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WWU Spatial Institute GIS Internship

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COLLEGE OF THE ENVIRONMENT



Internship Title: GIS Internship at the College of the Environment's Spatial Institute

Student Name: Ben Bruggen

Internship Dates: 12/01/2021 - 06/03/2022

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STUDENT SIGNATURE _____

A handwritten signature in black ink, appearing to be "Ben Bruggen", is written over the student signature line.

DATE: 06/07/2022

Internship Details

My internship with Western Washington University's Spatial Institute came about as a result of both my continuously growing interest and ambition in the field of GIS and my previous experience working with WWU faculty on a number of real-world GIS projects. While this internship specifically focused on the redesign of the WWU Campus Web Map, it also entailed a number of other campus-wide GIS projects and objectives, such as working with other institutes on campus to incorporate new information into the campus web map and working with the University Police Department to produce a general property map for crime reporting purposes.

Tasks and Learning Objectives

One of the key learning objectives I aimed to achieve with this internship was to further develop my data management skills. As the WWU Campus Web Map has been an ongoing project for quite some time, my involvement in this project required that I not only quickly familiarize myself with data and attributes, but also organize them in such a way that would ensure data quality and consistency for subsequent editing or for individuals who may work on the project in the future. Because the WWU Campus Web Map needed to contain up-to-date, campus-wide information, a significant portion of my work involved the compilation, organization, and validation of interdepartmental data.

One of our key partners in this project was the Sustainability Engagement Institute. Much of the institute's work involves the continual implementation of student projects related to sustainable features and amenities throughout campus — features that we wanted to be highlighted and made accessible on the campus web map. In order to incorporate this information into our spatial dataset(s), I had to work with excel spreadsheets and word documents that contained lists of sustainable features and amenities and their location(s) throughout campus. The key components of working with these spatial and non-spatial datasets

involved (1) validating that the sustainable project, feature, or amenity was still in place (and if actively being worked on, what the progress or status was), (2) checking the attribute tables in our spatial datasets to see if we already had record of it (and if our records didn't match what was shown in the spreadsheet or document, reach out to the appropriate individual or department for clarification), and (3) convert the sustainable project, feature, or amenity information to a spatial format by manually entering attributes under corresponding categories (fields) in our spatial dataset, such as "Water," "Energy," or "Waste".

All of these attributes were associated with point features representing buildings, departments, offices, points of interest, and other notable locations on campus. By adding attributes under specific categories (or fields) for each point feature, I was able to organize the data in a way that would allow for future efforts to make the campus web map more intuitive, such as the use of a "search" widget, which would, for example, allow students to search for a building and then display the building and its associated attributes (such as sustainable features and amenities).

I found that this experience allowed me to achieve my goal of becoming proficient in data management — both with spatial and non-spatial data. By being placed in a position where I had to utilize and fully understand spatial datasets, excel spreadsheets, and other documents — all of which were created by different people and contained different information related to features and attributes of locations on campus — I was able to develop strong data management methods and skills. Because much of the data was not only derived from a wide range of file types and formats, but also contained a significant amount of information that overlapped with what we already had in our spatial datasets, managing the data required meticulous organization and precise record-keeping to ensure data consistency, quality, and integrity.

Another key learning objective I set out to achieve was to better understand applications and concepts in GIS that I had little experience with prior to my internship. One project I was

tasked with (aside from the WWU Campus Web Map) was creating a map for the University Police Department as part of the CLERY Act requiring universities to report crimes on campus. The key components of this project that I carried out involved (1) digitizing a “Core Campus Boundary” polygon that delineates the campus crime reporting area based on both previous maps as well as WWU and city-owned parcels, (2) acquiring street centerline data from the City of Bellingham (and digitizing any missing streets on campus), and (3) using annotations to label the street address numbers at every corner that meets the Core Campus Boundary. In doing this, my map provided the University Police Department with a way to quickly and easily report the location of crimes on campus and in the near vicinity.

Although this project was fairly “simple” with consideration to the work I have done in other GIS courses, it entailed aspects and applications of GIS that required knowledge of concepts related to law enforcement — something that my previous education and experience has lacked. Furthermore, by completing this project from scratch and seeing it through from start to finish, I was able to gain a deeper understanding of the purpose and application of the map that I created — something that I have not had the opportunity to experience with larger, ongoing projects that I have worked with in the past.

Knowledge Acquisition — *Coursework vs. Internship*

The experience I gained through both this internship and the GIS courses I have taken at Western have undoubtedly allowed me to develop a strong skill set and well-rounded knowledge base in a wide range of GIS applications. However, both my internship and coursework have contributed in different — but equally important — ways to my overall understanding of the creation and application of knowledge in GIS. My coursework at Western has allowed me to gain experience in a large number of *broad* GIS applications, but because of this, there have been few opportunities for me to develop a deep and comprehensive understanding of a *particular*

skill, concept, or application. For example, I felt that a significant portion of the labs and projects that I have completed as part of my GIS coursework have entailed a rather “surface level” understanding of many broad concepts over a *short* period of time. On the other hand, the experience I gained through my internship allowed me to develop a deeper understanding and greater proficiency in *specific* skills, such as data management, over a *longer* period of time. In this way, both my internship and coursework have been instrumental to my understanding of the creation and application of knowledge in GIS. My coursework provided me with valuable, well-rounded, and necessary foundational knowledge, while my internship experience gave me the opportunity to build upon that knowledge through developing a proficiency and deep understanding of a specific aspect of my skill set in GIS.

Conclusion / Reflection

As a whole, my internship with the Spatial Institute allowed me to further develop my skill set by gaining experience in both familiar and new applications of GIS. While much of the work I completed through this internship entailed aspects of GIS that are not particularly of greatest interest to me, such as data management, the experience I gained was nonetheless extremely beneficial and has contributed significantly to the high level of preparedness I feel going into the professional environment. Furthermore, by spending a considerable amount of time developing skills as both a student and an assistant, I have learned the importance and power of teamwork, quick problem-solving, and the virtue of both sharing knowledge and acquiring knowledge with others. I highly recommend this internship to any and all individuals who are interested in exploring the vast number of applications in GIS — especially those that are being utilized right here on campus!

Statement of Hours Worked

For this internship (3 credits), I completed a total of 91.38 hours.