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SNHU

CS 499 – Journal 5-1: Computer Science Trends and Artifact Update

**PART 1:**

* **Taking each trend in turn, explain its significance. How will it change the field of computer science? Will it also change the experience of consumers, workers, or citizens? If so, how?**

The first trend is the increase of higher quality in-vehicle computer system being implemented into different vehicles such as Tesla, Ford, Chevy, Audi, etc. These in-vehicle computer systems are following the “smart” trend to implement OS into objects such as “smart phones”, “smart houses”, “smart tvs”, etc. The implementation of an OS into a vehicle gives companies the ability to obtain information from “Big Data” and develop new apps and/or devices with the “Internet of things”. The implementation of these OS with apps and devices will create additional jobs by combining the field of computer science with motor vehicle designs. The addition of the OS into vehicles will continue to add to the field of computer science just as the “smart phone” by having a new device to mine data and create a new position to collect the data. The data can affect other entities such as government, companies, and/or individuals due to apps and/or devices affecting the OS in the vehicle. The data can notify companies about an accident and the data can assist a government agency, such as law enforcement, to locate a vehicle used in a crime. These are just a few ways how a higher quality version of an OS can be used when implemented into a vehicle.

The metaverse is also a new trend being used by many big tech businesses such as Facebook, Google, etc. The metaverse is changing the way companies and/or individuals conduct interact with one another by having virtual meetings with employees, training new employees, selling product to customers, online meetups, etc. The metaverse is the next step in computer science and the internet because of the new devices and software required to give individuals the ability to experience a different way to interact and view the different sets of reality. The metaverse will unlock a new way of life by the development of different technologies such as full dive body suits that will cause consumers and citizens to obtain the newest version to enhance their abilities in the metaverse.

* **Next, explain how it may fit with your career interests or aspirations**

I have already seen the increase of in-vehicle computer system abilities during my line of work when I worked on active patrol duty and currently in the investigation bureau. I have been able to find suspect(s) who have committed a crime involving a vehicle by using the navigation apps in the computer system to locate areas where the vehicle was turned on and off. For example, I assisted in a stolen vehicle case with my partner, and we were able to use the in-vehicle computer systems to track the vehicle and determine how fast the vehicle was traveling in the city. We were able notify the closest local agency to the vehicle and then we were able to shut off the vehicle with the use of the victim’s cellphone to capture the suspect of the stolen vehicle. The computer system in the vehicle has helped law enforcement in solving crimes involving the use of the vehicle by giving information a case sometimes desperately needs in order to be solved.

The metaverse is an area that I believe will affect my future career when it comes to cybersecurity. Many companies, such as Facebook, are in the process to become a metaverse company and their new way in developing revenue will be in the metaverse. With this new form of profit, there will be many, new, advanced criminal activities in order to exploit any flaws in the system to allow hackers access to information and/or valuables. Throughout the years, we have seen hackers obtain information, such as Blueleaks, and/or valuables, such as Bitcoin, by breaking into a system and stealing the data. With big tech companies using the metaverse, there will be new career opportunities to prevent these attacks from hackers and there will also be new opportunities to investigate these attacks on markets that will be established within the metaverse.

**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

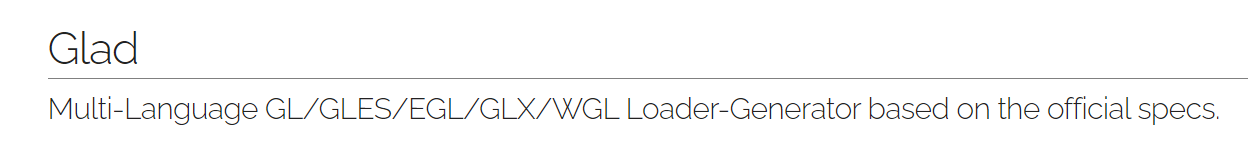
Description automatically generated

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.