

SOAP Final Presentation

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Table of Contents

- I. Introduction and Rationale for Choosing Module
- II. Map Page Before and After
- III. Module UI and Code Additions
- IV. Clustering Algorithm Comments
- V. coordTest.php: Calling the c++ executable
- VI. Challenges Faced
- VII. Future Work
- VIII. Insights Gained
- IX. Questions

Objectives and Rationale for Choosing Module

- **Goal:** Predict pollution level at a given location (using latitude and longitude)
 - Also include the option to use your current location
- Pollution level was approximated using a clustering algorithm
 - Algorithm was originally created by Thomas Borgia during the Mentored Undergraduate Student Experience (MUSE) at TCNJ
 - Algorithm was written in C++ and was not implemented with SOAP
- We did not want Thomas's work on the algorithm to go to waste
- This was one of the main features that Dr. Caruso wanted implemented

Map Page (Before)



Map Page (After)

SOAP
Data - Visualize - Help - Blog - Log In

Welcome to SOAP's Map Feature

Please search for properties by name or location in the search bar on the left. Click on a coordinate data point located on the map for specific information about the site, including contaminants and location. View demographic information, such as local minority percentage and income level, by clicking the button above the map on the left.

Go to Address:

Go to address...

Search Coordinates:

40.2720336

-74.7780916

Search Facilities:

Enter facility name...







Filter by County:

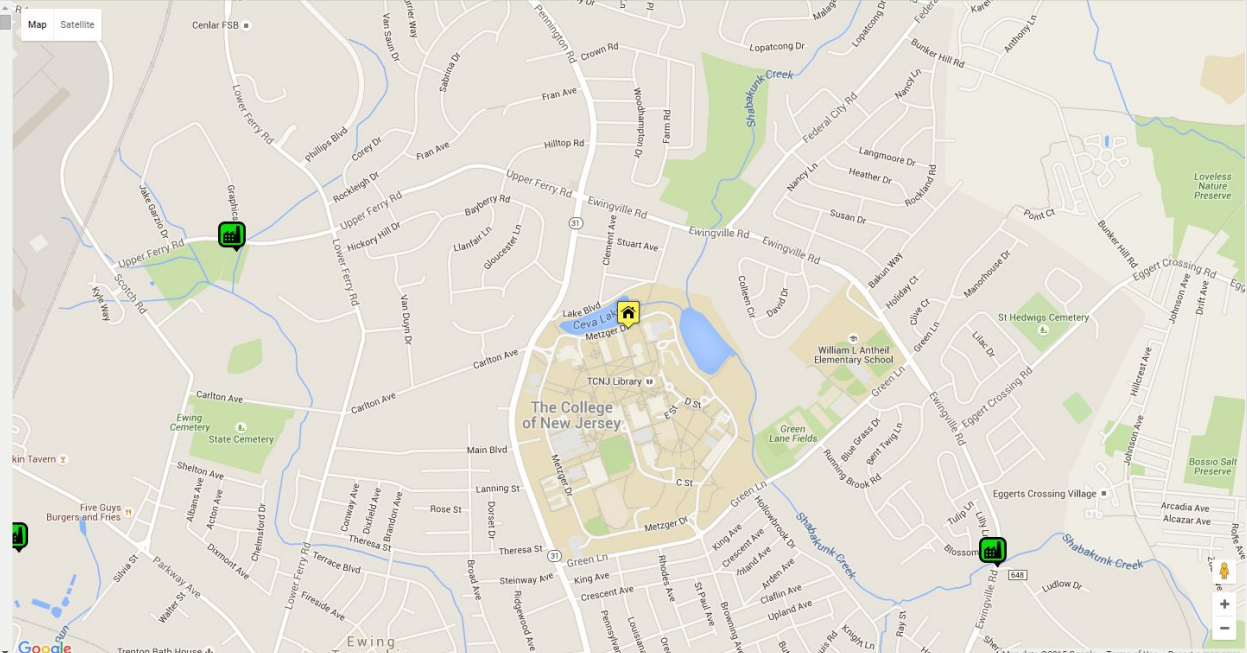
----- ▾

Filter by Danger Level:

☒ 1 ☒ 2 ☒ 3 ☒ 4 ☒ 5


Facilities List:


-  ECOLAB INC
-  CONTINENTAL PLASTICS CO CHEMICALS INC
-  CP CHEMICALS INC. AVENEL WAREHOUSE
-  GENERAL DYNAMICS ELECTRO DYNAMIC
-  PILOT LABORATORIES
-  PQ CORP RAHWAY



Latitude and Longitude Search Bars

Search Coordinates:

40.2720413 

-74.7780525 

Search

Use Current Location

Error Handling

Search Coordinates:



The page at csc415-team04.tcnj.edu says: ×

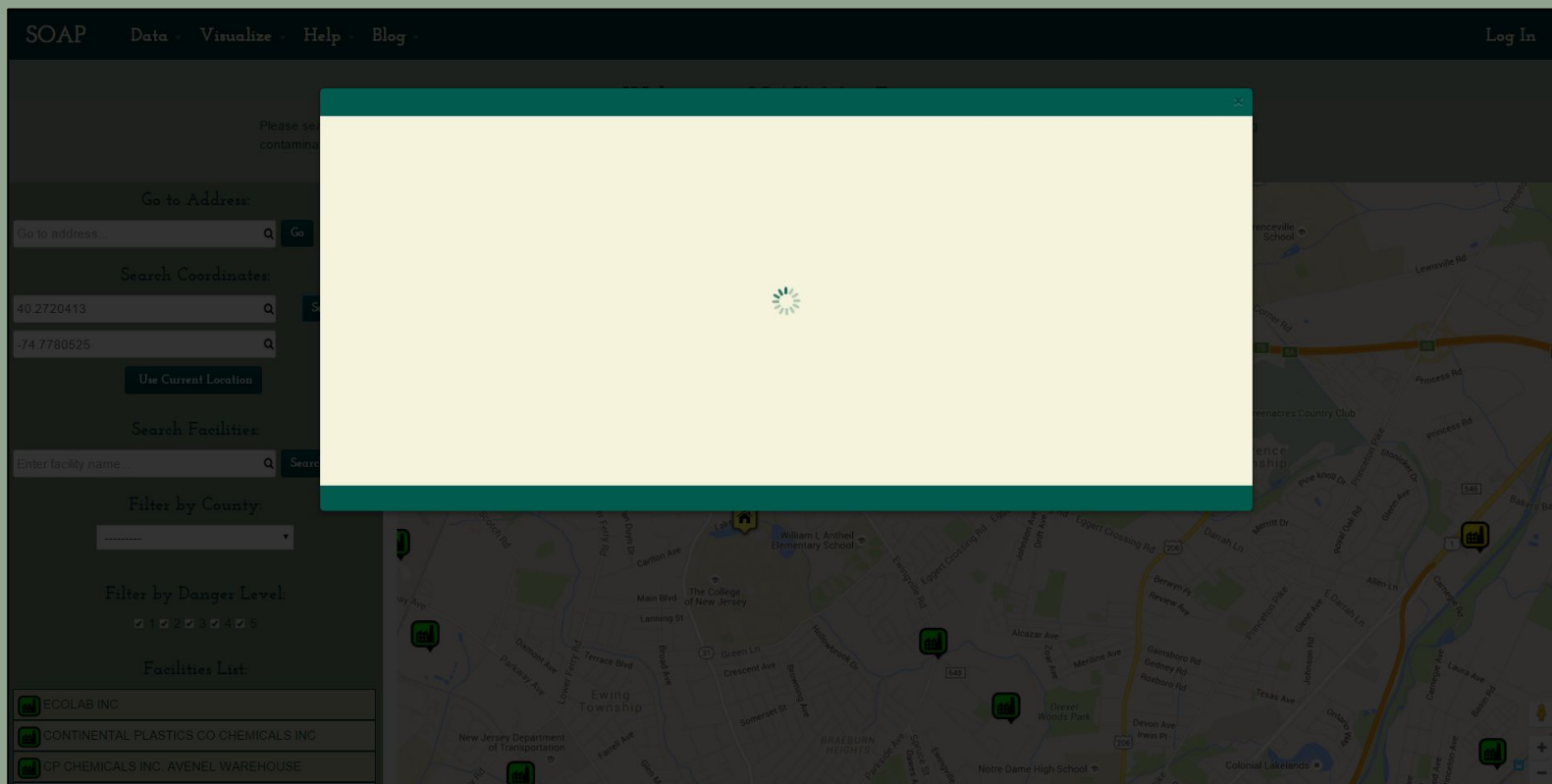
Please enter a valid longitude and latitude.

map.js: nonSitePredictor()

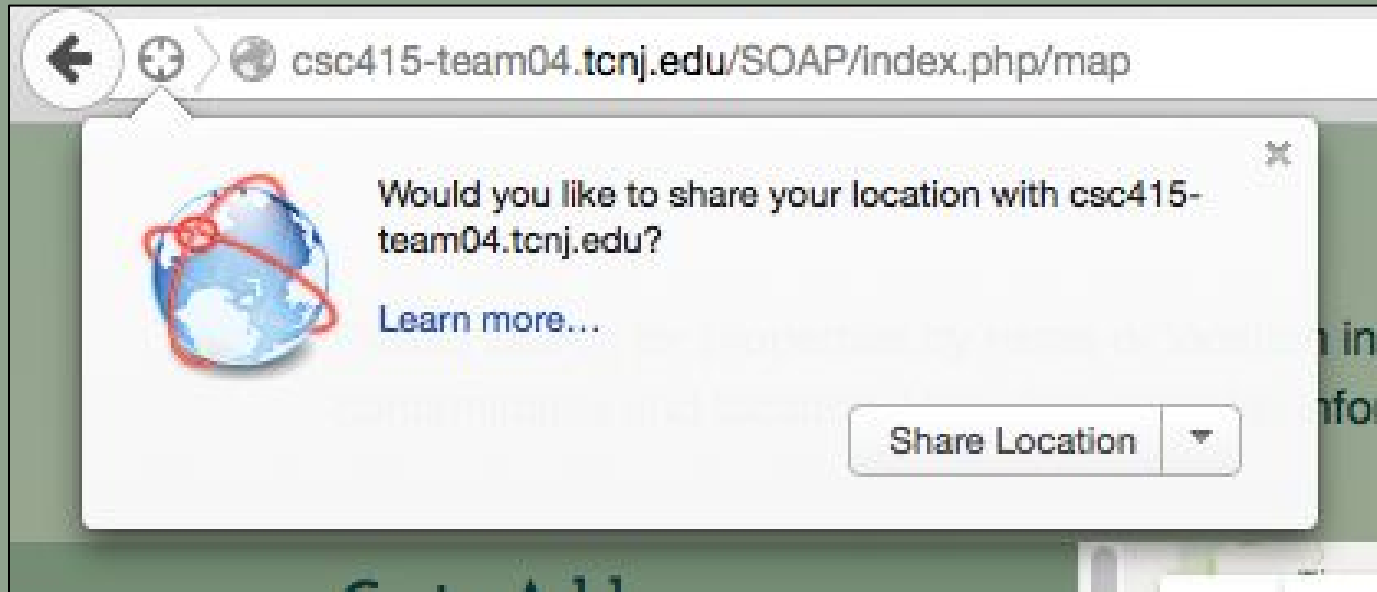
- Functions for handling button clicks (with error handling)

```
231 //Predicts the pollution at a location that is not a known facility
232 //Added Evan Melquist, Jeremy Leon, and Richard Levenson
233 //Modified by Hunter Dubel and Jeremy Leon
234 function nonSitePredictor() {
235     var latitude = document.getElementById("latitudeSearchBar").value;
236     var longitude = document.getElementById("longitudeSearchBar").value;
237
238     if(latitude !== "" && longitude !== "" && typeof parseInt(latitude) === 'number' && parseInt(longitude) === 'number') {
239         $('#mapModal').modal('show');
240
241         $.ajax({
242             type: 'get',
243             url: location.origin + '/SOAP/app/webroot/index.php/map/prediction/' + latitude + longitude,
244             beforeSend: function() {
245                 $("#div#mapModal div.modal-body").empty();
246                 $("#div#mapModal div.modal-body").addClass("loading");
247             },
248             success: function(response) {
249                 $("#div#mapModal div.modal-body").removeClass("loading");
250                 $("#div#mapModal div.modal-body").append(response);
251             }
252         });
253     } else {
254         alert("Please enter a valid longitude and latitude.");
255     }
256 }
```


Pop-up Window



Use Current Location



map.js: goToCurrLoc()

- Functionality for finding current location

```
66 //Centers the map on the user's current location.
67 //If nothing is entered, zooms out and centers on initial position (Trenton, NJ)
68 //SE Fall 2015
69 //Added by Zach Nelson & Hunter Dubel
70 //Modified by Richard Levenson.
71 function goToCurrLoc(position) {
72     mapOptions.initialPosition = new google.maps.LatLng(position.coords.latitude, position.coords.longitude);
73     setInitialPosition(mapOptions);
74     map.setCenter(mapOptions.initialPosition);
75     map.setZoom(15);
76     var latbox = document.getElementById('latitudeSearchBar');
77     var lonbox = document.getElementById('longitudeSearchBar');
78     latbox.value = position.coords.latitude;
79     lonbox.value = position.coords.longitude;
80 }
```

Clustering Algorithm Comments

- Helped us understand algorithm and will help future groups
- Chemical.cpp
 - Object that included chemical name, chemical ID, and total amount of chemical
- Facility.cpp
 - Object that included chemical count, facility ID, facility name, latitude, longitude, and if visited
- Clustering.cpp
 - Creates a vector of clusters and handles writing the information to files for each cluster.
- UpdateClusters.cpp
 - Read data in from facilities.csv and contains.csv and call clustering.cpp on this data
- PointAnalysis.cpp
 - Takes a latitude and longitude point and finds what cluster it belongs to
 - If it finds a cluster, all the chemicals for that cluster are accessed and pollution information is displayed

coordTest.php: Calling the c++ executable

- Includes function to call PointAnalysis executable file

17 lines (14 sloc) 510 Bytes

Raw

Blame

History



```
1 <!--
2     Created by Evan Melquist.
3 -->
4 <!--
5     Modified by: Richard Levenson and Hunter Dubel to include function to call PointAnalysis.exe file for point prediction.
6 -->
7
8
9 <?php
10     // Runs the PointAnalysis executable file to find the cluster info of the point
11     // Takes the latitude and longitude strings as input parameters and returns the cluster information.
12     function runPointAnalysis($lat, $long){
13         exec("SOAP/app/View/Results/src/PointAnalysis $lat $long" , $clusterInfo);
14         return $clusterInfo;
15     }
16 ?>
```

Challenges Faced

- Issues setting up the virtual machine
- Past merge issues in map.js and map.css files
- Managing the interactions between various languages
 - php, javascript, c++
- Lack of available documentation

Future Work

- Fixing custom pop-up window
- Fully linking the front end to the C++ algorithm
- Improving the algorithm

Insights Gained

- Deadlines are unpredictable
- Good communication facilitates efficient team development
- Easy things can seem difficult and vice-versa
- Documentation is important for current and future developers

Questions

