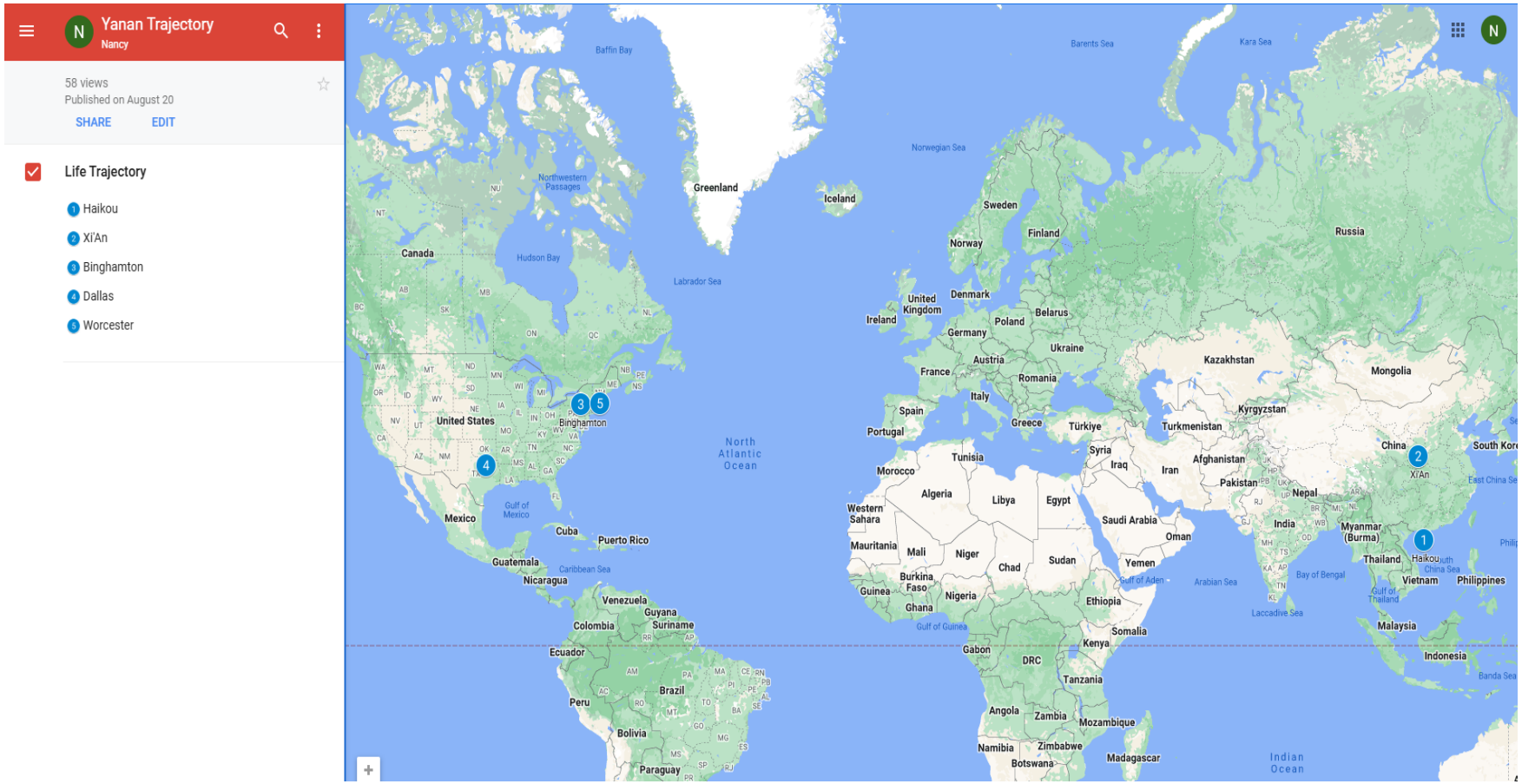
WEEK 01

Instructor: Yanan Wu
TA: Vanchy Li

Spring 2025

YANAN WU – VISITING ASSISTANT PROFESSOR

- Education & Experience



TEACHING

- Intermediate Statistics
- Python Programming in GIS
  - Manipulating spatial data
  - Web mapping
  - Processing Raster
  - Data Analysis
  - Creating Custom Tool
  - Data visualization
- Spatial Database

TA INTRODUCTION

- Office Hours: 1: 00 – 3:00 PM on Monday
- Office Location: EROS, the first floor of the Geography Building.

HOW ABOUT YOU?

- Your background (e.g., name, major, where you come from)
- What is your funniest thing that happened during your winter break?
- What relevant experience do you have with spatial database?
- What are your expectations for this course?

COURSE FORMAT

- Lectures: Instructor & TA
  - Location: Physics/Math BP310 & Jonas Clark Hall JC105
  - Time: 10:25 – 11:40 on Monday & 14:50 – 16:40 on Tuesday
- Labs: TA
  - Location: Physics/Math BP310
  - Time: 10:25 – 11:40 on Friday

LEARNING RESOURCE

- Introduction to PostGIS

- Obe, R., & Hsu, L. S. (2021). *PostGIS in action*. Simon and Schuster.

COURSE REQUIREMENTS

- Labs: 9 labs in total

  For any graded assignment, if the you do not agree with the grade received, the instructor and TA must be notified within one week after the assignment is graded.

- Late policy for lab (excluding midterm and final project)

- One midterm exam & One final project (oral presentation and paper report)

GRADE

- Assignments 80% = nine labs
- Final Project 20% = 15% oral + 5% written

A (93.0 to 100.0)	B (83.0 to 86.9)	C (73.0 to 76.9)	D (63.0 to 66.9)
A- (90.0 to 92.9)	B- (80.0 to 82.9)	C- (70.0 to 72.9)	D- (60.0 to 62.9)
B+ (87.0 to 89.9)	C+ (77.0 to 77.9)	D+ (67.0 to 69.9)	F (0.0 to 59.9)

WEEK 01

LECTURE SESSION

Instructor: Yanan Wu
TA: Vanchy Li

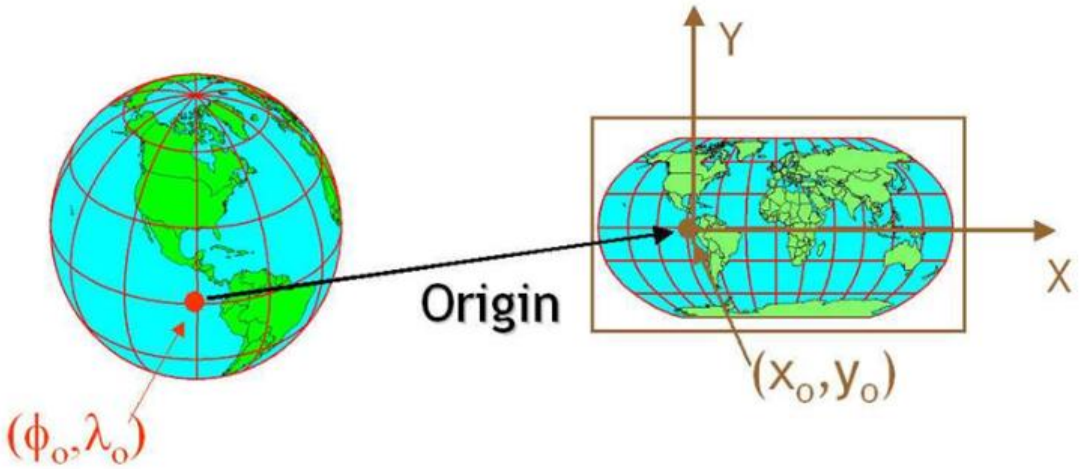
Spring 2025

WEEK 01

- Introduction to the Course
- Software Installation
  - PostgreSQL: The world’s most advanced open source database
  - PostGIS: About PostGIS

WEEK 02

- Introduction to the PostGIS, PostgreSQL, and pgAdmin
  - Basic operations in pgAdmin
  - Introducing PostGIS
  - Introduction to psql



WEEK 03

- Spatial data and geodatabases
  - Spatial data types
  - Spatial reference systems
  - Working with real data

IMAGE SOURCE: HTTPS://SUPPORT.PITNEYBOWES.COM/SEARCHARTICLES/

WEEK 04

- Introduction to SQL (I*t is pronounced as "Escuel ", but most often you can hear the slang "Sequel".*)
  - Simple SQL
    a) SELECT
    b) INSERT
    c) UPDATE
    d) DELETE
  - Working with spatial data

IMAGE SOURCE: HTTPS://PAGGYRU.MEDIUM.COM/SQL-WHAT-IS-A-SIMPLE-LANGUAGE-DBDC2E1F5544

WEEK 05

- Complex Queries and Database Management
- Combine Information
- Write Queries to run faster and use less data

IMAGE SOURCE: HTTPS://AIRBYTE.COM/DATA-ENGINEERING-RESOURCES/ADVANCED-SQL-CONCEPTS

WEEK 06 & WEEK 07

- Proximity Analysis
- Nearest Neighbor Search

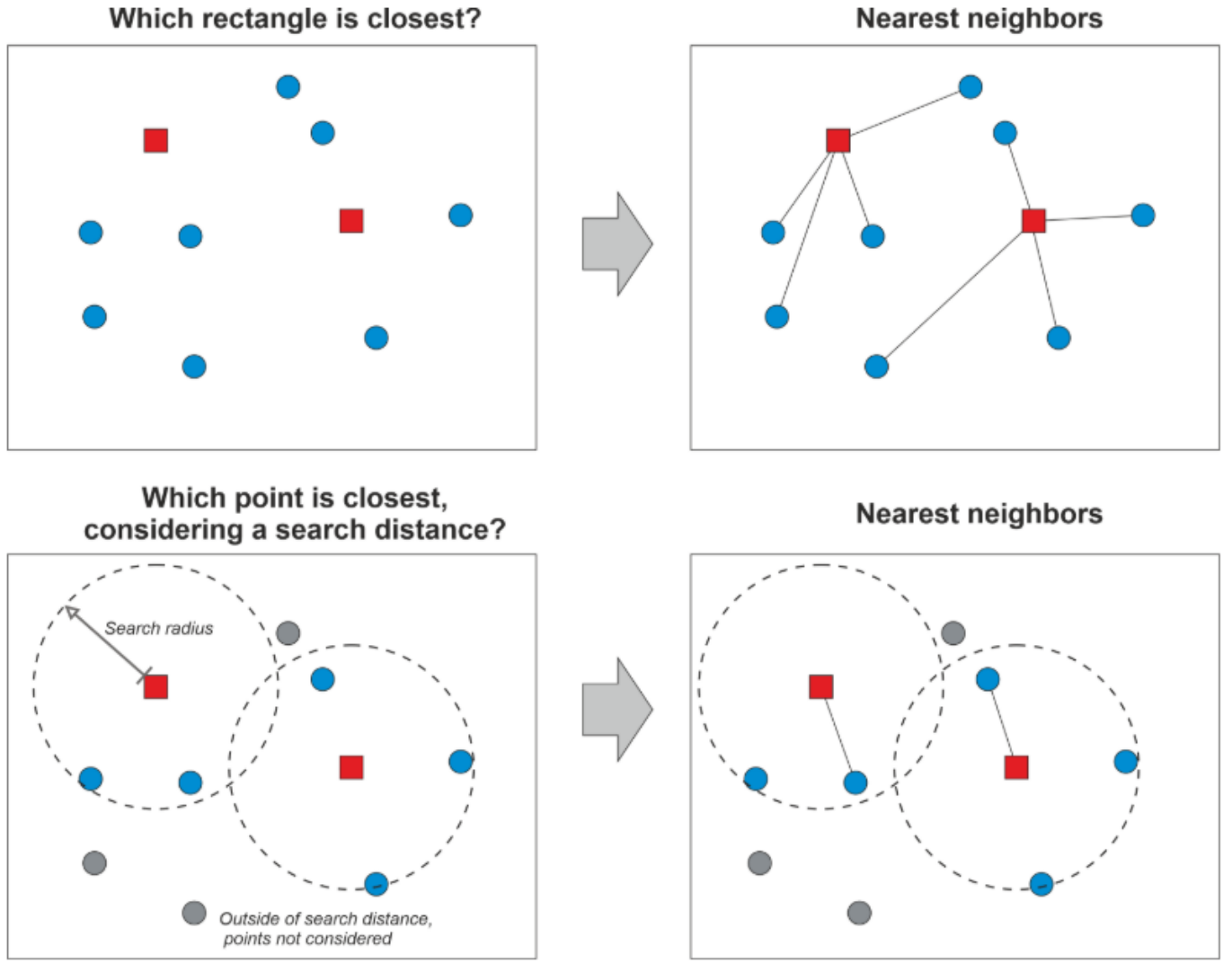


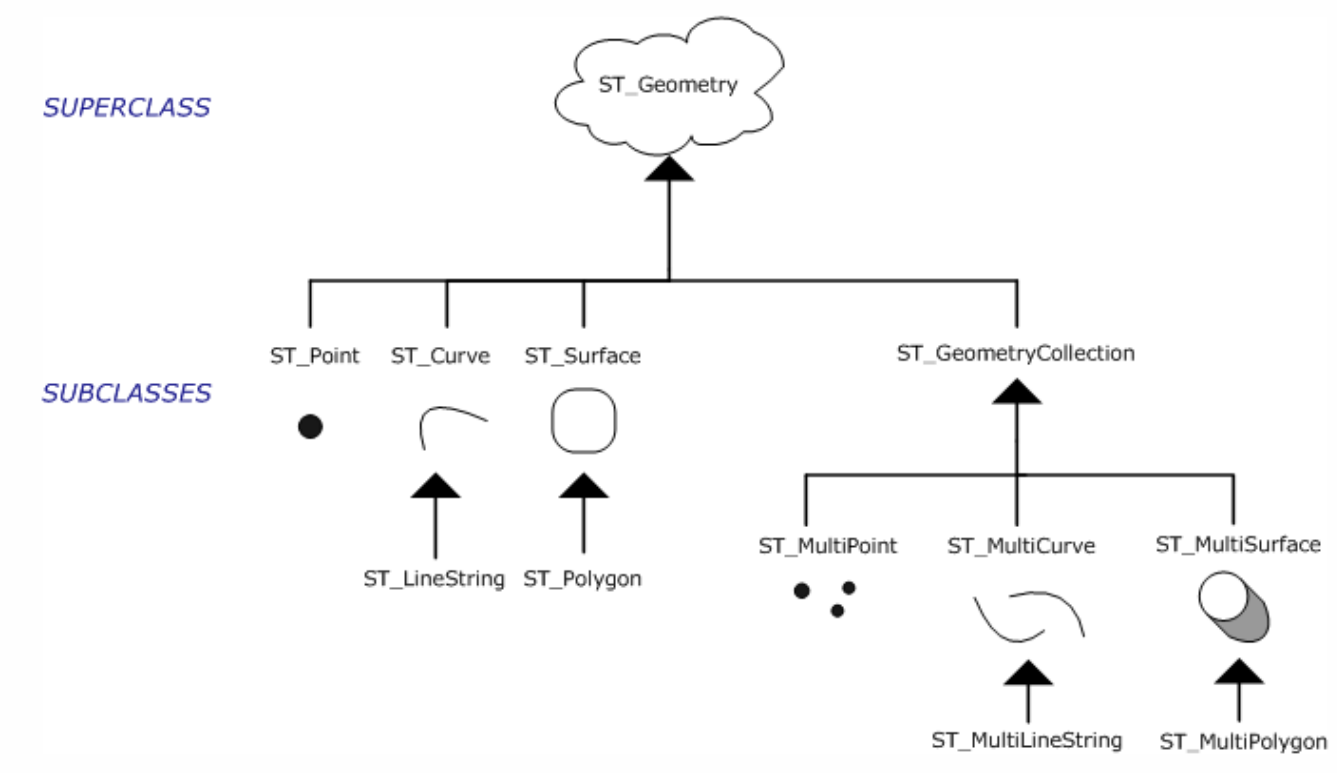
IMAGE SOURCE: HTTPS://PYTHONGIS.ORG/PART2/CHAPTER-06/NB/07-NEAREST-NEIGHBOUR.HTML

WEEK 08

- No Class Meeting
- Spring Break

WEEK 09

GEOMETRY PROCESSING



WEEK 10

- Raster Processing
- Raster output
- Raster Accessors and setters
- Reclassing functions

WEEK 11

POSTGRESQL AND ARCGIS OR QGIS

WEEK 12

- PostGIS with Python

WEEK 13

- PostGIS in Web Application