CS 6474 Social Computing: Location and Mobility

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Week 14 | November 21, 2016
Urban Observatory
NYU CUSP Unveils First-Of-Its-Kind 'Urban Observatory' In Downtown Brooklyn

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
The Livehoods 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.
- Main finding – spilling, splitting and corresponding.
- Evaluation – 22 qualitative interviews with residents of the city studied (Pittsburgh).
Semi automated cluster tuning with human feedback
Generalizability
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?
The 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?
The Great Good Place: Cafes, Coffee Shops, Bookstores, Bars, Hair Salons, and Other Hangouts at the Heart of a Community 3rd Edition
by Ray Oldenburg

The Amazon Book Review
Author interviews, book reviews, editors picks, and more. Read it now
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 covered 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.
Characterizing spatial routes with social media location information
Beyond beautiful and pleasing routes...

What can social multimedia reveal to us about location?
Mapping the World’s Photos

Crandall, Backstrom, Huttenlocher, Kleinberg, 2009
Location and Social

Finding Your Friends and Following Them to Where You Are

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ABSTRACT

Location plays an essential role in our lives, bridging our online and offline worlds. This paper explores the interplay between people’s location, interactions, and their social ties within a large real-world dataset. We present and evaluate Flap, a system that solves two intimately related tasks: link and location prediction in online social networks. For link prediction, Flap infers social ties by considering patterns in friendship formation, the content of people’s messages, and user location. We show that while each component is a weak predictor of friendship alone, combining them results in a strong model, accurately identifying the majority of friendships. For location prediction, Flap implements a scalable probabilistic model of human mobility, where we treat users with known GPS positions as noisy sensors of the location of their friends. We explore supervised and unsupervised learning scenarios, and focus on the efficiency of both learning and inference. We evaluate Flap on a large sample of highly active users from two distinct geographical areas and show that it (1) reconstructs the entire friendship graph with high accuracy even when no edges are given; and (2) infers people’s fine-grained location, even when they keep their data private and we can only access the location of their friends. Our models significantly outperform current comparable approaches to either task.

Figure 1: A snapshot of a heatmap animation of Twitter users’ movement within New York City that captures a typical distribution of geo-tagged messaging on a weekday afternoon. The hotter (more red) an area is, the more people have recently tweeted from that location. Full animation is at http://cs.rochester.edu/u/sadilek/research/.

1. INTRODUCTION

Our society is founded on the interplay of human relationships and interactions. Since every person is tightly em-
Hyperlocal Events and Trends

What are the risks of location inference from social media data?

“Gaming” locations on social media; identity deception