Lecture 19: GIS in Action II: GeoSpatial Revolution (chapter 10)

Rui Zhu
Episode 3: GIS in military actions, safety, and privacy issues

http://geospatialrevolution.psu.edu/episode3
Episode 3: GIS in military actions, safety, and privacy issues

- How GIS assists military actions?
  - 3D terrain mapping and terrain analysis (LiDAR)
  - Route finding

- Safety
  - Buffer based on road network and time
  - Hotspot mapping: where to patrol?

- Privacy issues
  - Ubiquitous monitoring system
  - Someone else can track you!!!
Disambiguation of Places
Responsible Machine Learning Summit at UCSB

http://ml.ucsb.edu/summit.html
Episode 4: Climate, hunger, and disease

http://geospatialrevolution.psu.edu/episode4
Episode 4: Climate, hunger, and disease

- Climate
  - Quantitatively mapping the climate change
  - Help decide how severe the problem is
- Hunger
  - More informed decision on crop growth around the world
  - How much the food is needed?
- Disease
  - The famous John Snow example: simple but effective!
  - Spatial point pattern analysis: tracking disease distribution
- Community mapping
  - VGI: geographic information helps residents in Kibera and Kenya
A side story: maps in the GOT

https://gameofthrones.fandom.com/wiki/Westeros

In summary

- GIS facilitates information management and decision making in many domains:
  - Climate change, transportation, city planning, security, health, disaster responses, resource allocation, agriculture, business management, military and so on….

- Research on GIS → GIScience
  - Studies geographic information: how can we use geographic information to change the world!
GEOG 176A: Introduction to Geographic Information Systems

Lecture 20: The Future of GIS

(chapter 11)

Rui Zhu
What are some future directions for GI Systems and GI Sciences?
The future of GIS

- **Big data**: a lot of data from different sources
  - Various types of sensors
  - Ubiquitous mobile devices
  - Geographic coordinates on almost everything
  - Volunteered geographic information
  - Wearable devices
  - ...
Various types of sensors

- Sensors on satellites
- Sensors in the fields
More sensors
Citizens as sensors

- VGI: locations, trajectories, photos, tags, description, social networks...
Friendship in Facebook

https://www.facebook.com/notes/facebook-engineering/visualizing-friendships/469716398919