Patterns of Inadvertent Privacy Violations from Volunteered Geographic Information (VGI) in the United States

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Background and Motivations

- **Age of big data**: personal location information in the form of text, geotag, photo, and video more widely available
- **Few real-world examples** of locational privacy infringement in literature
- Objective to provide taxonomy for **technology solutions**
Overview

- Research Focus
- Definitions of Privacy
- Proposed Conceptualization
- Methods
- Case Studies
- Evaluation of Categorization
- Discussion of Solutions
- Conclusions
Research Focus

- Evaluate current legal conceptualization of privacy
- **Participatory** spatial data: departs from traditional forms of surveillance (Shilton 2012)
- **Inadvertent** privacy violations
- Physical or psychological **harm**
Legal Tradition

- “the right of the individual to be *let alone*” and “the right to *one’s personality*” (Warren and Brandeis 1890)

- “the right of the individual to control the *disclosure of personal information*” (Rotenberg 1991, 80)
Geography Tradition

• the unnecessary or unjust revelation of individual identity through the release of personal records (Goss 1995)

• Locational privacy: the right of individuals to determine how and the extent to which their location information is shared with other parties (Elwood and Leszczynski 2011; Krumm 2009)

• Cybercasing: the planning of physical attacks relying on online geotagged data (Friedland and Sommer 2010)
privacy = set of “family resemblances” of persons and information

Solove (2007, 11)
Privacy Relationships

Collection
- Surveillance
- Interrogation

Processing
- Aggregation
- Identification
- Insecurity
- Secondary use
- Exclusion

Dissemination
- Breach of confidentiality
- Disclosure
- Exposure
- Increased accessibility
- Blackmail
- Appropriation
- Distortion

Invasion
- Intrusion
- Decisional interference
Methods

- Review of
  - Legal records
  - News articles
  - Websites
  - Journal articles

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- Application of Solove’s (2007) legal categorization
Case Study: Facebook burglary ring

- September 2010: Burglary ring in Nashua, NH used Facebook vacation status updates
Case Study: Privacy “awareness” sites

- Use Facebook, Twitter APIs to access check-ins, location data
- Using pleaserobme.com, person made harassing calls to victims at restaurants, events of check-ins
Case Study: Privacy “awareness” sites
Case Study: Lil JoJo

- Tweeted location before fatally shot near 69th St on Chicago’s South Side, September 2012
Case Study: Zimmerman couple

- March 2012: LA man tweets (incorrect) address of George Zimmerman, Spike Lee retweets
- Address belongs to different couple, forced to relocate
Proposed Reclassification

- Dissemination
  - Breach of confidentiality
  - Disclosure
  - Exposure
  - Increased accessibility
  - Blackmail
  - Appropriation
  - Distortion

- Processing
  - Aggregation
  - Identification
  - Insecurity
  - Secondary use
  - Exclusion

- Surveillance

- Invasion
  - Intrusion
  - Decisional interference
Solutions

- Regulation
- Technology
  - Anonymity
  - Obfuscation
    - Inaccuracy
    - Imprecision
    - Vagueness

Example: k-anonymity

Gkoulalas-Divanis (2009)
Conclusions

- Legal conceptualizations of privacy must be updated for social media
- Categorization of social media privacy infringements can help focus development of technological solutions
- Further research would collect more examples of locational privacy violations
- Some categories may require regulation until technology solutions are reached
References

Friedland, G. and Sommer, R. 2010. Cybercasing the joint: On the privacy implications of geotagging. 5th Usenix Hot Topics in Security Workshop (HotSec2010), Washington DC.
Goss, J. 1995. We know who you are and we know where you live - the instrumental rationality of geodemographic systems. Economic Geography 71 (2):171-188.