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SNHU

CS 499 – Journal 6-1: Emerging Technology and Artifact Update

**PART 1:**

* **First, choose two technologies of interest. These can be at the center of computer science—such as new application programming interfaces (APIs), cloud computing, or augmented reality—or technological developments that will touch on or impact computer science, such as different types of biotechnologies or emerging energy sources.**

The two technologies of interest that I have chosen are the following:

1. different metaverse realities
2. bioinformatics

* **Taking each in turn, first, describe them and discuss their computer science aspects or components. Then, evaluate the likely impacts that you see for each technology: How will these change computer science or your career? More broadly, how might they impact humans, communities, or the world?**

When I speak about the different metaverse realities, I am talking about the following types of realities: virtual reality (VR), augmented reality (AR), mixed reality (MR), and extra reality (XR). These different realities along with the development of the metaverse is making huge impacts within the big tech industries. The impact has caused a major tech company, Facebook, to change their status from a social media and tech company to a metaverse company. The major big tech companies such as Facebook, Google, etc. have called the metaverse the internet 2.0 and I see the implementation of the metaverse to have a major impact when it will be completely open to the public. I believe the metaverse will have a major change in computer science and my career. First, I believe it will allow a new way of interacting between users and it will allow the development of virtual items that will affect the real world for example items such as NFT (non-fungible tokens) which some of these NFTs have sold for extraordinary amount of money and the possession of certain NFT has allowed access to private real-world events.

Next, bioinformatics is a combination of computer science along with biology to store and study biological data such as DNA sequences. Bioinformatics will be the future in studying and curing major diseases by allowing a computer program to run many scenarios to develop data discovering cures by having a computer system create these hypothetical scenarios for example the combination of certain chemicals and human cells in order to develop the probability of a successful cure and these computer programs will be a replacement for other tests such as animal testing. Bioinformatics will cause a huge impact on humans around the world because we will combine the data gathering and the speed of a supercomputer with the limitless imagination of a human being to help heal members of humanity.

**Part 2:**

* **Software design/engineering**

My project uses many files from libraries and files to be brought into the main.cpp file to create the design. For example, the use of shaderfiles were used to develop the 3D design of the objects in the 3D world and without these shaderfiles the program will not run due to an GL error. In order to not lose track of these shaderfiles, I placed a folder into the main project to retrieve these files whenever they are needed, and they can be used by anyone who has the project. Along with the shaderfile folder, I also placed an image folder with my jpg and png files to retrieve the images needed to wrap the texture around the 3D designs.

One thing I changed from my original project; I added all my header files into the include directory of my project. Including these header files, allows the project to automatically retrieve the files without them being manually placed into the project within the sln for my project.

* **Algorithms and data structures**

I added new algorithms and data structures to my project to make the design better. With my design, I added new commands to the camera.h file to allow camera movement to up and down using the Q and E key on my keyboard by using the following commands with the GLFW library:

Main.cpp

**Graphical user interface, text, application

Description automatically generated**

Camera.h

**Text

Description automatically generated**

Also, I added data structures such as staticMesh3D.cpp and h files along with vertextBufferObject.cpp and h files to give images in my 3D design better graphics. The following is an example comparing a design from an earlier design of my project with my new one:

A picture containing text, electronics

Description automatically generated A smart phone next to a smart phone

Description automatically generated with low confidence

Comparing the designs together, we can see the tile graphics are more realistic and more aligned in the newer version. We can also see the graphics on the duct tape and cellphone are a lot better as well when it comes to the shape and structure of it.

* **Databases**

1.

Logo, company name

Description automatically generated

2.

Text

Description automatically generated

3.

Logo

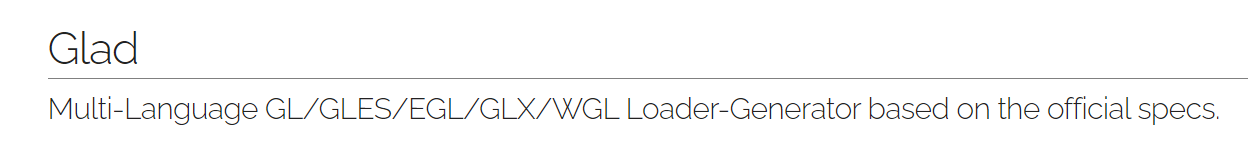
Description automatically generated

4.

A picture containing text, clipart

Description automatically generated

5.



These databases have set libraries which allow the use of many dynamic link libraries. These libraries contain many files such as hpp, h, c, and cpp files. These files are then allowed to be used with many programs when developing code. With the use of visual studios 2022 and cMaker, I was able to link these library folders and include folders into my project. In visual studios, these libraries are necessary to allow the creation of .exe programs, the development of a window, and math to create a 3D world. Throughout the first weeks of my capstone, my glew32.lib became corrupt and it was causing havoc to my project by creating errors and failures. Due to these libraries being open sources, I was able to get the newest version of my libraries and link the new libraries to my project. With these new libraries, I was able to add new algorithms and data structures to make my project even better.