

# ECpE 492 – Bi-weekly Report #4

## Oct 11 – Oct 25

Project Title	Interactive evaluation of shortest path methods
Client & Advisor	Goce Trajcevski
Team	sddec23-14
Team Members	Alex Blomquist, Samuel Caldwell, Selma Saric, Yadiel Johnson

## 1 Report

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### 1.1 Abstract

The web server endpoints and controllers have been updated, allowing for dataset upload, processing, and deletion. Refinements and larger changes have been made to the algorithm visualizations and dataset parsing.

### 1.2 Work Breakdown

Throughout the last period, the team completed the tasks outlined on the GitLab repository assigned to each member via the Issues board. More information can be found in the Major accomplishments section below.

Among those, major developments included a robust visualization method for datasets and improvements to the common communication format for the frontend and backend.

On the frontend side, multiple pages have been added to the web browser, see the Major Accomplishments section for a list of all pages that have been implemented. A filereader has been implemented to parse through a user's uploaded text file describing the graph. The sigma.js visualizer has been completed, showing the results of the user's uploaded graph.

The ETG server has seen various changes to the GitLab runner in order to improve the pipeline structure. As well as the integration of various tests and security improvements in the process utilizing ssh-key generation.

On the web server side, several improvements to the HTTP endpoints have allowed for algorithm execution and dataset upload to properly interface with the Algorithm Execution Driver. Now that the implementations for the SSSP algorithms is finalized, it also facilitates information retrieval (for the algorithms and datasets alike).

#### 1.2.1 Major accomplishments

- Implementation
  - Sigma.js (a visualization library).
  - Graph parsing from text files.

- UI for algorithm selection on the frontend.
  - Page for uploading graphs
  - Page for visually rendering the graph
  - Page for displaying the metrics of the algorithms
  - Tutorial Page
- Implementation of the tutorial page within the frontend.
- Backend server pipeline using Docker.
- Additions
  - Single-source shortest path calculation refinements.
  - HTTP endpoints for algorithm and dataset operations.
  - Atlas tool added to sigma.js for improving the visual appearance of the graph.

### 1.2.2 Pending issues

- A reevaluation of user account and report persistence is in progress, wherein the team hopes to pinpoint how to persist these reports and if they need to be linked to a specific user to satisfy the design documentation, or if there are alternate methods to achieve the same goal.
- The Docker side of the server yielded some new issues leading to some extra time spent with the pipeline and the Gitlab-runner this week during testing. This led to some delay on the overall implementation of the SQL databases.

### 1.2.3 Individual contributions

Name	Individual Contributions	Worked Hours	
		This Period	Cumulative
Alex Blomquist	<ul style="list-style-type: none"> <li>● Continued development on pipeline and docker integration due to issues uncovered by testing</li> <li>● Worked on pipeline testing and fixed integration the GitLab-runners</li> <li>● Due to setbacks with the pipeline testing I made only minor progress on my work on SQL database storage in the backend</li> </ul>	18	76
Samuel Caldwell	<ul style="list-style-type: none"> <li>● Finished Implementation of basic sigma.js visual renderer</li> <li>● Finished implementation for parsing user files for frontend graph storage.</li> <li>● Implemented persistent storage for graph dataset across web server using cookies.</li> <li>● Implemented new sigma.js features for visual graph manipulation</li> <li>● Began implementation of page for displaying results of algorithm execution on the uploaded graph</li> </ul>	14	74

Selma Saric	<ul style="list-style-type: none"> <li>• Designed, implemented, and finished the tutorial page that explains to users how they can use our web app</li> <li>• Continued work on home page UI</li> <li>• Lead discussion and helped team members get tasks assigned to them for the next couple of weeks</li> <li>• Filled out meeting minutes document and Gitlab for project management</li> </ul>	10	74
Yadiel Johnson	<ul style="list-style-type: none"> <li>• HTTP endpoint improvements for server.</li> <li>• Refactoring and reorganization for backend.</li> <li>• Merge request for completed changes on GitLab (<a href="#">issue</a>).</li> <li>• Portions of <a href="#">Section 1: Report</a> and overall development for this weekly report.</li> </ul>	12	94

## 2 Comments and extended discussion

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### 2.1 Work Planned for Next Week

#### 2.1.1 Collective

The next major step for our project is to continue working on the UI of the home page by fully implementing the dataset file parser as well as allowing the user to pick starting and ending points for their dataset. We will also begin working on the connection between the frontend and backend. On the backend side of things, we will be working on the development of the SQL database and working on the APSP algorithm implementations.

#### 2.1.2 Individual

- Alex Blomquist
  - Finalize testing and integration of pipeline
  - Continue development of the SQL database
- Samuel Caldwell
  - Finish researching MapBox API implementations.
  - Continue to add new accessibility features for the sigma.js visual tool.
  - Begin implementing endpoints for frontend/backend communication.
  - Finish implementation of the results page for displaying the algorithm's metrics
- Selma Saric
  - Continue updating the meeting minutes document when we meet with our client
  - Update the Gitlab issue board as new tasks come up
  - Continue working on the UI home page layout
  - Start trying to connect frontend algorithm options with the algorithm implementations in the backend
- Yadiel Johnson
  - Implement new methods/endpoints for the RESTful API server.

- Adapt Floyd-Warshall's and Johnson's algorithms for APSP functionality on the AED.
- Set up logging on the application.
- Set up database storage for the application using the ETG server.

## **2.2 Summary of weekly advisor meeting**

Given our advisor was traveling for a conference and our lack of need for a meeting prior. Our weekly meeting is taking place this Friday, two days after the posting of this report.