

Development of a Transportation Web Map for the CSULB Campus

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Introduction

Geographic information system (GIS) software can be used to create, manage, visualize, and disseminate geospatial information. This project focuses on the use of GIS software to do all of these things for the purpose of preparing an interactive transportation web map for the California State University, Long Beach (CSULB) campus. The goal of this project was to create a web page that could provide students, faculty, and staff at CSULB with effective public transit information. In order to accomplish this goal, it was necessary to create new GIS compatible datasets of nearby public transportation routes so that route information could be displayed in the interactive map. Once the data was created it was then successfully published through ArcGIS Online so that it could be incorporated into the web map. Overall this project was successful in achieving its goal.

Data and Data Sources

The data sources used for the project include the CSULB Maps webpage (<http://csulbshuttle.com/map>) and the Long Beach transit webpage (<http://www.lbtransit.com/WebWatch/>). New Bus Route and Bus Stop feature classes were digitized based on the information on these web pages, and were then stored and managed in a file geodatabase.

Dataset	Source
CSULB Bus Route	CSULB Shuttle Transit Map
CSULB Bus Stops	CSULB Shuttle Transit Map
LBT Bus Routes	City of Long Beach Transit
LBT Bus Stops	City of Long Beach Transit

Table 1: List of data and data sources used in the project

Timeline

Project Timeline	
Task	Deadline
Data Collection	13-Jun
Methodology	13-Jun
Literature Review	20-Jun
Presentation	24-Jun
Draft MXD	11-Jul
Revisions	11-Jul
Publish MXD as Service	18-Jul
Revisions	18-Jul
Enhance Service using Scripting	25-Jul
Revisions	25-Jul
Test Service	1-Aug
Revisions	1-Aug
Finalize	15-Aug
Submit	15-Aug

Table 2: Table displaying Project Timeline

By the time I selected this project topic I had only 7 weeks left to complete my work. I encountered delays in the project when I was publishing the feature classes on ArcGIS Online and when putting the HTML webpage together. If given the opportunity to work on the project again, I would provide myself with more time, I would make sure the data published correctly, and I would learn more HTML scripting.

Methodology

The methodology for the project consists of the processes taken to acquire the data, store and manage the data, and visually display the data in a web mapping application. The bus route and bus stop data used in the project was created by referencing the CSULB Shuttle and LBT web pages. The data was stored in a file geodatabase and was then published on ArcGIS Online in order to generate map services. Once map services for these datasets were published, the data was incorporated into an HTML webpage using the ArcGIS for JavaScript API. The HTML webpage was then customized using JavaScript and CSS to enhance the display and functionality for the user.

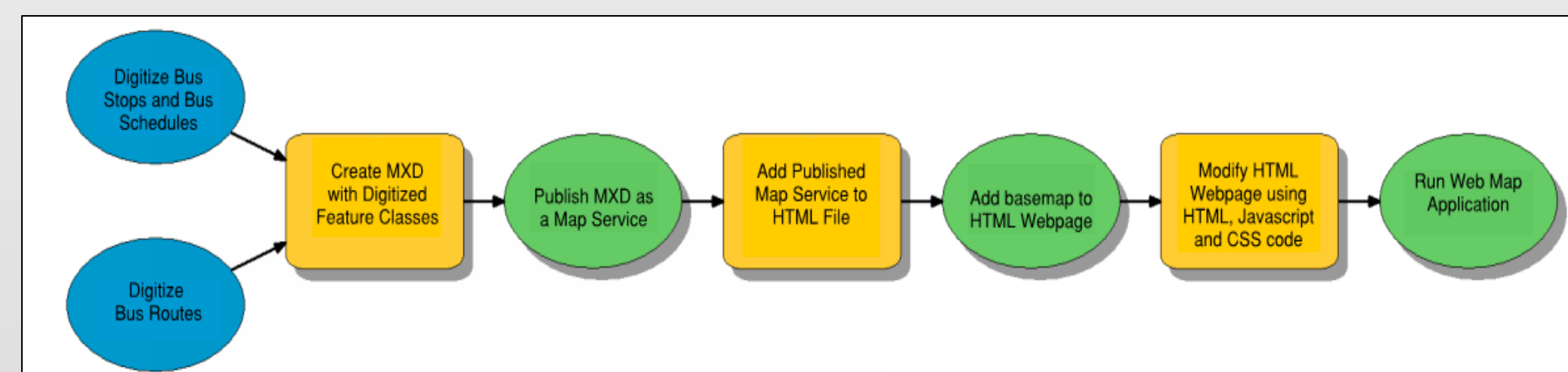


Figure 1: Spatial model representing the project methodology



Figure 2: Logos for the CSULB Campus Shuttle and the Long Beach Transit services.

Results

For the most part the project was successful in achieving its goal of producing a transportation web map for the CSULB campus. The purpose of the project was to determine whether GIS can be used to produce a web map application that was capable of routing the commute for those using the CSULB and LBT transit services on campus. Instead, the project produced a web map application that displayed the bus stops and bus routes for the CSULB and LBT transit services. This map is still a significant achievement because it allows users to zoom in and out as well as pan around the CSULB campus to view public transportation routes. Although the web map application is functional and interactive, the application failed to implement the features necessary to generate commuting routes for users and to display transit schedules. Additionally, it did not prove possible to include a real-time tracker that recorded the location of the CSULB Shuttles along with their current occupancy.

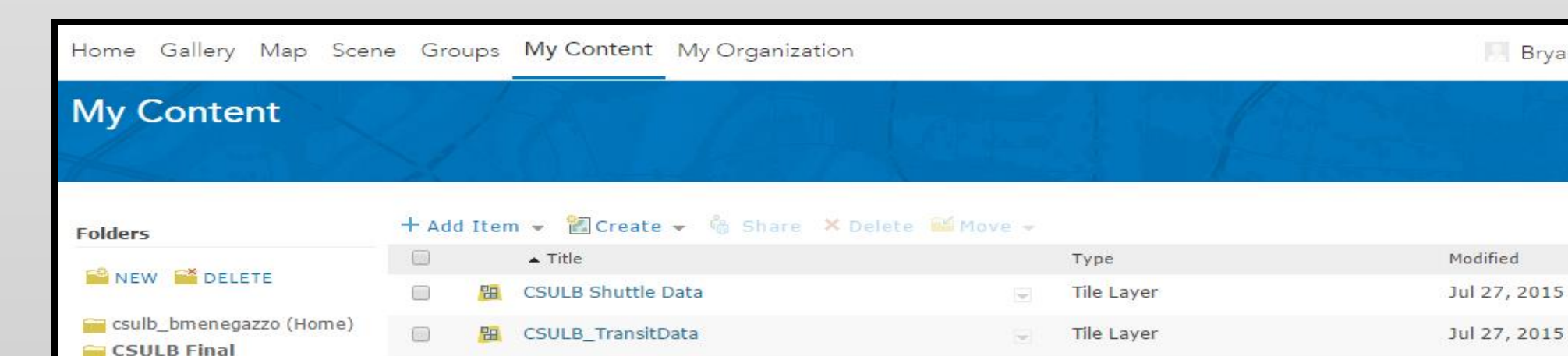


Figure 3: The image above displays the shuttle route data published on ArcGIS Online.

Discussion

Altogether, the project was structured and planned effectively. Each step of the methodology was carried in the correct order, the data was created and processed correctly, and the HTML webpage was created successfully. The original goal, however, was not feasible for the project given the time constraints. The interactive web map generated through this project is not ready for public use, but it does show that a GIS based transportation web map could be effectively developed for CSULB.



Figure 4: This image displays the HTML code that was written for the project. The HTML file is responsible for displaying the web map application and the relevant text.

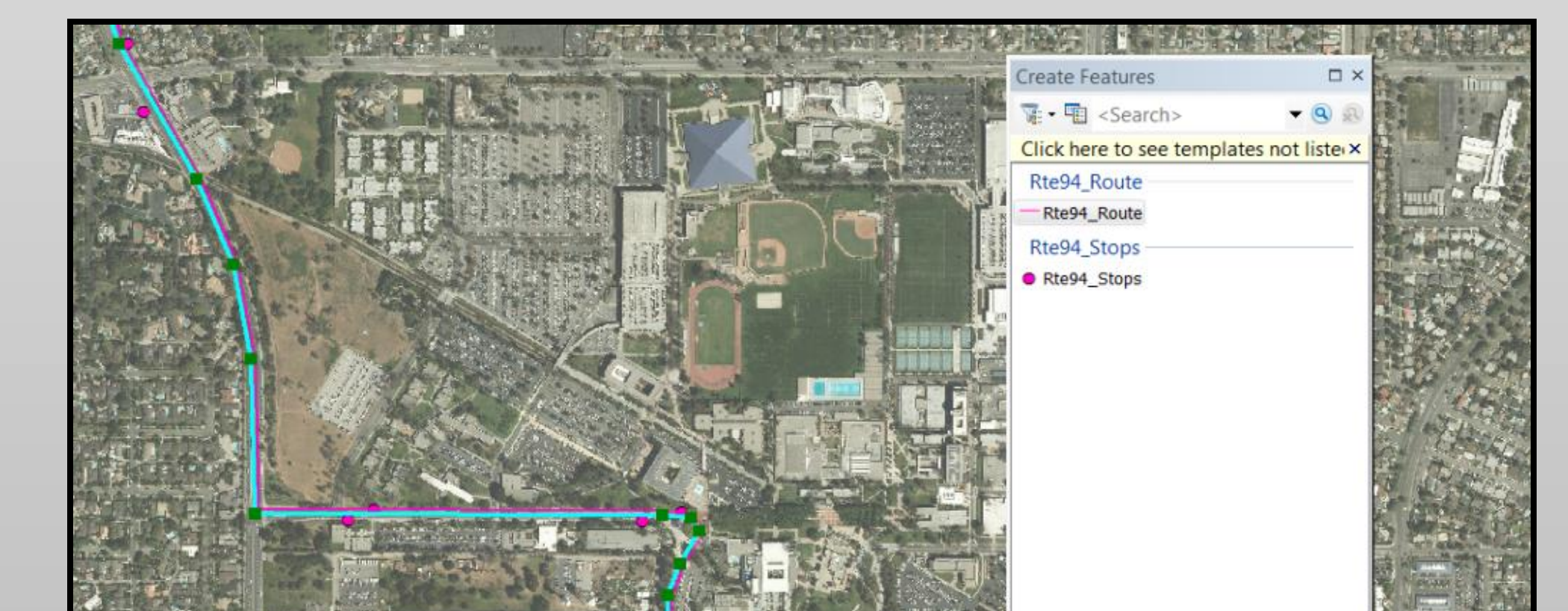


Figure 5: The image above displays how the data looks while being created on the Desktop ArcMap GIS.

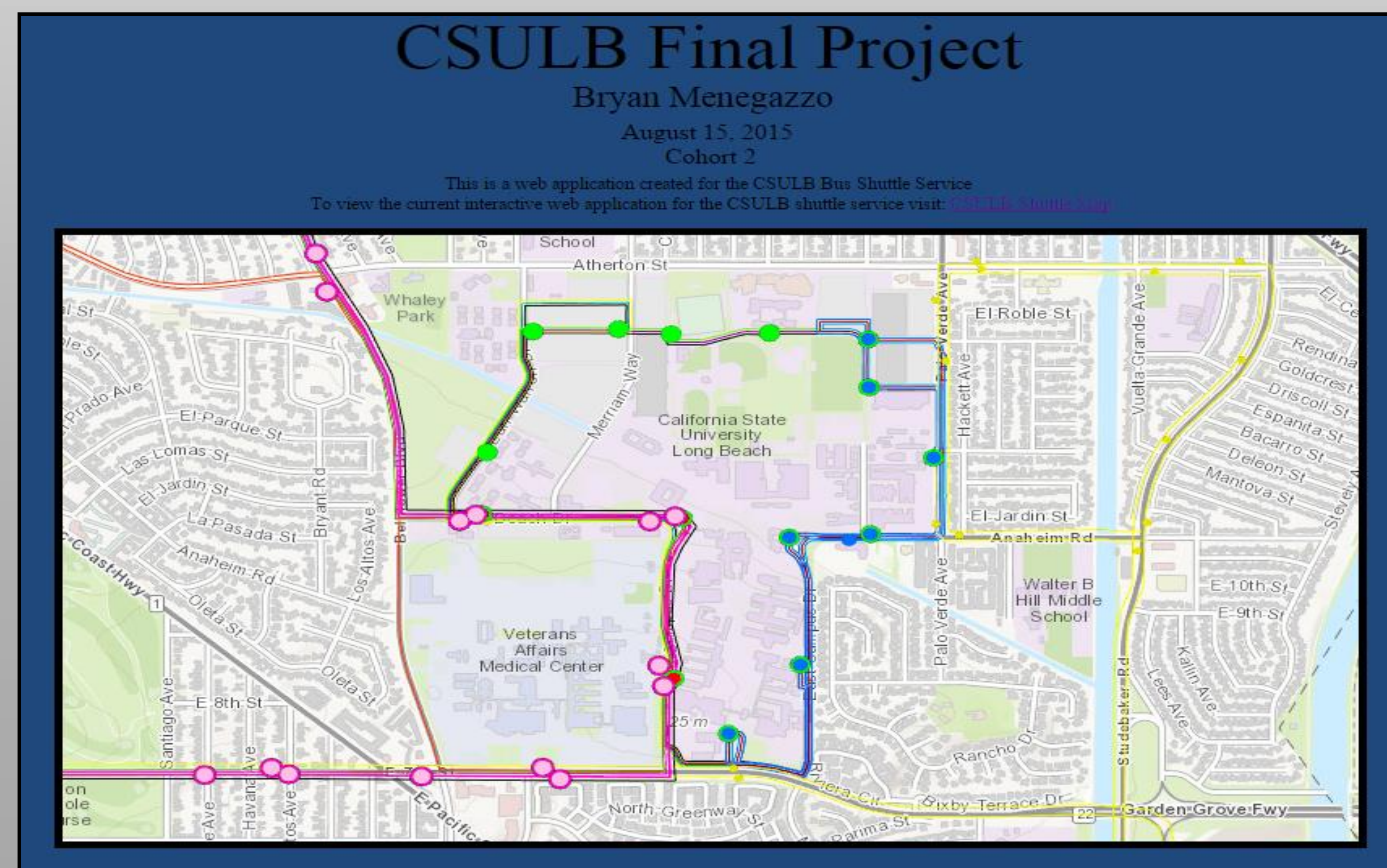


Figure 5: The final HTML webpage for the project showing the transit routes and stops around the CSULB campus. The web map is publicly accessible at <http://web.csulb.edu/~bmenegaz/index.html>

Conclusion

The most significant finding of the project lies in the realization that GIS can be used to create a web map application for transit services. Although one may see how GIS could be used in the development of a web map application, the method in which it is used may be unknown to many. Executing this project allowed for me to learn how GIS is used in web map development. Furthermore, the project allowed me to obtain a better understanding of how GIS competency can be improved by learning other software programs and computer programming languages. In order to create custom, advanced map products it is necessary to sometimes go beyond what the functionality that GIS software provides and look into learning new skills from related fields like web development.

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