INFSCI 2809: Spatial Data Analytics
Project 1
Due: January 31, 2019

This project has two components: a spatial data manipulation component and a spatial data aggregation component. The objective of the spatial data manipulation component is to learn the basic knowledge for handling spatial data and the objective of the aggregation component is to understand the issue of scale in spatial data analysis.

All the files required for implementing the two components of the project are available at "http://gis40.exp.sis.pitt.edu/INFSCI2809_data". R/RStudio must be used to implement the project.

Spatial Data Manipulation

Obtain the file "pgh_streets.shp", which is one of the files in "pgh_streets.zip", and:

a. Find the total number of road segments. [5 points]
b. Calculate minimum, maximum, and mean segment lengths. [5 points]
c. Filter out the segments that are below the mean length that you calculated in (b) and then create a map showing the remaining segments. [5 points]

Points: 25 [10 points for R script]

Spatial Data Aggregation

Use the data in "lnd.RData" and "stations.RData" and aggregate the values contained in points (stations) to correspond with polygons (lnd) and:

a. Aggregate the data based on the mean of the point values. Create a map and prepare a report on the result. [10 points]
b. Run regression on the point values before and after aggregation. Prepare a report on the result [20 points]

Points: 40 [10 points for R script]

Total points: 65

Submit your answers/results along with R scripts for all components as a single PDF file on courseweb.