

Quantifiable City

- Urban Big Data (Introduction)
- How is a city quantifiable ? (Context)
- Why quantify a city? (Issues)
- How to quantify a city? (Privacy)

Urban Big Data

We have got a generation of free-flowing data across a set of different domains. Generally, urban big data has been characterized as the three volumes and varieties:

Directed (Somebody is in charged of the process and directing the cameras)

- Surveillance: CCTV, drones, satellite
- Scaled public admin records

Automated (Internet of Things and different devices can networked to generate data automatically, eg.smartphone)

- Automated surveillance
- Digital devices
- Sensors, actuators(IoT)
- Interactions and transactions

Volunteered (Social media or located media, eg.Foursquare)

- Social Media

Urban Big Data

Also, there are diverse devices to generate fine-grained data from public and private about citizens and cities in real-time. All data has a kind of indexical relations.

-Utilities

Smart meters in measuring your gas uses or water uses

-Environmental agencies

Environmental agencies collect data about pollution and weather situation

-Mobile phone operators

Various apps that are on your phones collect your travel locations, writing reviews

-Home appliances and entertainment systems

Nest thermostat adjust temperature and also you can access it by your phone with the internet

-Financial institutions and retail chains

Your consumption using credit card

They are producing data that could be combined analyzed and acted upon.

How is a city quantifiable ?

- History of data being generated from cities and also about cities

There's a really rich history about we have been generating data from city. We generate data every second, minute and hour. There is always the data revolution of city's history.

- A urban data is a key input source for understanding city life

There are so many ways we generate data from a city. They are not only about understanding city life, but also for solving urban problems, such as guiding how government's governance formulate policy, plans and modeling possible future city.

- Shifting city towards a more kind of data-driven networked urbanism

As diverse issues are coming up in city, we are always informed urbanism has been continuing. And the source power of urbanism is data – a kind of data-driven networked urbanism, a data-driven city.

Why quantify a city?

- Cities are becoming ever more instrumental and networked, their system interlinked and integrated. Also cities are shifting to more knowable and controllable in dynamic ways.

(EG. Rich data could give us ability to make models and simulations to predict what's going on in the future. In China, many cities are in the process of constructing subways, but the problems are where –the land use. How data give the ability to predict this situation?)

- Urban operational governance are becoming highly responsive to a form of networked urbanism in which big data systems are prefiguring and setting the urban agenda/ producing a deluge of contextual and actionable data/ influencing and controlling how city systems respond and perform in-real time.

(EG. Big data could stimulate creativity in innovation and new form of economic development, new form of transportation systems. Every city has a basic limitation of volumes of cars, heavy traffic always happen. Issues/ problems come up.)

Why quantify a city?

- The circulation of data are becoming more indiscriminate at an exhaustive way. They involve all individuals, all objects and all transactions.
- They are becoming more distributed. They occur across multiple devices, services and places.
- They are becoming platform dependent. Data can easily flow across different platforms services and devices.
- They are becoming continuous. Data are being generated on a routine automatically.
- But data are not useful in and of themselves. They only have utility if meaning and value can be extracted from them. In other words, it is what is done with data that is important, not simply that they are generated.

How to quantify a city?

Privacy and big urban data

Privacy debates concern acceptable practices with regards to accessing and disclosing personal and sensitive information about a person. It's multi-dimensional construction.

- Identity privacy(to protect personal and confidential data)
- Bodily privacy(to protect the integrity of the physical person)
- Territorial privacy(to protect personal space, objects and property)
- Location and movement privacy(to protect against the tracking of spatial behavior)
- Communication privacy (to protect against the surveillance of conversation and correspondence)
- Transaction privacy(to protect against monitoring of searches, purchase and other exchanges)

How to quantify a city?

Privacy - Location/ movement data

We are routinely tracked and traces in our movement through series of different technologies and mass surveillance not focus on particular individuals.

- CCTV cameras recognize IDs automatically by scanning the numbers on cars' plates.
- Smart cards track location data through codes of chips on the credit cards when you swipe cards to purchase or in an ATM.
- Wi-Fi network across UCL is capturing every phone that connects on to it. But cell phone always has got the previous connections. So Wi-Fi network not only get you connection to them but also get the history of everywhere else you try to connect to or have to be connect to.
- Smartphone track themselves in different ways. Through the cell mass GPS which is embedded on the phone and also through the Wi-Fi networks.

There are lots of different ways which location and movement data is captured. But maybe these data help to generate ways for predicting privacy harms?

References

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