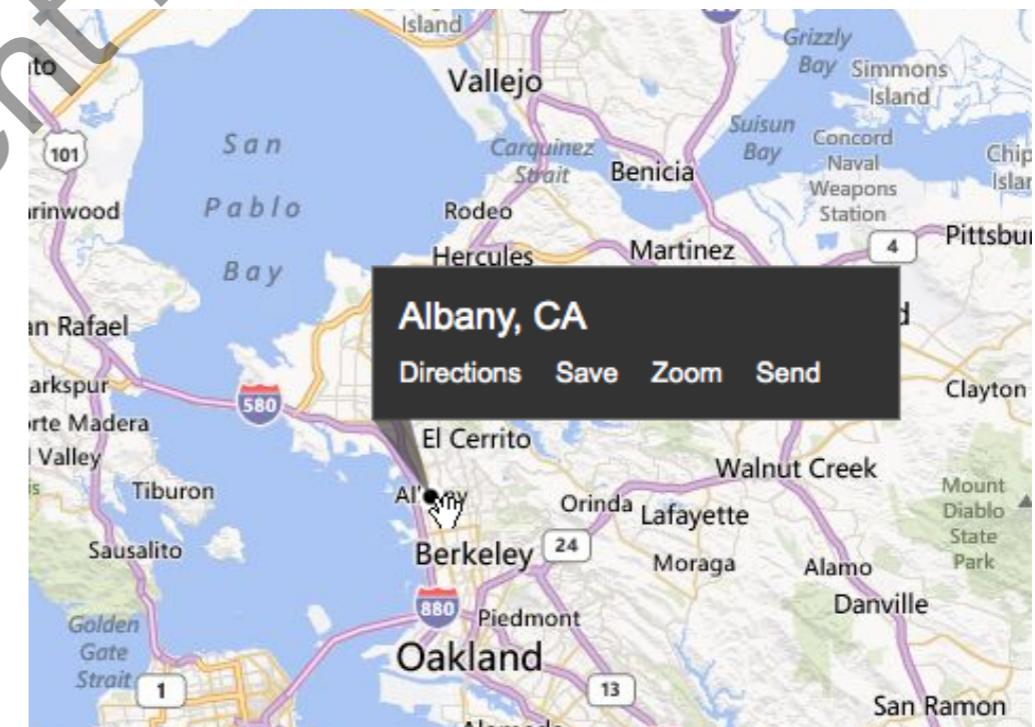
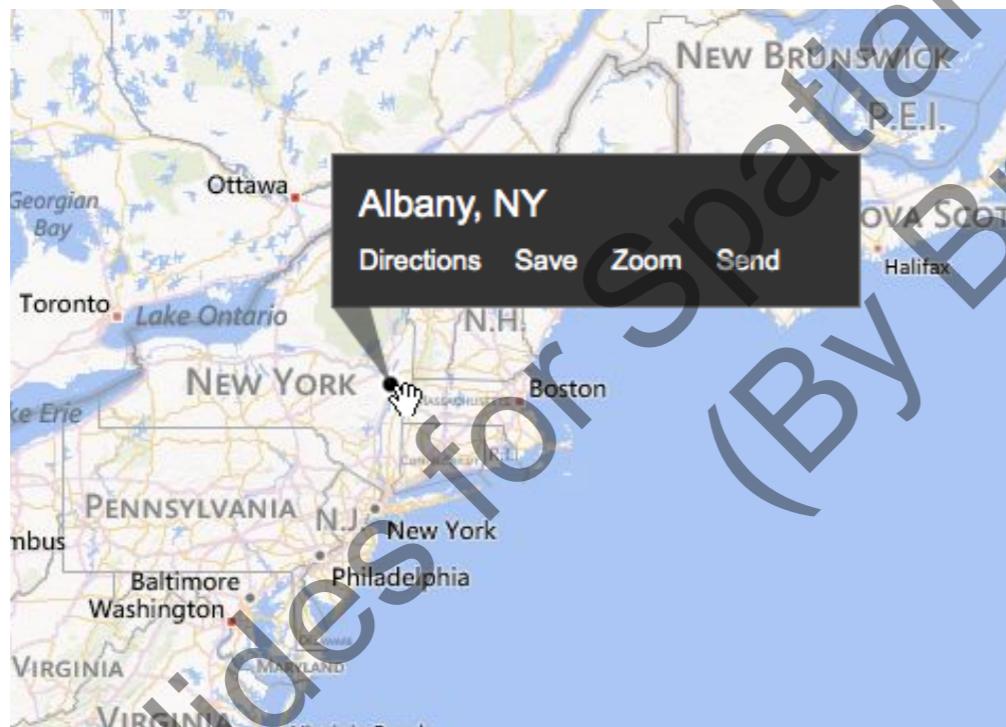


Slides for Spatial Computing  
BY Brent Hecht

# Geo/Geo Ambiguity

one place name (*toponym*) → more than one place

“Albany”

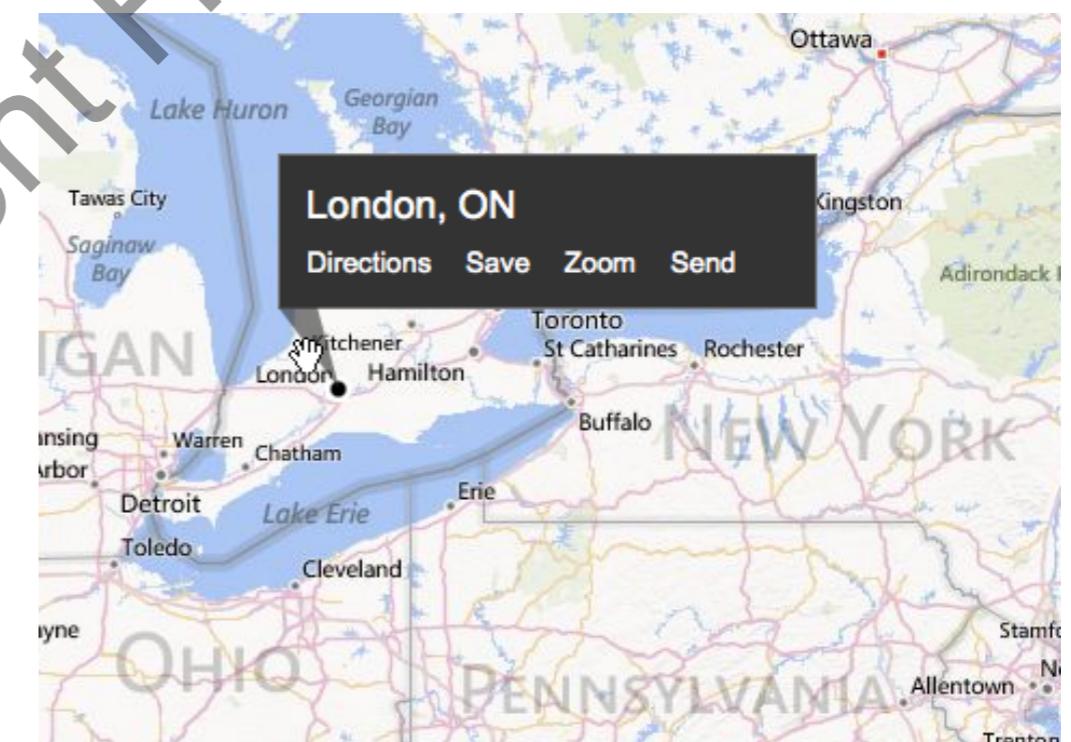
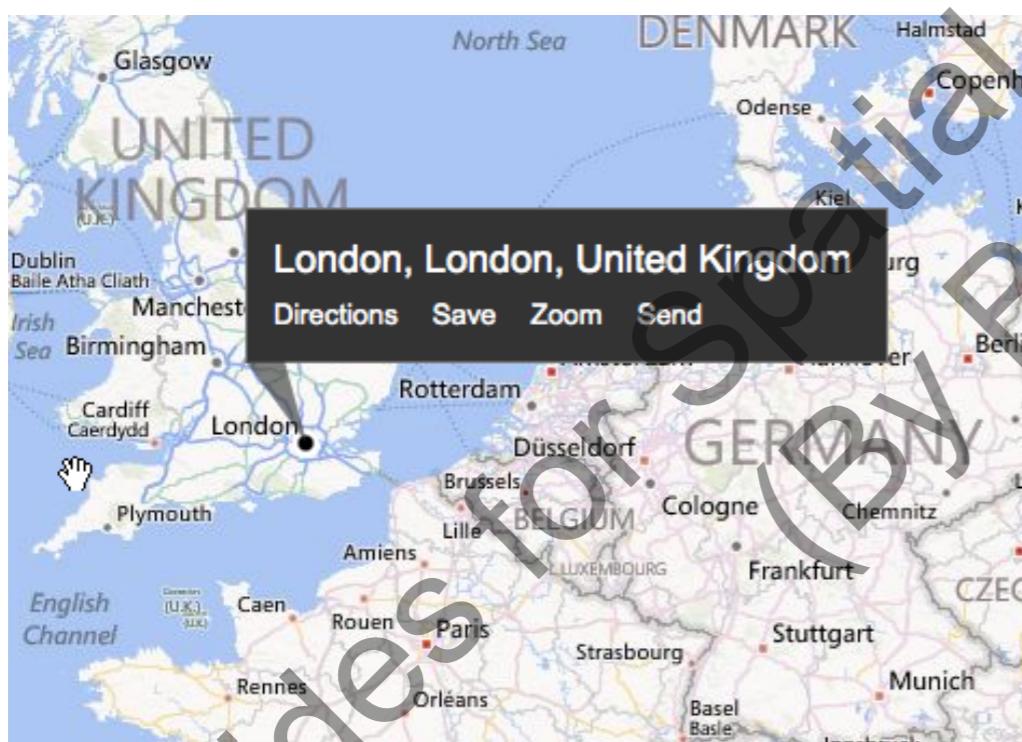


Slices for Spatial Computing  
(BY Brent Hecht)

# Geo/Geo Ambiguity

one place name (*toponym*) → more than one place

“London”



Slides for  
Spatial Computing  
BY Brent Hecht

# Geo/Non-Geo Ambiguity

*one term → a place name and ≥ 1 other meaning*

Slides for Spatial Computing  
(By Brent Hecht)



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**#seventiesmusic #itsrainin**



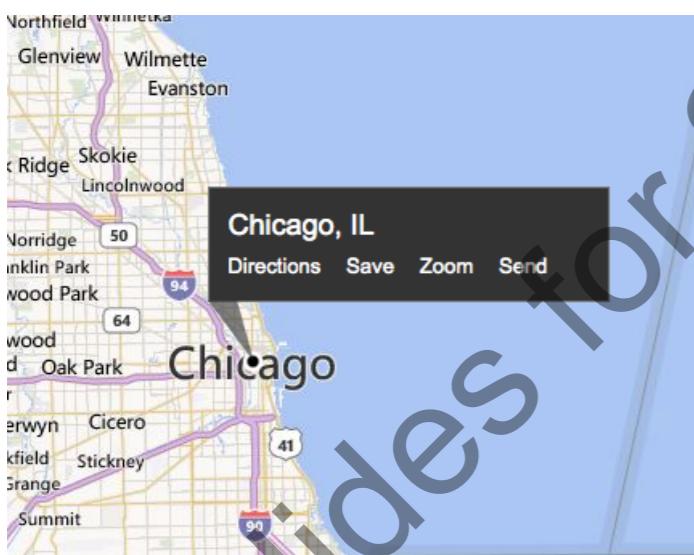
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# Geo/Non-Geo Ambiguity

*one term → a place name and ≥ 1 other meaning*

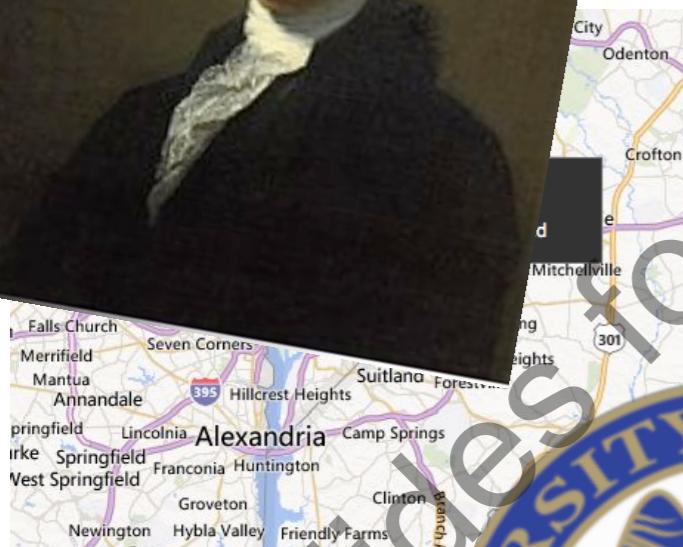
“Chicago”



# Geo/Non-Geo Ambiguity

one place name (*toponym*) → more than one place

“Washington”

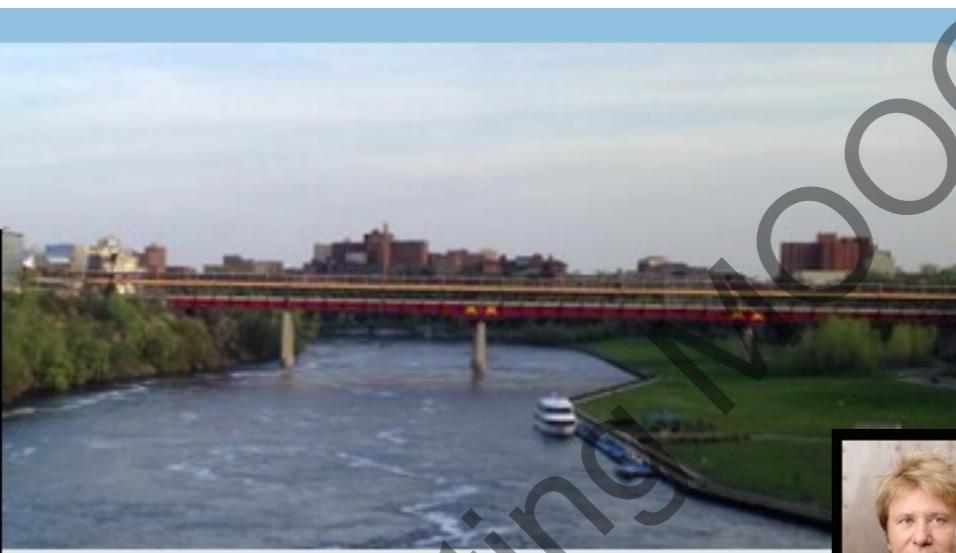
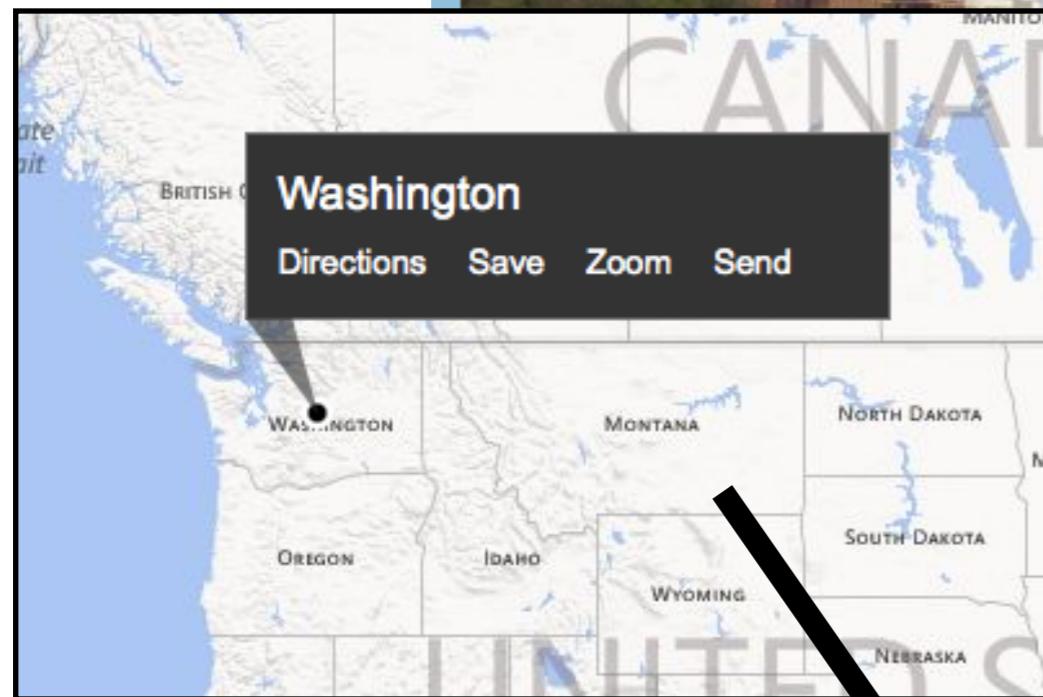


Slices for Spatial Computing  
(By Laurent Hécht)



Geo/Non-Geo  
Ambiguity

Geo/Geo Ambiguity



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***SemanticRelatedness(A,B) =***

A single numeric estimate of the number  
and strength of relationships between  
concepts A and B.

---

**CONCEPT A**



**CONCEPT B**



**$SR(A,B)$**   
**= High**

---

***SemanticRelatedness(A,B) =***

A single numeric estimate of the number  
and strength of relationships between  
concepts A and B.

---

**CONCEPT A**



**CONCEPT B**

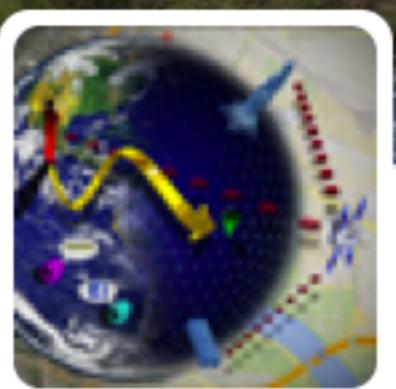
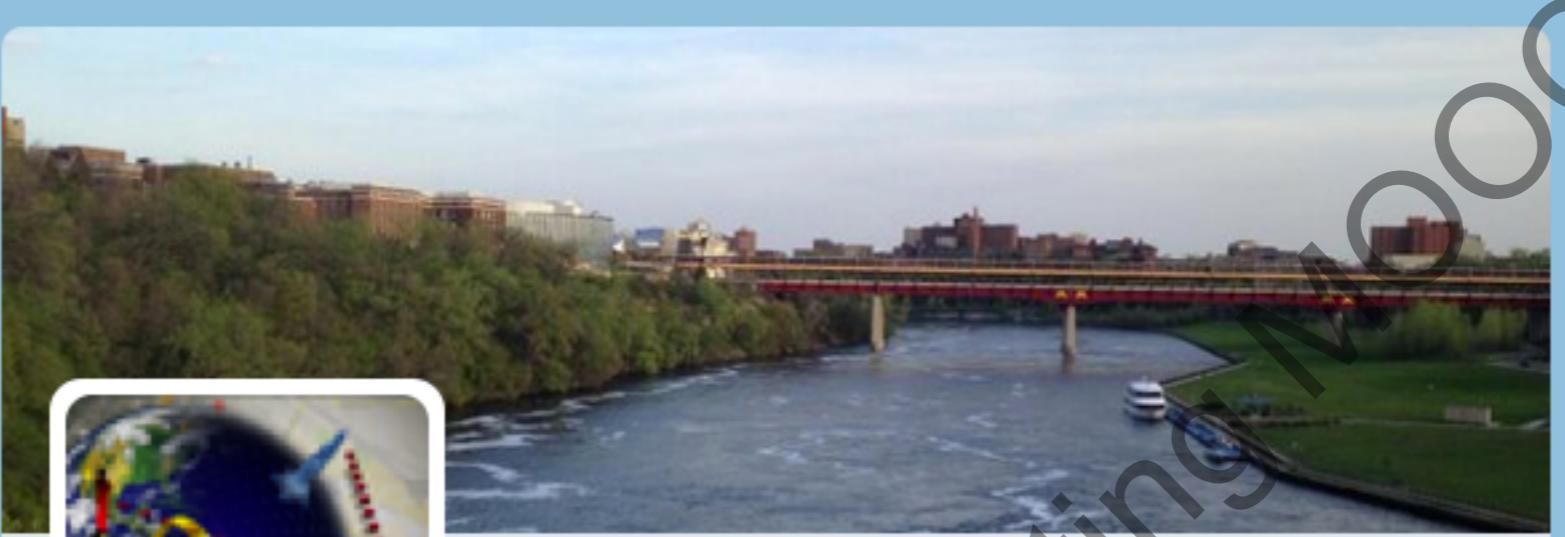


Dr. Shashi Shekhar

Garth Brooks

**$SR(A,B)$**

= **High**  
**Low**



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Washington state is  
well-known for...



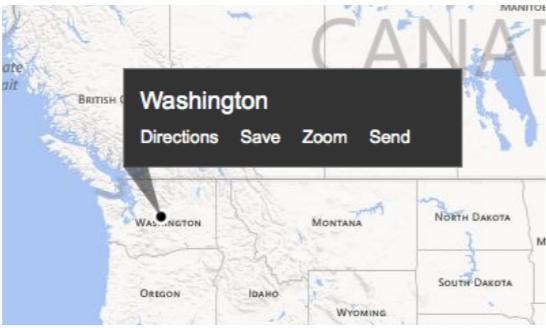
...Apples



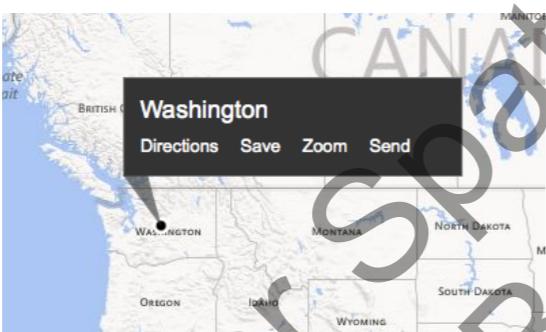
...Rain

Slides for Spatial Computing MOOC  
(By Brent Hecht)

$SR("apple", "picking") = \text{High}$

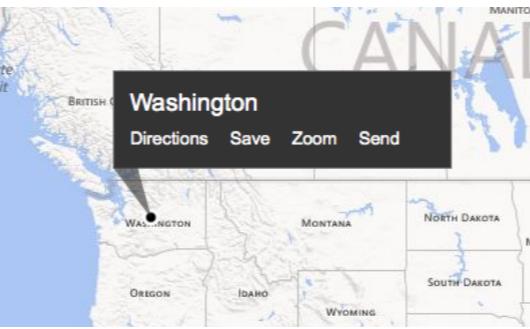


$SR("its", "raining") = \text{High}$

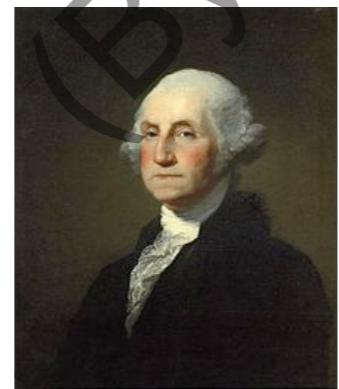
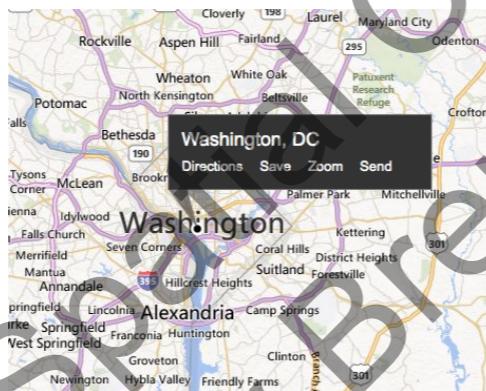


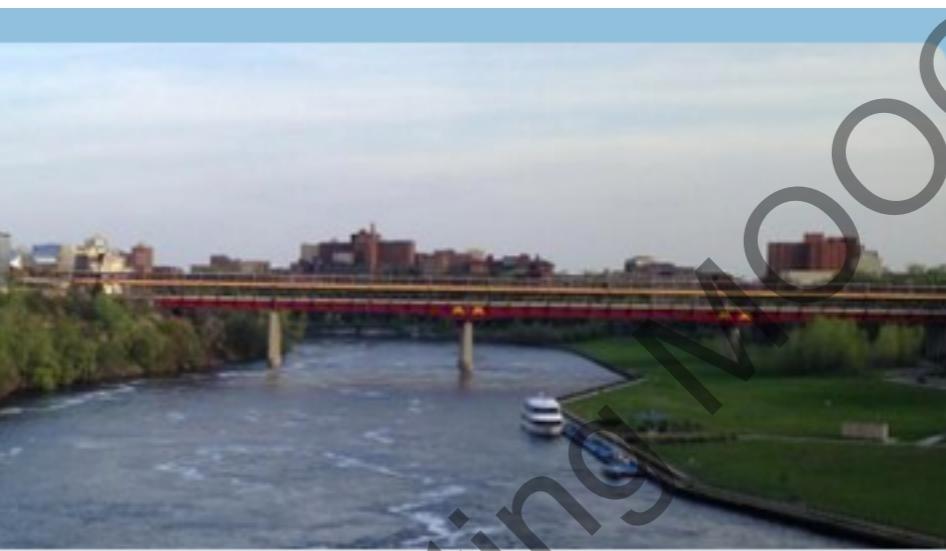
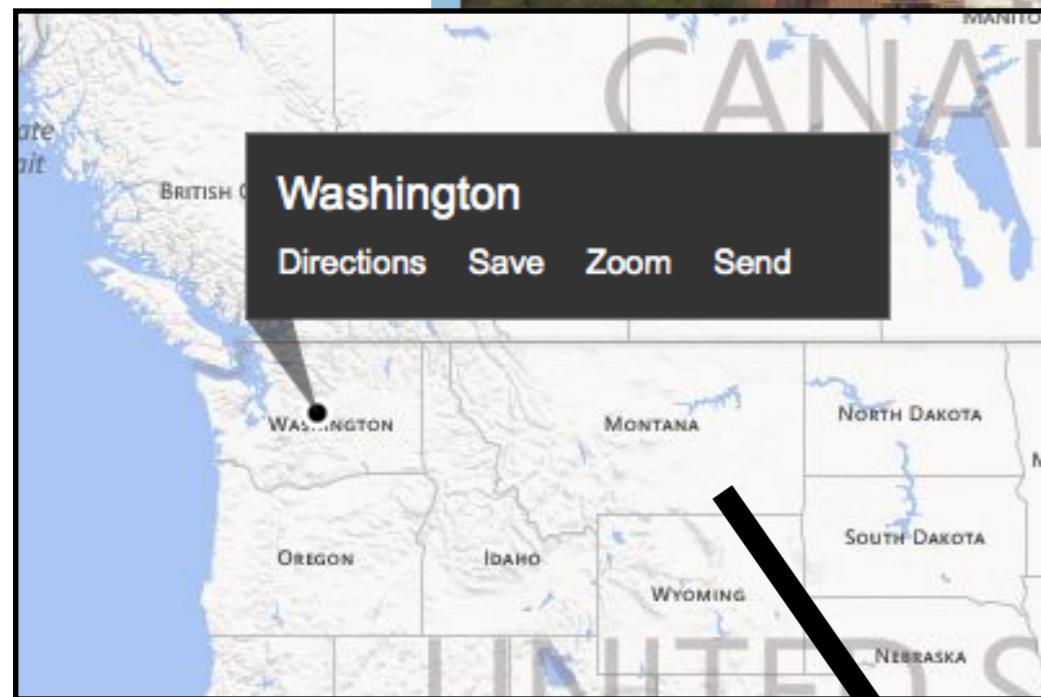
Slides for Spatial Computing  
(By Brent Hecht)

SR(  
Sliders for Survey Computing Hecht)



“apple  
picking”  
, “apple  
picking”  
, “apple  
picking”  
)





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**#seventiesmusic #itsraining**



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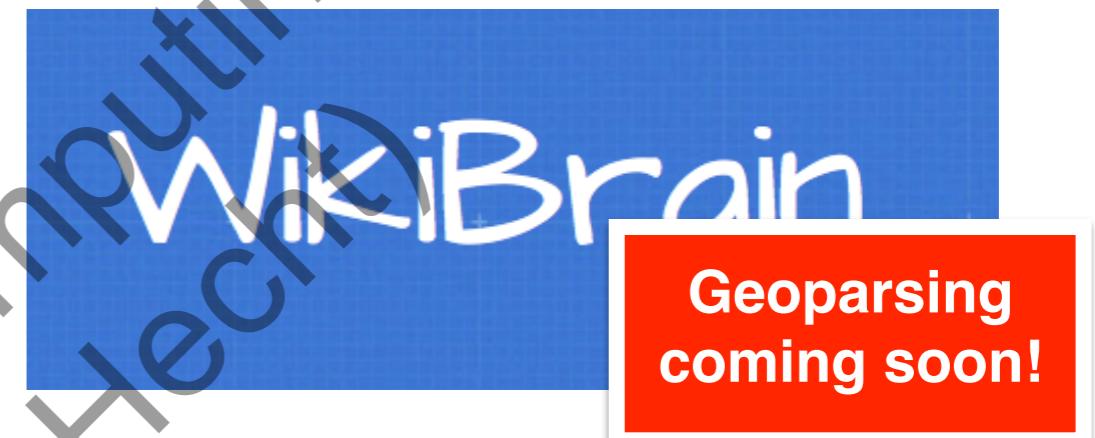
#seventiesmusic #itsrainin...

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# Tools



DBpedia Spotlight



WikiBrain



Yahoo! BOSS  
PlaceSpotter API



Berico Technologies'  
CLAVIN

# Positioning

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