2019 spring course announcement

GEOG-389

Geospatial Data Analytics

Time: TBD
Place: Physical Sciences Building 310

Instructor: Dr. Yi Qiang
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Link to syllabus: goo.gl/fcSUgd

Geospatial techniques to discover useful information from big data

Geospatial data are currently generated at an unprecedented speed, providing ample opportunities to study human and environmental dynamics from multiple perspectives at nearly real-time. Geography 389 is designed to introduce quantitative and computational techniques to analyze large geospatial data in different forms and resolutions. Specifically, the course will introduce analytical methods to discover and model spatial patterns, trends and relationships. It will teach programming skills to automate data processing and analyses with support of geographic information systems (GIS). It will also introduce techniques to acquire geospatial data from the Internet such as social media data. Theories and methods will be introduced in lectures. Workshop style classes will be offered to demonstrate the coding process and tool usages. Students will have chance to practise the skills using real-world dataset in lab exercise and projects. Overall, this course provides an introduction to data science with a geospatial focus.

Example course topics include:

- **Exploratory spatial data analysis**: Visualize, analyze and interpret spatial distribution, patterns and relationships.
- **Geostatistics and machine learning:** Statistical hypothesis testing, spatial clustering, 'hot spot' detection, and spatial regression.
- **Spatial interpolation and aggregation**: Methods of estimating data in unsampled locations. Spatial data down-scaling and up-scaling.
- **Python programming**: Basic coding skills in Python and the interfaces with ArcGIS and other GIS packages.
- **Geospatial big data**: Analysis of geo-tagged social media data. Usage of web data and geospatial services (e.g. Google Maps APIs).

Requirements:

- GEOG 388 (or equivalent GIS courses or experience).
- Basic skills of using computers (programming skill is not required)

Note: The course description in the course Catalog and Availability website may not be updated. Please contact the instructor directly for override and information.