Information Systems Lecture Presentation - “Maps with Python Folium”

Patrick J. Slattery for Job ID: 23771, 20-Apr-2023

Colab Notebook:
https://bit.ly/is_lecture_presentation

Class Slides:
https://bit.ly/is_lecture_slides

“I'd go to the farmers' market in Santa Barbara, and I'd put out my guitar case, and I'd test out these little ditty songs that I would write, and I would get a couple of avocados, a bag of pistachios, and, like, fifteen bucks.

That was a lot of money for me.”

— Katy Perry

Online Class Notice

Class sessions and office hours are held online using Zoom, Blackboard Collaborate Ultra and other similar platforms. A network connection, display device and speakers are required to participate. A microphone and webcam are also recommended. Class recordings are available in Blackboard Collaborate Ultra.

Students who participate in this class with their camera on or use a profile image are agreeing to have their video or image recorded solely for the purpose of creating a record for students enrolled in the class to refer to, including those enrolled students who are unable to attend live. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live.

Agenda

• Zoom Notice, Introduction, and Configuration	12:35 – 12:50
• Create a Basic Map in Folium*: San José feria*	12:50 – 01:00
• Markers in Folium*: San José feria*	01:00 – 01:15
• Some Fun with IFrame Markers*: San José feria*	(optional)
• Exercise*: Dublin Bikes*	(homework)
• Q&A and Housekeeping	01:15 – 01:30

This lesson works with an accompanying Jupyter notebook on Google Colab at https://bit.ly/is_lecture_presentation

Introduction

(IS Lecture Presentation)

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image courtesy of Microsoft PowerPoint

Our work today will take us traveling to San José, Costa Rica in Central America and across the Atlantic to Dublin, Ireland

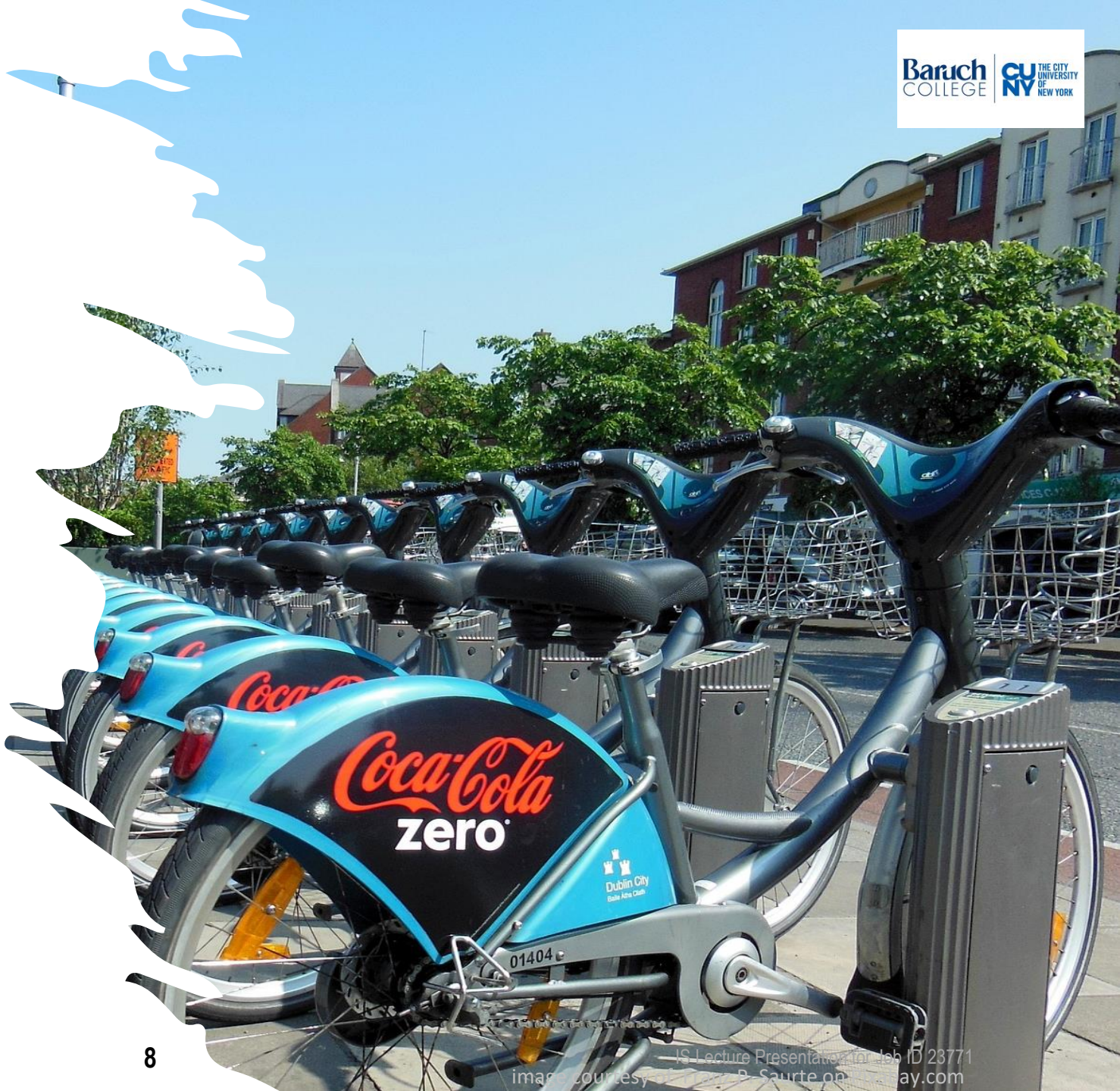
We will use data about farmers' markets in **San José** to construct maps with Folium

*In Spanish "**ferias del agricultores**" means "**farmers' markets**" , and "**feria verde**" means "**green market**"*

image by Patrick J. Slattery

The Folium exercise to take away from today's class works with bike rental data from **Dublin, Ireland**

*In Irish (Gaelic) the word for "**bicycle**" is "**rothar**" , which just means "**thing with a wheel(s)**"*



Before we practice making maps of *ferias del agricultor* (farmers' markets), let's discuss some of the concepts

About Folium

Maps and Tiles

Markers on Maps

IFrames (HTML Pop-ups)

Based on `**leaflet.js**`, Folium was created by Rob Story in 2013 and has an active open-source community offering updates and enhancements

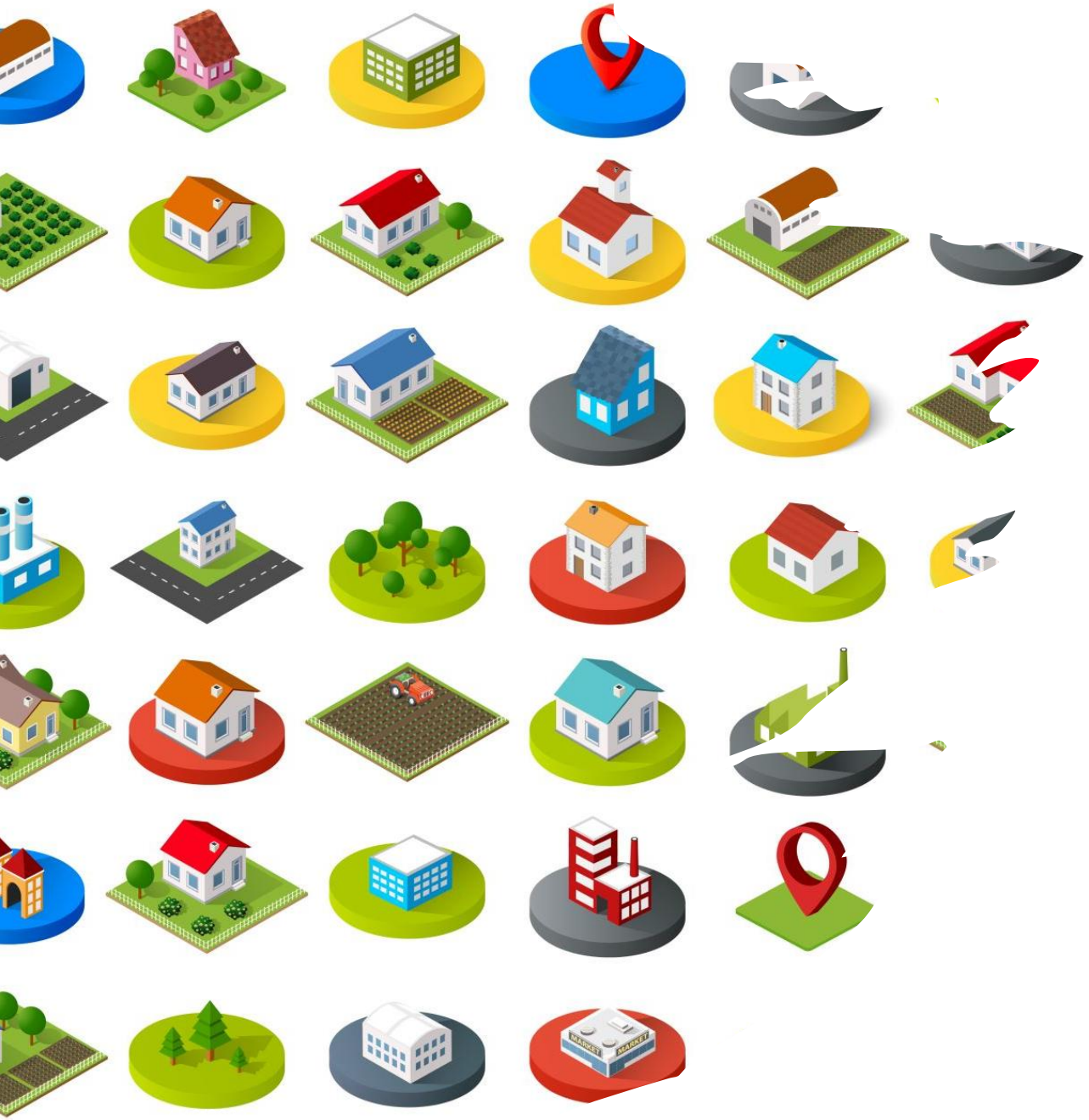
Folium can be used for visualizing geospatial data
• Choropleth maps • GeoJSON overlays • Heatmaps • **Marker clusters**

In addition to those map styles, Folium offers customizable features
• Custom markers • Pop-ups • Tooltips

Maps and Tiles

- Map tiles are essentially small, square images that represent a specific section of the Earth's surface at a particular zoom level. The entire map is divided into a grid, where each cell corresponds to a map tile. As you zoom in or out on a map, the tiles are fetched and displayed to provide a smooth, seamless experience.
- When creating maps with the Folium library, you need to choose a base map or tileset to serve as the foundation for your map.
- The base map is made up of map tiles that are sourced from various providers like OpenStreetMap, Mapbox, or Google Maps. Each provider offers different styles and levels of detail, so it's essential to choose a suitable base map for your specific needs

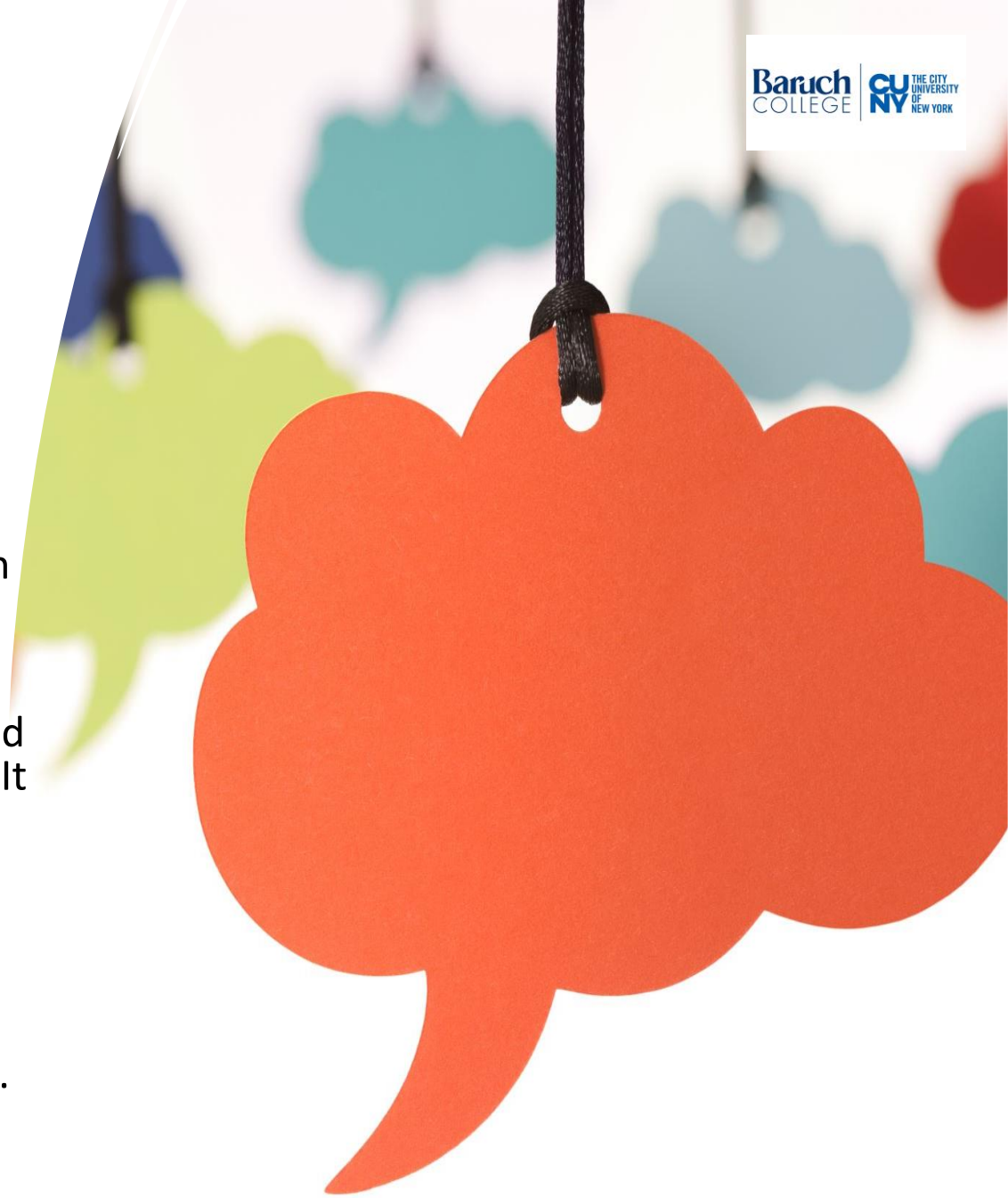
4/19/2023



Markers on Maps

- Markers are visual symbols placed on a map to represent specific locations or points of interest. They can be used to highlight various types of information, such as addresses, landmarks, or event locations.
- Markers can also be customized with different colors, icons, and even images to make them more visually appealing and informative.

IFrames
(HTML pop-up) (Tooltips)



- IFrames, or Inline Frames, are an essential component when working with Python's Folium library to create interactive maps with advanced content.
- An IFrame is an HTML element that allows you to embed and display content from an external source within a web page. It can be used to include various types of content, such as multimedia, documents, or even other web pages, in your map's pop-ups and tooltips.
- By utilizing IFrames, you can incorporate images, videos, charts, or even entire web pages into your map's pop-ups, providing a more engaging and informative user experience.

Configuration & Colab Notebook

(IS Lecture Presentation)

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Let's work with Folium in Python using a Colab notebook.

- Follow along with your copy of the notebook or use this link: **https://bit.ly/is_lecture_presentation**

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• Zoom Notice, Introduction and, and Configuration	completed
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• Exercise*: Dublin Bikes*	completed
• Q&A and Housekeeping	01:15 – 01:30

Q&A and Housekeeping

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Housekeeping

- Blackboard™ Access/Issues
- Drops/Adds
- Other Administrative Issues
- Contact: Patrick.Slattery@canopach.com ,
  or +1.347.694.7809 (w)
- Office Hours:
  - Book office hours at: https://calendly.com/professorpatrick/20min
  - Remote Office – Zoom.us (Meeting: 3476947809, no password)

Next Steps

- Next Class on DD-Mmm-2023 (Day) is **On Blackboard**
  - **We will continue working with mapping in Python**
- Practice with your own version of Python:

  In the Cloud with Google Colab:

  https://colab.research.google.com
- See you next class!

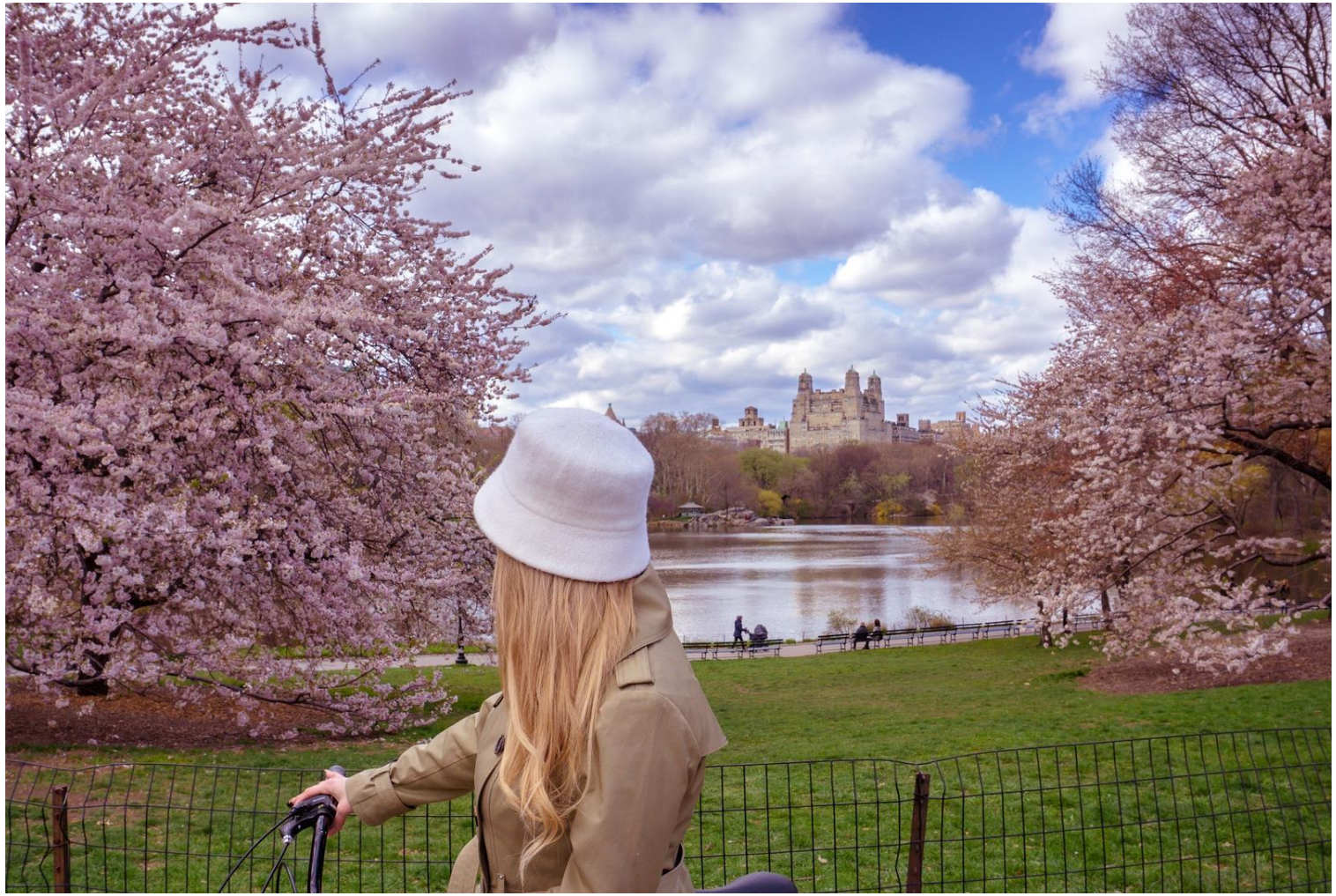

Photo by Hansjorg Keller, unsplash.com

Practice with maps in Folium!

See you next class!