GIS 5571 Lab 1

Due: 2 weeks from the date of assignment

Goals

1. Practice decomposing interfaces for spatial web API's into informal conceptual models
2. Compare and contract different web API's using informal conceptual models and custom-built extract, transform, and load (ETL) routines
3. Build an ETL pipeline with Open Source Tools in Esri's Online and ArcPro Jupyter Notebook and integrate a two datasets via spatial join

Deliverables

Submit a lab report on Canvas as a PDF (see report form). Include all your code on Github.

Specifics

For this lab:

1. Write a lab report that does two things:
    a. Compare and contrast the conceptual models for the following API's
        i. Minnesota Geospatial Commons
        ii. Google Places
        iii. NDAWN

    b. Create Jupyter notebooks that can programmatically get data from each of these APIs. Using Jupyter notebooks, build a pipeline that
        i. downloads two data sets,
        ii. transform both datasets to the same coordinate reference system (geographic and projected),
        iii. spatially joins them,
        iv. prints to screen the head of the table showing the merged attributes, and
        v. saves the integrated dataset to a geodatabase.

2. Make all code available on Github in your Lab 1 folder.

A few tips:

1. Before writing any code, start by using paper and pencil to unpack the dataset objects.
2. Look at other examples of how people designed ETL code.
    a. Towards Data Science article on ETL with CRON or Jupyter
        i. Google terms you don't understand (there are a lot of resources)