

# CS 8803 Social Computing: Location and Mobility

*Munmun De Choudhury*

[munmund@gatech.edu](mailto:munmund@gatech.edu)

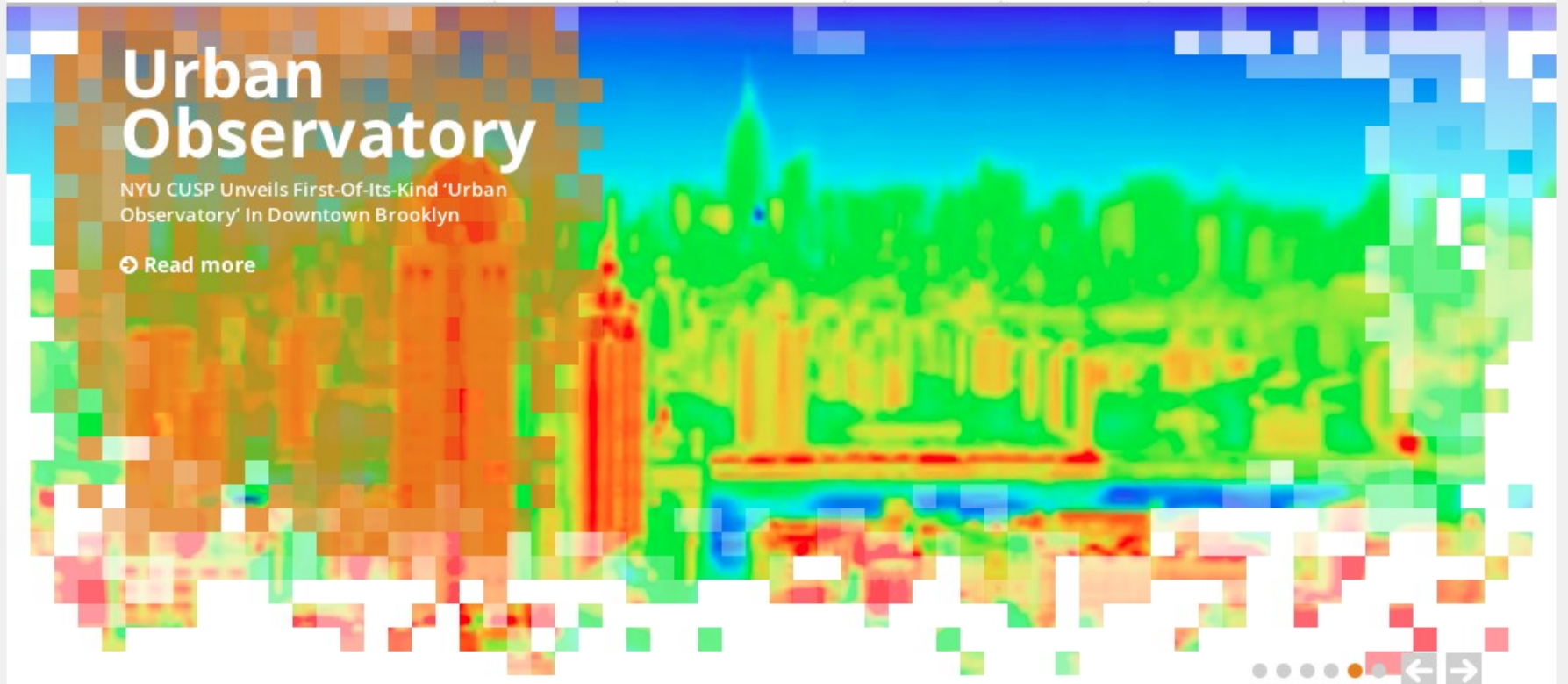
Week 14 | November 17, 2014



# Urban Observatory

NYU CUSP Unveils First-Of-Its-Kind 'Urban  
Observatory' In Downtown Brooklyn

[Read more](#)



## WHAT'S HAPPENING AT CUSP? [View all](#)



EVENT

11/22/2014  
2014 AT&T Transit Tech Developer  
Day at CUSP

8:30 am - 5:30 pm



NEWS/BLOG

Claudio Silva receives...  
Nov 13, 2014



IN THE MEDIA

A Secret Urban  
Observatory  
Is...  
Nov 03, 2014

# Tweets from Justin Bieber's Heart: The Dynamics of the Location Field in User Profiles

# Summary

- One of the earliest analyses of self-reported location on social media
- Focused on Twitter, authors found 34% users did not provide valid/accurate location information
- Examine the relationship between location and social media behavior – whether one can identify a user's location by only looking at what that user's tweets
- Main finding: a user's country and state can be determined easily with decent accuracy, indicating that users implicitly reveal location information, with or without realizing it

Why is user-level location inference useful?

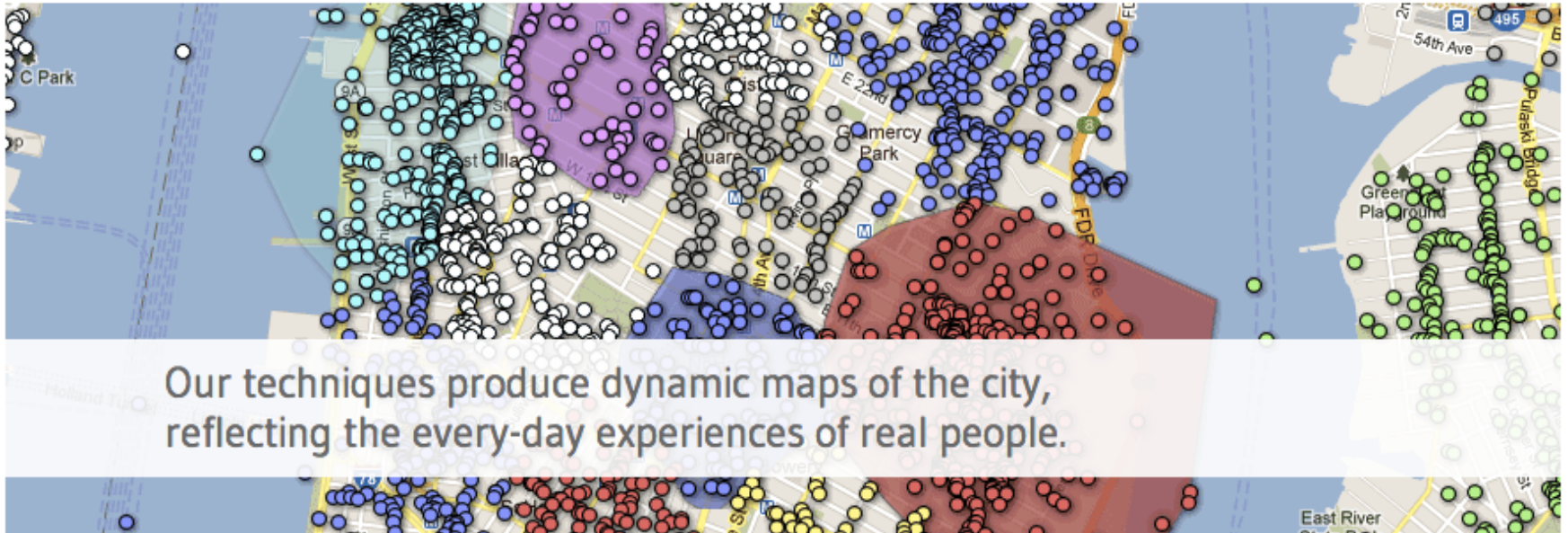
What are the dangers of such user-level location inference?

# The Livelihoods Project: Utilizing Social Media to Understand the Dynamics of a City

# Summary

- The paper presents a methodology to capture the dynamics of urban settings, called “livehoods” using self-reported location information from the social media Foursquare.
- Main motivation – municipal neighborhoods and zipcodes do not capture the “character” of a city
- Method – a (spectral) clustering model that takes into account spatial proximity and social proximity between checked in locations
- Data – 18M checkins
- Evaluation – 22 qualitative interviews with residents of the city studied (Pittsburgh)





Our techniques produce dynamic maps of the city, reflecting the every-day experiences of real people.

## Re-Imagining the City in the Age of Social Media

Livehoods offer a new way to conceptualize the dynamics, structure, and character of a city by analyzing the social media its residents generate. By looking at people's checkin patterns at places across the city, we create a mapping of the different dynamic areas that comprise it. Each Livehood tells a different story of the people and places that shape it.

[> MORE](#)

## Using Machine-Learning to Study Cities

Our research hypothesis is that the character of an urban area is defined not just by the the types of places found there, but also by the people that make it part of their daily life. To explore this idea, we use data from approximately 18 million check-ins collected from the location-based social network foursquare, and apply clustering algorithms to discover the different areas of the city.

[> MORE](#)

## Current Maps



[> New York City](#)



[> San Francisco](#)



[> Pittsburgh](#)



[> More Maps](#)

# The Shortest Path to Happiness: Recommending Beautiful, Quiet, and Happy Routes

# Summary

- Most current technologies suggest geographic routes based on shortest distance or time
- However scenic or emotionally pleasing routes can be desired by travelers
- Utilize crowdsourcing to identify beautiful, quiet, and positive emotion inducing routes in London and Boston
  - Participants are shown two photos and asked to vote
  - votes from more than 3.3K individuals translate into quantitative measures of location perceptions
- Use crowdsourced votes to construct recommendable routes in London and Boston
- Validate routes using geotagged Flickr photos and feedback from 30 participants in London and 54 in Boston

The first and second papers focus on inferring attributes of urban settings based on social media reported locations. What are some example situations where this information could be used?

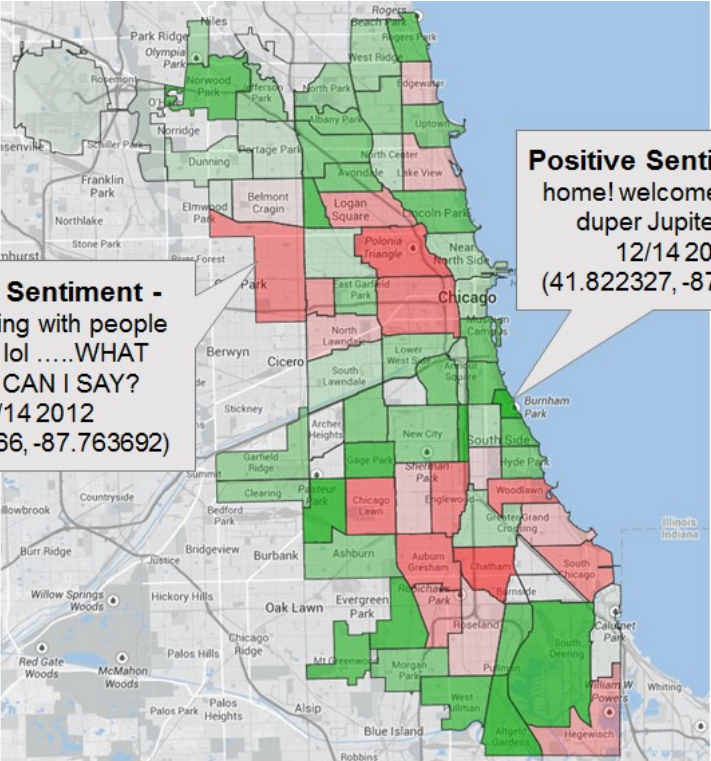
Quercia et al.'s work focuses on finding beautiful and emotionally pleasing routes. However emotion is subjective. How would you alter the algorithm to take into account such subjectivity?

Beyond the subjectivity of beauty and emotion, challenges lie in *who* is traveling in those routes and *where* those routes are. Cite some examples where different travelers may have different expectations and how social media can help us tailor to those attributes.

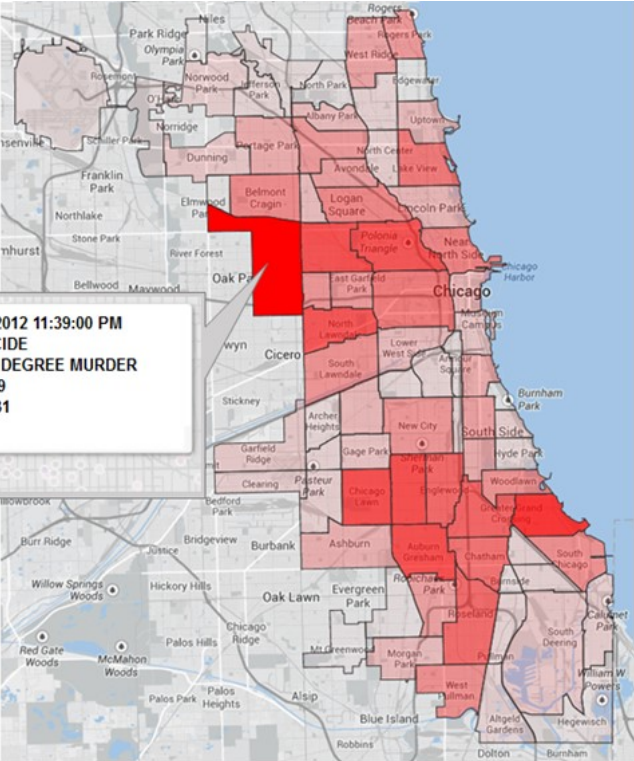
# Beyond beautiful and pleasing routes...

**Negative Sentiment -**  
shxx fuxxing with people  
on here lol ....WHAT  
MORE CAN I SAY?  
12/14 2012  
(41.897766, -87.763692)

**Positive Sentiment -**  
home! welcome to super  
duper Jupiter love.  
12/14 2012  
(41.822327, -87.606525)



Date: 12/12/2012 11:39:00 PM  
Description: HOMICIDE  
Detail: FIRST DEGREE MURDER  
Lat: 41.8989  
Lng: -87.7531



Kim, Cha, Sandholm (2014). "SocRoutes: Safe Routes Based on Tweet Sentiments"

Can social media help us deal with bad traffic?



Self-reported social media locations have many issues. First, there's no way to distinguish between locals and tourists. How would this lack of information impact the algorithms we read today?

Neighborhood inference using social media can be challenging due to the digital divide and other linguistic, cultural factors. Cite some cities/case examples where social media locations may not indicate true neighborhoods.

Location inference beyond text: In the light of Quercia et al.'s work, are there visual or temporal signatures that exemplify the spatial characteristics of a location. If so, can social multimedia help us mine such information?

The fact that more than a fifth of Twitter locations were inaccurate (Hecht et al.) is alarming in many ways. It questions the design of these systems in many ways. As a designer, what would be your takeaways?

# Mapping the World's Photos

Crandall, Backstrom, Huttenlocher, Kleinberg, 2009



# Hyperlocal Events and Trends

Hu, Farnham, Monroy-Hernandez (2013). Whoo.ly: Facilitating Information Seeking For Hyperlocal Communities Using Social Media

**Whoo.ly**

**Capitol Hill** Seattle, U.S.A.

**1.2 Active Events**

**1.1 Recent Tweets**

**Active Events**

- 8/12/2012
  - Grill Broadway
- 8/9/2012
  - Cash Timothy Instant Forex System St
  - Bike Theft
  - Invasion Elderly
- 8/8/2012
  - Hill Mexican Restaurant
- 8/3/2012
  - Bakery
  - Cider Sights Gluten Kitchen Dedicated Sets Free Bar
- 8/2/2012
  - Gas Leak Pike Blocked Pine St 10Th
  - Surreal Landscape Sam Wall Red Capitol Hill
  - Promote Research Drum Company Answer #Citysmartsea

**Recent Tweets**

- Les Sterling** @lessterling 8/12/2012 3:39:14 PM  
Tippy Rose Lee blows audience away again!! @ The Grill on Broadway [http://vt.co/vWfZn](#)
- Les Sterling** @lessterling 8/12/2012 3:37:17 PM  
Amanda gives us an accidental tribute to the Olympics!!! @ The Grill on Broadway [http://vt.co/vHnN40p3](#)
- Les Sterling** @lessterling 8/12/2012 3:13:54 PM  
You know that's The One and Only Mama Tits! @ The Grill on Broadway [http://vt.co/vKhFg7R1s](#)
- Craig Falvo** @craigfalvo 8/12/2012 3:12:30 PM  
RT @bettinahansen: March for Nuns blocking 10th and Pike in [http://vt.co/v0V165gTx](#)
- Les Sterling** @lessterling 8/12/2012 3:09:05 PM  
Sant n Pepsi. Now BITCHES that's Miss Ursula at Mimosas With Mamal @ The Grill on Broadway [http://vt.co/vPAfRtri](#)
- JesseGusGus** @jessegusgus 8/12/2012 2:53:58 PM  
On vacation. No editing needed. @ Fort Stevens State Park [http://vt.co/vVGEp2hL](#)
- Les Sterling** @lessterling 8/12/2012 2:52:54 PM  
Mimosas With Mamal #mimosas @ The Grill on Broadway [http://vt.co/vw8ON6lJlr](#)
- Christina Ratkus** @cRATKUS 8/12/2012 2:35:50 PM  
Wow to all the Seattle men with deep v necks on right now!! I didn't know men could have cleavage. #capitolhillseattle [http://vt.co/vDFjIA8iL](#)
- chelsy west** @ChelsyMWest 8/12/2012 2:24:41 PM  
Lake Stevens! [http://vt.co/v1xGihzDV](#)

**1.3 Top Topics**

cap (134) madison (86) park (82) free (51) neighborhood (59) pike (51) day (48) gas (38) grill (37) st (28) block (36) leak (35) bar (36) bike (35) beach (30) time (33) lake (31) market (27) pine (25) party (29) tonight (29) love (28) food (28) home (27) cider (27) night (24)

**1.4 Popular Places**

**Active People**

- jseattle (145)
- Seattle (77)
- Seattle Newsy (41)
- Mikal Tall (41)
- Capitol Hill (37)
- CHSfeed (35)
- Seattle CP (25)
- Seattle (17)
- mon (16)

**Popular Places**

- Starbucks (132)
- Seattle-Tacoma International Airport (87)
- 24 Hour Fitness (33)
- Capitol Hill Neighborhood (29)
- Counterbalance Park (29)
- City Target (27)
- Uptown Seattle (21)
- Dick's Drive-In (20)
- Walgreens (19)
- Lawrence Lofts (17)
- McCollum's (17)
- Pussy Palace (16)

**1.5 Active People**

Part of complete coverage on  
**China**

ON 中国  
CHINA

## Can social media clear air over China?

By **Kristie Lu Stout**, CNN

updated 2:16 AM EDT, Fri April 19, 2013



### On China: Governing pollution

#### STORY HIGHLIGHTS

- Chinese environmentalist enlists social media to fight pollution
- Microbloggers invited to send photos of suspected polluters

**Editor's note:** Each month, CNN's Kristie Lu Stout sits down with three China experts to discuss what's really driving the world power and economic giant. This month's episode will focus on China's pollution problem. See [here](#) for air times for CNN's "On China."

# Wednesday Nov 19's class

- Atlanta Computational Social Science Workshop
- Schedule: <http://css-workshop.gatech.edu/schedule.html>
- Attend Prof. Noah Smith's (CMU) talk – 10am to 11am, Friday Nov 21
  - Talk title: "Machine Learning About People From Their Language"
- *OR*
- Attend Prof. Arthur Spirling's (Harvard) talk – 1:30-2:30pm, Friday Nov 21
- **Location: TSRB Ballroom**
- *Either do Nov 19's reading reflections, or attend one of the above talks. If later, attendance will count for the grade toward Nov 19's reading reflections*



# Next class

- Monday 11/24
- Topic: “Microblogging and Collaboration”
- Assigned readings due by 11:59 pm Sunday
- **No class next Wednesday 11/19**