Creating context: Making sense of geo-location and social media data for health

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What do these have in common?
Is this you?
Location based services

Tracking
"We never think outside the box at this company, Finkman!"
Consider alternative perspectives
eHealth - connected-convergent-conformant
Geolocation data
Uses: Directed Information Sources

- **iTriage** - iPhone application
  - integrates clinical information with **geolocational** data
  - designed to empower patients to make better health decisions
  - get appropriate help, whether in emergency or preparing for routine surgery
Convergence
Convergence?
Uses – Influenza Tracking
Spatial Variation

- Public Health
- Epidemiology
- Infectious Disease informatics (trends) and outbreak detection
- Integration of data from multiple sources
  - Mapping HIV/AIDS programs US
Newer Uses

• **Geolocation** monitoring (individual patients)
  – for wandering patients,
  – in the elderly remote monitoring (vital signs) - promoting autonomy
  – can detect falls

• Geolocational tagging in emergency and disasters (for triage) and mass casualty situations
Behavioural Geolocation/ Tracking
Additional complex variable

- Communication/collection channel
Every 60 seconds (April 2012)

- Facebook users post **695,000** status updates
- YouTube broadcasters upload **600** new videos
- Photographers (amateur and professional) share **6,600** photos on Flickr
- iPhone owners download **13,000** new apps for their smart phones
- Twitter types send **98,000** “tweets”
Social Media

• Ambient geospatial information as location and time recorded
• Use of Twitter for infoveillance/infodemiology
  – provides various types of location data, including exact GPS coordinates
  – but limitations as not well understood /or documented
  – Good real time data and low costs excellent for public health
In Health = Big Data

- Unravelling secrets – better data
- Healthcare analytics – THE next big thing in healthcare - *consumer and provider*
Extraordinary potential

- Identifying new correlations
- To date has been used by marketing not health
- Health informatics/analytics v bioinformatics
  - Google Flu Trends (predictive/proactive)
- Decision making ........
Figure 2: Influenza rate from August 2009 to October 2010 as measured by CDC FluView (measured as percentage of specimen's that tested positive for influenza) and ATAM+'s “flu” ailment (the normalized probability of the “flu” ailment given the week): correlation coefficient of 0.958.
Mix social media and geolocation data for the public.
“Intelligent” uses of social media in healthcare

Healthcare fraud investigators using social media sites
Harnessing Social Media for Health Promotion and Behaviour Change
61% of adults search for health information online
Over 2000 health groups on Yahoo alone
Government funding in Australia for Social network analysis
Analysis for situational awareness as it relates to human healthcare activities
Twitter in participatory sensing
Convergence in Healthcare => Big Data

• New phenomenon for healthcare
• Clinical care use?
• Big data analytics
  – Pharmaceutical companies
Big Data and Analytics for Health

WICKED PROBLEM
It's next year already
How time travelling would work

Space-time is like a flat surface, and when it is curved it may be possible to create a 'wormhole' that connects one part of space-time to another - allowing us to go forward or back in time.
Security and Privacy Issues

• Legislation ? Surveillance?
How are we going to embrace this opportunity?

“Never, ever, think outside the box.”