

Lab 0

Goals

1. Refresher on Esri Technologies via Esri's Online Learning Platform (see email from Esri)
2. Tour the technology ecosystem including:
 - a. ArcPro and Jupyter notebooks
 - b. ArcOnline and Jupyter notebooks online
 - c. ArcPy
 - d. Github.com
3. Become acquainted with
 - a. Lab reports guidelines for the course
 - b. Spatial data science project setup on github.com
 - c. Basic git functionality

Deliverables

- Finish online tutorials (automatically tracked via invite from Esri) -- if something is unfamiliar, take more time on it. For those things you know well, go through the tutorials as quickly as possible.
- Submit a lab report on Canvas here as a PDF (see [report form](#))
 - Note: each section below has specific deliverables at the end
 - See the due date in the syllabus

Statement

In this course, our goal is to use the multiple facets of the Esri ecosystem in concert with other open source software. For this lab, your objective is to write a compare and contrast lab report illustrating how to make a map of your choice.

This lab is broken in three activities:

1. Esri refresher online tutorials
2. Introduction to Github, ArcPro + Jupyter notebooks
3. Introduction to ArcOnline + Jupyter notebooks

Section 1: Github.com

Objectives:

By the end of this section, you will have a strong working understanding of git. We will use git throughout the semester, so its important that you gain a firm understanding early of the basic actions you can perform. These include a) clone, b) add, c) commit, d) push, and e) pull.

Steps:

1. Follow the [instructions](#) for the github quickstart docs
 - a. Do the entire exercise and create the hello world repo
2. Do this [tutorial](#)
3. Create a new repository called GIS5571
 - a. Clone this repository locally on your computer
 - b. In the repository, create five folders:
 - i. Lab0
 - ii. Lab1
 - iii. Lab2
 - iv. Lab3
 - v. Lab4
 - c. In each folder, place a copy of the [lab report form](#)
 - d. Add, commit and push these changes to github.com

Deliverables:

1. In your lab report Discussion and Conclusion section, create a subset titled “GitHub” and describe what went well and what was tricky about getting set up with github.
2. Put a link to your GIS 5571 repository in the appropriate place in the lab report form.

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Section 2: ArcPro, Jupyter Notebooks, and ArcOnline

Jupyter notebooks represent the standard for spatial data science. We will use them extensively throughout the course. Yet, sometimes it can be more efficient and effective to use a GUI in ArcPro or ArcOnline. In this activity, we begin the semester-long project of comparing and contrasting these different views of the Esri ecosystem of GIS functionality.

Objectives:

By the end of this section, you will have:

1. Finished your Lab0 [lab report form](#)
2. Compared and contrasted three basic operations in 3 different environments
3. Established a firm foundation for working with GUI and python-based Esri tools

Throughout, save all of your code in your git repository Lab0 folder.

Steps:

1. **Problem Statement** (use this as the basis in your lab report):

The Esri ecosystem has many different ways that you can access the same underlying functionality. Your objective is to compare and contrast performing the same simple activity - buffer a network dataset - using three different tools: ArcPro, Jupyter Notebooks in ArcPro, Jupyter Notebooks in ArcOnline.

Note: use the lab guide to build out the following steps

2. **Input data:** you can choose any road network data you would like from the Minnesota Geospatial Commons. Be sure to fill out all the required elements as required in the lab report.
3. **Methods:** Your data flow diagram will be relatively simple. It will be similar, but not the same for all the processes. Be sure to describe the different steps. Organize these according to sub-headings:

ArcPro

This should be old hat.

Jupyter Notebooks in ArcPro

Read this getting [started](#). All of the documentation for ArcPy will work the same in Pro.

Jupyter Notebooks in ArcOnline

Read this getting [started](#). Note: you will need to upload your dataset to ArcOnline

4. **Results / Results Verification:** Compare and contrast each of the above systems. Use a table or figure to help reduce the amount of text required. For results verification, you may consider comparing the final output across all methods.
5. **Discussion / Conclusion:** remember to include section 1 deliverables here as well. Add further reflection on how this went for you and the different approaches to accessing the Esri ecosystem.
6. **References:** use APA or some other reference format for any docs or other pages you used to accomplish the above tasks.
7. **Self-Score:** fill out the rubric for yourself.

When you've completed this, submit the assignment on canvas as a PDF.