

Senior Design II – PIRM 2

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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 Challenges**

- *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
 - Algorithm interfaces for SSSP and APSP
- Technical Challenges
 - Spring Boot user account implementation
 - Database structure
- Working on...
 - RESTful server
 - Implementation for two APSP algorithms
 - Floyd-Warshall's Algorithm
 - Johnson's Algorithm

Frontend – Home Page UI

Interactive Evaluation of SP Methods

Select an Algorithm

Choose Algorithm(s)

- Algorithm 1
- Algorithm 2
- Algorithm 3
- Algorithm 4

Select a Dataset

Upload a Dataset

No file chosen

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.