# Senior Design II – PIRM 2

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Client: Dr. Goce Trajcevski

# Interactive Evaluation of Shortest-Path Methods

This project aims to develop a system that enables:

- The use of various algorithms on a variety of different existing or given traffic network datasets to output detailed comparisons
- For use by educators, students, and assisting programmers.
- Facilitate the decision-making process when evaluating algorithms for a given project using detailed comparisons and performance metrics

# Backend - Server

#### Completed

- Server hosted on VM
- CI/CD pipeline integration through GitLab

#### Technical Challanges

• GitLab Runner / Docker registration with GitLab

#### •Working on / Goals

- Setup SQL database
- Setup Frontend REST endpoints
- Generate additional test for pipeline

## Backend – Algorithm Execution Driver

- Completed
  - Algorithm framework for implementations
  - Complete algorithm execution and comparison available for:
    - Dijkstra's algorithm
    - Thorup's algorithm
  - $\cdot$  Algorithm interfaces for SSSP and APSP
- Technical Challenges
  - Spring Boot user account implementation
  - Database structure
- Working on...
  - RESTful server
  - $\cdot$  Implementation for two APSP algorithms
    - Floyd-Warshall's Algorithm
    - Johnson's Algorithm

# Frontend – Home Page UI

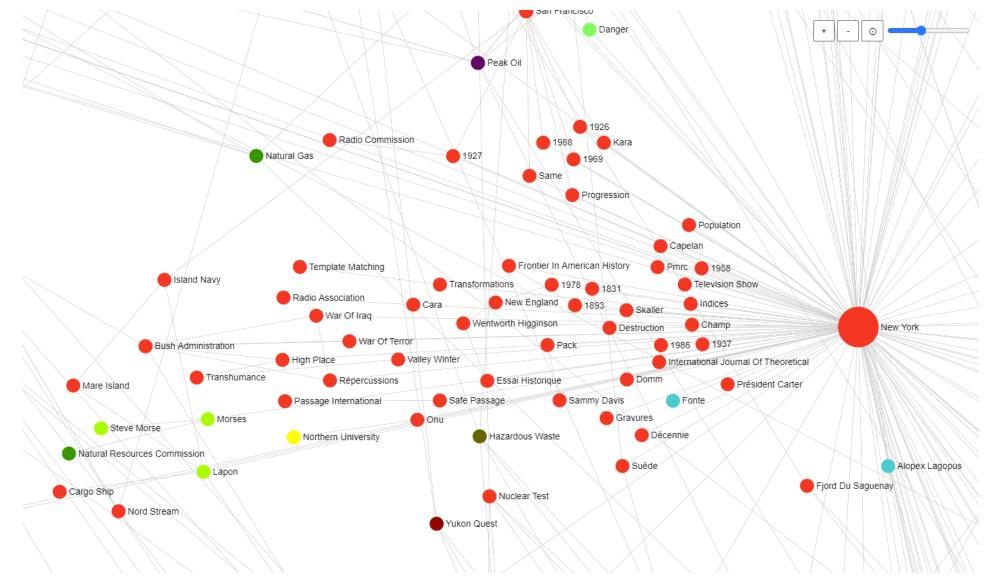
Interactive Evaluation	of SP	<sup>9</sup> Methods
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Select an Algorithm
Choose Algorithm(s)
Algorithm 1
Algorithm 2
Algorithm 3
Algorithm 4

Select a Dataset		
Upload a Dataset		
Choose File No file chosen		
Upload		

Start Now

# Graphology Visualization Page



## Frontend - Goals

- Implement the basic UI for the other pages within the website and improve the design/aesthetic of all the pages
- Add source and end point entry field for user when uploading a dataset on the home page
- Add HTTP requests for backend communication.
- Implement Visualizer using MapBox API to go alongside Graphology's visualization page.

## Frontend - Technical Challenges

 Need to update dataset section to include source and destination point entry fields

• Need to find a way to translate user data sets into Mapbox's predefined visuals.