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DGM – 4410

Senior Project Reflection

**Global Review:**

To start I’d like to discuss the whole process of the final project from beginning to end in a concise way. It all started back in Marty’s class a year ago when he introduced the idea that our final projects would be based on practical implementations of our skills in other sectors of business. After collecting nearly 20 ideas of what might be suitable for the project Marty helped me settle on creating a digital map of the school.

At first, the idea was to create a tool for prospective students to have a way to navigate the school before classes started. You’d be able to see different classes and route the quickest way between them to have an accurate representation of what your schedule might look like. Similarly, the tool would ease the minds of those with anxiety about the school. However, it was deemed in part by me and Marty that the tool should serve more people. So, I decided that the focus would also be on out of country students, parents, investors/guests, and those with disabilities, etc. Deciding this put me into a frenzy of asset collection practices taking hundreds of photos of various objects. While I was doing this, I found out about a very compelling practice in the industry called photogrammetry. Thus, I decided that it would be a good idea to do some research on it while I was gathering assets. From what I found it seemed initially like photogrammetry was a great move. However, after some time of dabbling in it, I found that the render times and limitations of the software created too much overhead for the project.

After I found out that photogrammetry was not a viable solution I moved into more conventional means of producing assets. I started by writing down huge lists of assets that I would need and aspects of the building that was necessary to capture. However, this too was daunting because I would need to spend hundreds of hours meticulously measuring each small intricacy of every hallway. After failing to create assets quickly enough with this method I began asking for help. From here Marty pointed me in the direction of obtaining the floor plans and or blueprints of the school. Doing this was wildly successful and helped boost productivity exponentially. At the end of the first semester, I had all the floors mapped out for the whole school.

Next semester I began to run into some problems. For starters, I still had a tremendous list of assets that needed to be created for each building. Similarly, some security concerns were raised, and time constraints became more prevalent. After I was able to collect every asset that I had made previously it was decided that I should revert to my original idea of creating a student utility. So, I began to focus on a select couple of buildings that are imperative to students while also reducing my asset list to repeatable features. Doing this tremendously speed up the production of assets and buildings to the point where I would be able to finish on time.

Although I was making great headway on the project an opportunity opened to use my project for a more direct and deliverable purpose. Marty approached me one day after class and brought to my attention that a couple of professors were looking to create a space in the CS building. Within this space, I would showcase a proposal for a new construction project to be shown to the dean to make a better decision on the construction process. However, to do this, I would have to switch gears and cut most of the other work that I had created to that point. In the end, though it was decided that creating a tool that would help the school immediately would be a better choice. Similarly, it would be shown to big wigs in an industry that is not entertainment which in turn would also lead to more personal success. With this final decision, I moved through all my old assets and retrofitted them with new textures to be usable in a VR space. Ultimately, I was able to create a deliverable that will be shown to the dean by the end of the school year and before construction takes place.

**Positive Advancement:**

Creative Solutions:

During the last two semesters of me working on this project, I encountered numerous solutions that helped me in multiple ways. I will do my best to describe them in as detailed and precise a way as possible.

For starters, I found that photogrammetry was a very powerful tool that solved the problem of unique environment pieces. Countless rocks and trees would have been extremely difficult to create otherwise. While I ultimately didn’t go the route of using the software, I’d still like to mention it because it did help me create assets that were lifelike and had many interesting solutions as well. For instance, if I went down the route of photogrammetry my plans were to use the class computers to batch render multiple assets in one night. Essentially, I would gather multiple photos or video of objects and then render them overnight and come back to collect them and implement them into the scene. Learning more about photogrammetry also encouraged me to learn lots of computer tricks as well. Ultimately this was a good route to take because I now have a skill that I can say no one else has in my class.

Other solutions included not remaking assets that already exist. For instance, I mentioned earlier that I ended up getting floor plans for the school. Doing this was a huge help because now I didn’t need to sit and measure things out for each hallway and make numerous calculations and adjustments. All I had to do was sit down and recreate the floors from a precise reference.

Along the same vein of not creating things that already exist I also learned a lot about B2M. Essentially it is a program that uses photos to create tile able textures. By using this I was able to create countless lifelike textures from simple photos. Ultimately, I would have never been able to make the project look as good as it did without this knowledge.

Lastly, I also learned some great techniques about modeling environments from speed runners. Often when someone will speed run through a game they will break boundaries and see unintended objects. While watching a speed run I noticed that some environments in games were simply textures on flat boxes. Knowing this I was able to concoct my own solutions for very complicated scenes towards the end of the production process. For example, instead of modeling out a very detailed fire hydrant I could use a high-resolution picture to get the point across as effectively if not more so. I also was able to use this technique to make the outside of the building look realistic by using some panoramic photos that I created. I saved boatloads of time by doing which made other assets much better because I had the time to make them.

Successes:

Above is listed some of the bigger successes that I had in technical aspects of the project. However, there are many things that I succeeded in outside of the technical realm. For example, I learned programs that I would have never learned without this project. Before this project, my substance abilities were not that great. After the project, I feel confident in creating lifelike textures and have a great working knowledge of the suite.

Similarly, I also learned a huge amount of time-saving practices in Maya. I feel like I can now sit down and get numerous high-quality models done in Maya. Before this project, every model felt like a great undertaking. Now modeling is by far one of the most fun things about creating projects.

I also feel like I know 3 times as much about unity now. Before I knew quite a bit about unity. However, after this project, I really feel like anything is possible in unity. I feel like I could make a movie or a huge triple-A game now with the knowledge I have. (Or at least be competent in a team.)

Lastly, doing this project made me very hopeful for the future. I now feel like I have skills that can be useful in any sector of business. I feel like I could work for the military, private sector, and even for the sake of my own future business. Doing this project was very empowering.

**Improvement Areas:**

Pitfalls:

By far this whole project was 90% figuring out how I was going to do something and 10% was doing it. Knowing what I was going to do first made all the difference. For instance, If I knew I needed to make a texture for something I needed to know how and what the result would be. One such thing was the carpet on the floor of the building. I had no idea how I was going to take a large model like I had and make the carpet look decent. Substance Painter was making everything blurry and other solutions looked bad. It wasn’t until I investigated the unity side of it that I found out that textures scale in world space and not texile space. Many other small examples like this existed during my project where I tried to accomplish a task without having all the information to do it effectively. However, I was able to overcome this by asking nearly everyone in the degree for help and sifting through hundreds of online forums and videos.

On the other hand, the most challenging things and the biggest pitfalls were the human elements of my project. During my project, there was not a single moment where I didn’t have to serve four masters at once. Simply having an extra load from other classes put a crazy amount of strain on me mentally, physically, and emotionally. Considering this the first two strains make sense. However, you may be asking why it impacted me emotionally. In short, there were a lot of things that happened in my personal life. Prior to the project, I got in a serious car accident which really put me in a difficult place for quite some time. Along with that I constantly had to battle conflicting advice that often was nonoptional. To sum it all up I felt like the human element was by far the hardest challenge to overcome.

Mistakes:

I'll be blunt, I made a lot of mistakes in this project. I spent a lot of time looking at software and solutions that didn’t progress the project and only progressed me personally. I also had to cut a lot of things that I really wanted to make possible but were too far outside of my expertise to do. By far the biggest thing that was a mistake was trying to write my own navigation scripts without much help. I got far into the process and nearly had all the bugs fixed. However, I couldn’t use it in the end because of VR and the project shifts that were necessary. Because of this, I lost about 2 weeks of time for a mechanic that would have greatly improved the project but ultimately failed. Smaller instances like this exist in my project as well where I lost a day or two here and there because assets either wouldn’t work or were lost between the around five computers I had to use. Ultimately, I could go into every little mistake that I made but that would be a novel of a paper. However, I can say that I really would have liked the textures to be more precise and have the player able to visit every floor of the CS building. I would also very much have liked if I was able to create at least one more building to the quality that the result was.

Review of Improvement Areas:

I can really spend a lot more time working on my texturing abilities and rendering abilities. Through the project, those were my weakest points. I really felt that if I had known how to use substance before I started I would be a lot further along than I was. I similarly felt that I could have used some more practice working on things like lighting and asset presentation. Ultimately, I feel like these are the fields I should focus on in the coming months to make my portfolio look pristine.

**Global Reflection:**

I really learned more in this one year then I did the whole rest of the time I have spent at college. Not only did I learn personal skills, but I also learned a plethora of technical skills as well. I can say with confidence that doing this project really made things come into perspective for me as to the wide range that this field offers. It also gave me the confidence to push my work to levels that I never could have imagined Id reach this early in life. I really appreciate all the help that I have gotten from not only my professors but my fellow colleagues as well. Humbly I can say that I could not have gotten where I am without everyone who helped me through my project and pushed me to become a better technical artist. From here I can look forward to a bright future filled with good friends and fun projects.