GGR494 Group Project Instruction

Description

Students will work in small groups to plan and execute a space-time data analysis project. The project is expected to integrate a suite of space-time data (e.g., individual GPS trajectory data, multi-year crime incident data, and so on.) through a series of spatial analyses to solve a real-world problem. The goal of this project is to allow students to apply what they have learned from this course to real-world GIS problem-solving. Students are also encouraged to explore and experiment with any other space-time analysis methods or tools that may not be covered in this course. Based on the problem of interest and the expected analyses, groups will collect and process an appropriate dataset, and develop analysis workflow and final visualization of the results. **Freedom, exploration and creativity are encouraged.**

You should work in groups of 2-3 students. Every group needs to detail in a write-up of project topics and a 'rough plan' as the project proposal, as well as a presentation and final report that discussing the research project, dataset analysis, and final results, as well as the success of the project and detailing any issues encountered and the limitations. Your objectives are:

1. Identify a real-world problem or issue that can be solved with GIS space-time analysis.
2. Collect and preprocess related space-time datasets either from publicly available open data sources (e.g., Toronto Open Data Portal) or collect your own space-time data (e.g., Individual GPS trajectory data with smartphones).
3. Investigate the data and undertake the application of space-time data analysis, and visualization using state-of-the-art GIS software (e.g., ArcGIS Pro).
4. Discuss the significant findings of your project and detailing any issues encountered and the limitations associated with the use of the final products.

Deliverables

Part 1: Project Proposal and Self Reflection Report ([5%] Due Mar 12 at 5:00 PM)

The project proposal is a 1-2 pages outline of your project title, objectives, available data and data sources, methodology (how would you achieve your objectives? what spatial analysis tools you will use?), the expected results or final product, and a detailed time schedule.

Each team should also finish and submit a self-reflection report to describe team members' current contributions to the group as well as their expected future contribution to finish the project together. The self-reflection form will be released on Quercus soon.

Part 2: Group Presentation ([10%] Due Mar 31 In-Class)

Your team will create a slideshow and give a presentation summarizing your project and your code. The presentation should be about 10 minutes following with a 2-minute Q&A. All group members need to participate in the presentation in order to count towards their grade. The slide show should consist of the following sections:

- Identify the problem you wish to solve and the scope of your project
- Background of the problem and a description of the data used
- Description of how your group solved the problem with space-time analysis
- A flowchart illustrating your data processing
- Analysis of your work and results
- Discuss the significant findings of your project
- Description of each team member's contribution

Part 3: Presentation Slides, Preprocessed Dataset, and Final Products (Due Mar 31 In-Class)

You have to submit your presentation slides (in the format of PowerPoint), preprocessed dataset, and final products to Quercus before the in-class presentation in order to get your marks for the group presentation.

Only one submission is required per group, so please be sure to indicate your group number and who is in your group on the first page of your presentation slides.

Please zip the preprocessed dataset and final products you used in a file called Data&Product.zip with a technical (ReadMe.txt file) description of all the files included.

Part 4: A final report discussing the success of the project and detailing any issues encountered and the limitations associated with the use of the final products ([25%] Due Apr 2 at 5:00 pm)

Detailed instructions for the final report will be distributed shortly

Please find following some potential space-time data sources that may be helpful for your group to find geospatial data and develop your own real-world GIS problem:

- Open Street Map: https://www.openstreetmap.org
- Toronto Open Data: https://www.toronto.ca/city-government/data-research-maps/open-data/
- Chicago Open Data: https://data.cityofchicago.org/
- New York City Open Data: https://opendata.cityofnewyork.us/
- U.S. Census Bureau: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
- Esri Open Data: https://hub.arcgis.com/search
- Natural Earth Data: http://www.naturalearthdata.com/downloads/
- USGS Earth Explorer: https://earthexplorer.usgs.gov/
- NASA's Socioeconomic Data and Applications Center (SEDAC): https://sedac.ciesin.columbia.edu/data/sets/browse
- Open Topography: https://opentopography.org/