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SM6P07NI Digital Media Project

20% Research and Proposal

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I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a mark of zero will be awarded.

Abstract

This report is about the first part of a four parted all year project. It is about the research and development done for the creation of the final output of Digital Media Project along with client proposals. This report thoroughly talks about all the things required and done to make the final output possible from the basic concepts too the grand scale production; everything is covered along with the letters along with the idea itself.

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Exhibit A: Research

□ ***INTRODUCTION: -***

Amidst the COVID-19 pandemic, almost every industry experienced severe negative impacts, including tourism and previously thriving markets. However, the media industry stood out as an exception, with some claiming it even grew exponentially due to the pandemic. This report focuses on the broader scope of the media industry, encompassing not only the glitz and glamour of show business but also the diverse range from simple digital art on platforms like TIK TOK to multimillion-dollar projects on various streaming platforms. The pandemic shifted the spotlight to this industry, emphasizing its significant influence.

As technology in the modern era advances, the media industry keeps pace with it. Emerging artists are finding innovative ways to showcase their creativity, utilizing digital tools instead of traditional methods like paintbrushes. They create videos with remarkable clarity and produce virtual worlds within the realm of zeros and ones.

This project specifically revolves around the creation of a 3D environment for a story, complete with characters, their scripted actions, and accompanying sounds and effects. The primary objective is not only to realize this envisioned creation but also to ensure the media industry recognizes its value, intending to sell the project to potential clients. The process involves several stages, such as Conceptualization, Research and Development, Pre-Production, Production, and Post-Production. This report concentrates on the initial phases of Conceptualization and R&D.

In a world where technologies like 3D AVATAR 2 can be experienced without 3D glasses, it seems inevitable that we will eventually achieve a seamless integration of virtual worlds with our reality. This future possibility includes virtual trees producing virtual oxygen, entire virtual ecosystems, and even virtual buildings and food. However, realizing this potential relies on the continuous effort to push boundaries and "Work," given the limitations imposed by the current state of technology.

□ ***LITERATURE REVIEW***

To make a Third Dimension object and animate it, first we need to know what exactly is a '3d' inside of a computer. Even for that to comprehend we must first know what is a third dimensional object mathematically. As we have learned for our early educational years, 3d is something consisting of three different directions perpendicular to each other in so called space and time.

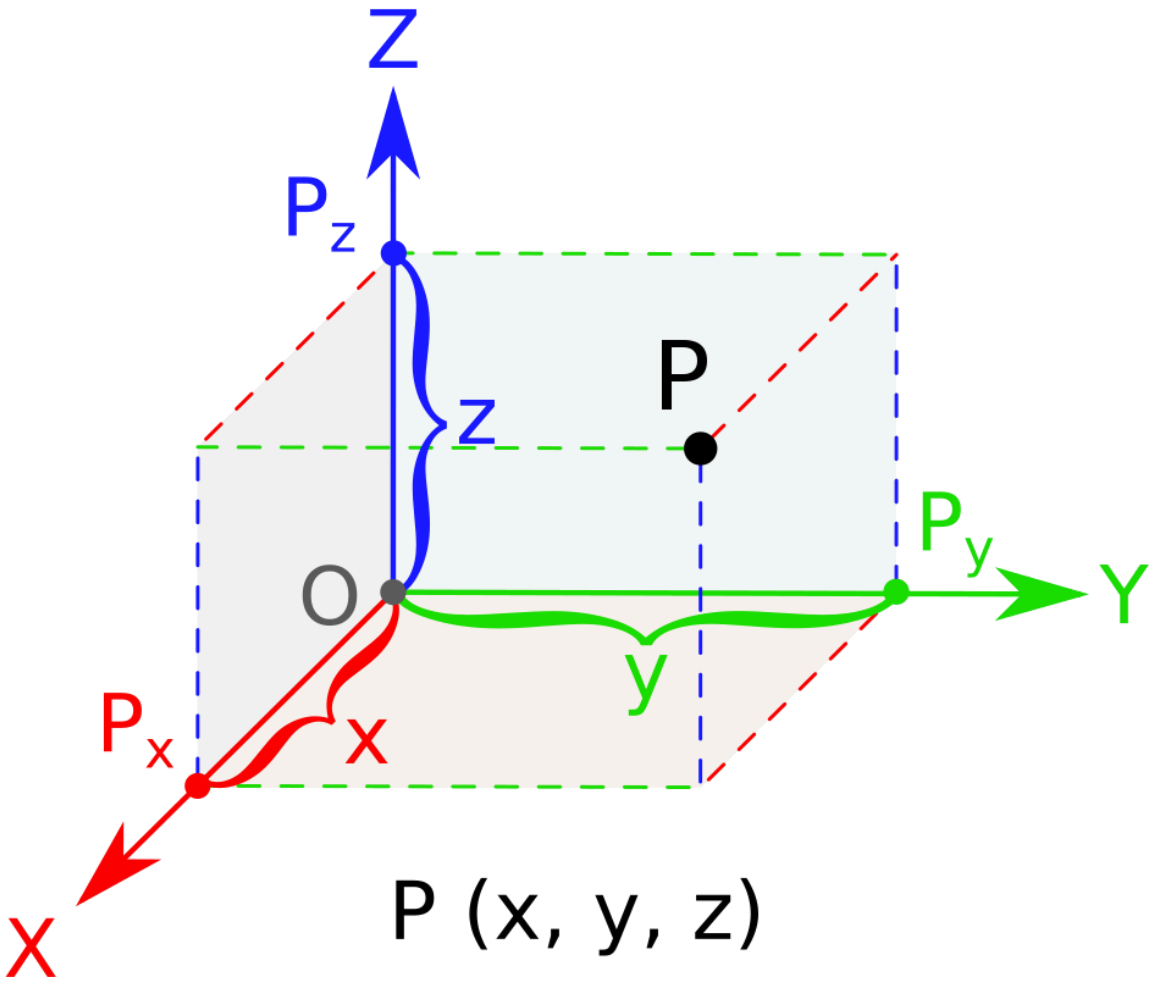

Figure 1. 3d concept in Space and Time (Falcorian, n.d.)

Suppose our earth has 3 different values which are perpendicular to each other in space and time, then our earth is a 3d object and the exact value or the location of our earth is known and then given to a machine(computer) in machine understanding i.e. 01

At first we need to know what how machine reads 3d data. It does that by a simple data calculation technique called **coordinate system**.

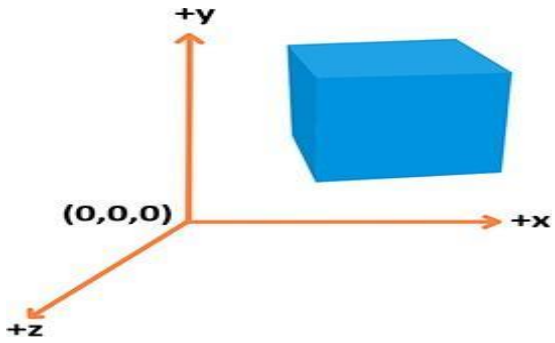

Figure 2. Coordinate System (MDN contributors, 2021)

3D essentially is all about representations of shapes in a 3D space, with a coordinate system used to calculate their position. Generally, we use the right-hand coordinate system — the x axis points to the right, the y axis points up, and the z axis points out of the screen, as seen in the above diagram (MDN contributors, 2021).

Figure 3. First 3d object in computer (McDonald, 2020)

To further explain this, we need to see an example which was done by Edwin Catmull and Fred Parke who were the founders of Pixar (Wiki, 2021). They created a computer-animated short film called A Computer Animated Hand that introduced 3D computer graphics to the world. This feat was achieved when Edwin drew 350 triangles and polygons in ink on his hand and then digitized and laboriously animated the data in a 3D animation program that Catmull actually wrote (McDonald, 2020).

♦ Objects

A Vertex is a point in space having its own 3D position in the coordinate system and usually some additional information that defines it. Every individual vertex has its own different attributes like position, color(RGB), direction, textures. By manipulating these values, we can create our own 3d object.

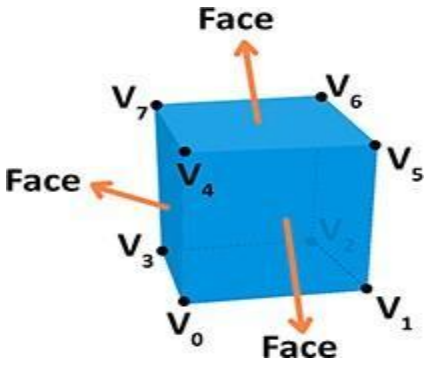

Figure 4. Cube 3d (MDN contributors, 2021)

♦ Render Pipeline

It is a process of printing digitally the values we want to see in 2d format from the 3d objects and its attributes. Basically, it converts 3d objects to 2d pixels format.

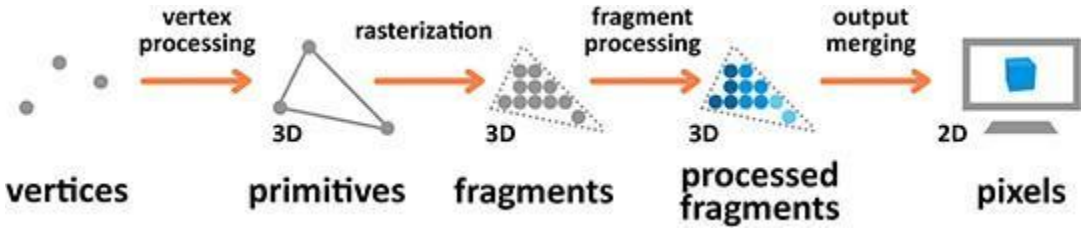

Figure 5. Rendering pipeline (MDN contributors, 2021)

After gathering all the necessary data from the 3d primitives, it is converted to pixelformat.

The things explained above talk only about how 3d technology works, but how does it come out as a 3d animated video? Well, unlike the above full technical process, we get the video output by a half technical and half creative process called **VFX Pipeline**, this is where the real fun starts.

♦ VFX Pipeline

VFX pipeline is a process of different aspects which makes the 3d video possible. It is categorized into 3 steps, Pre Production, Production and Post-Production

• Pre-Production

In my view, this stage of the process holds the utmost significance, as it directly influences the overall quality of the project. When you possess a strong script, well-crafted storyboard, and thorough research and development, it lays the foundation for a successful project.

Initially, the story concept is established, followed by meticulous scriptwriting (often involving multiple revisions). Subsequently, a detailed storyboard is created, and substantial time is invested in conducting extensive research and development to determine the project's direction and approach.

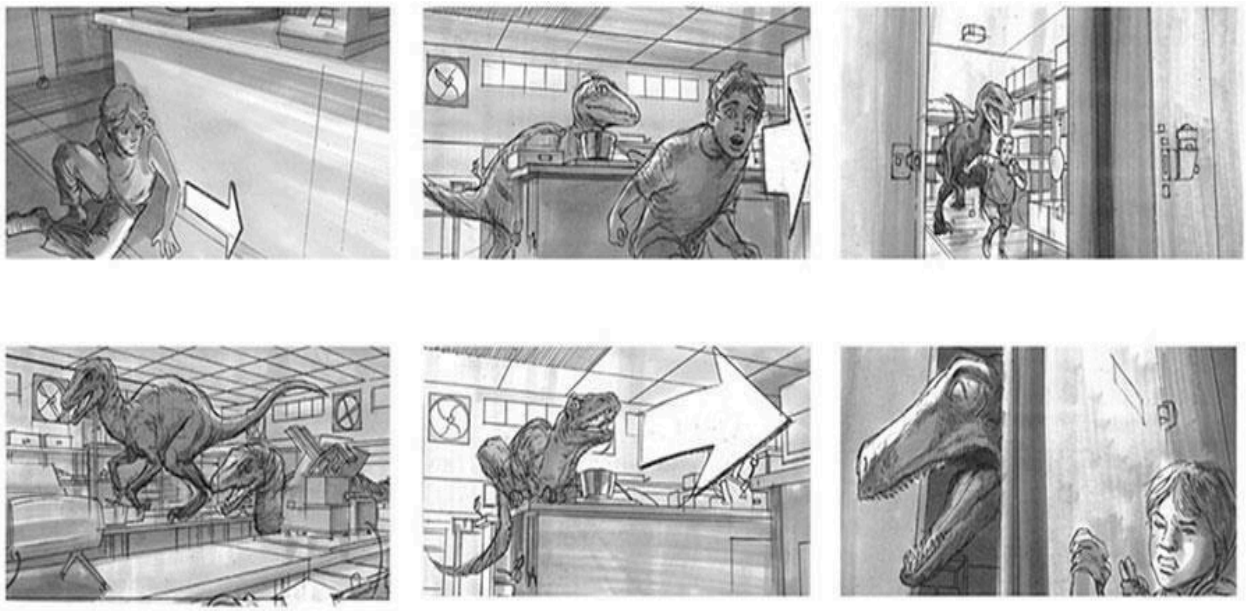

Figure 6. Storyboard (Fitzgerald, 2018)

- Production

The tasks that need to be completed following the pre-production phase involve a mixture of imagination and hard labor. They are:

- Modeling

All of the 3D objects that will be seen in the finished product must be manually given shape utilizing various 3D tools and software.

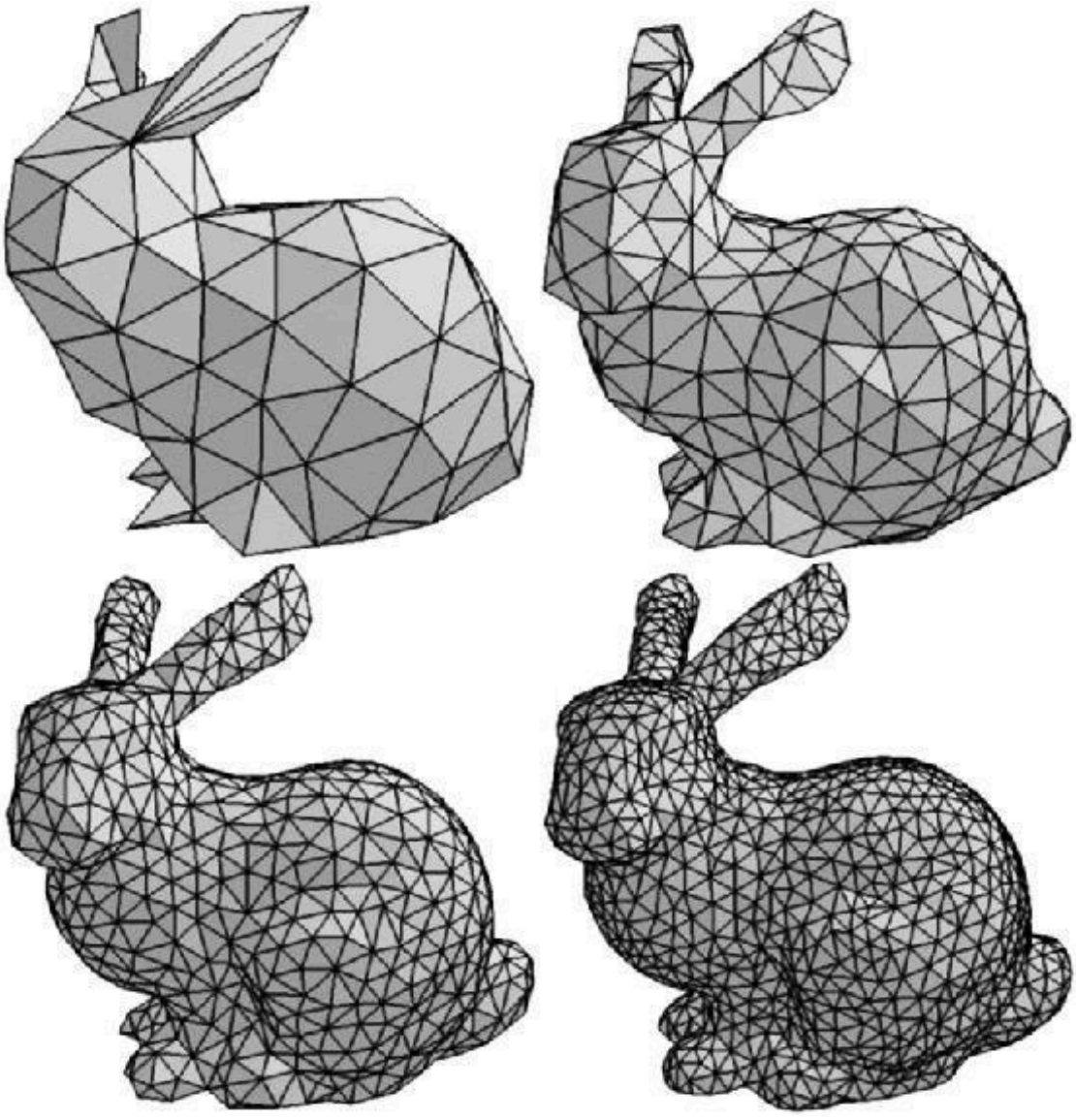

Figure 7. Modeling process (Novaković, 2017)

Texturing

Texturing is described by Media Freaks as "The art of giving clothes to the 3D models" (Chang, 2019). Technically speaking, when a 3D model is made, the outer portion is layered with RGB values, producing various illusions for various circumstances

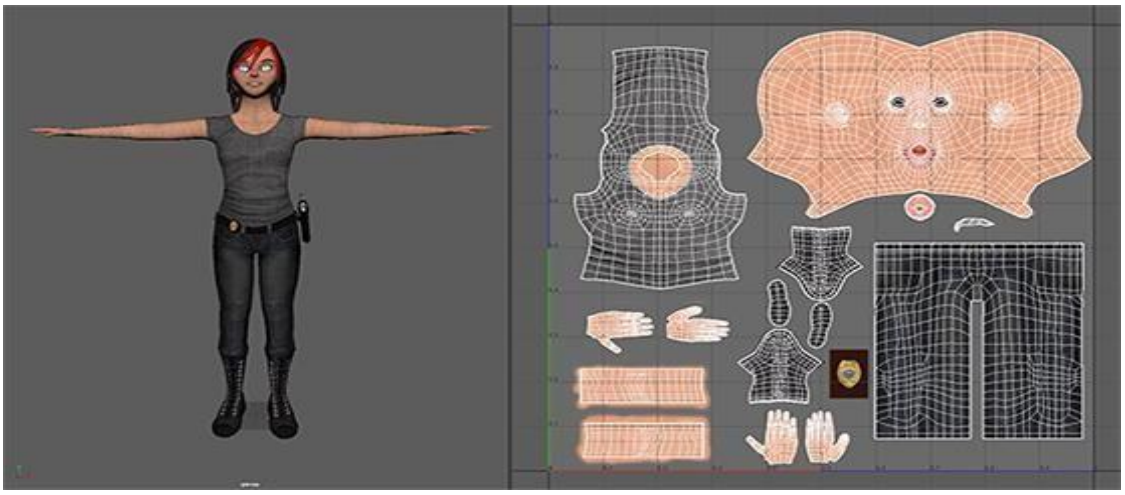

Figure 8. UV mapping and Texturing (UVs, 2020)

Rigging and Skinning

Rigging is the process of giving the primitive model's exterior body a skeleton, which enables it to move in all (x, y, and z) directions by giving control values and real control to the corresponding vertices.

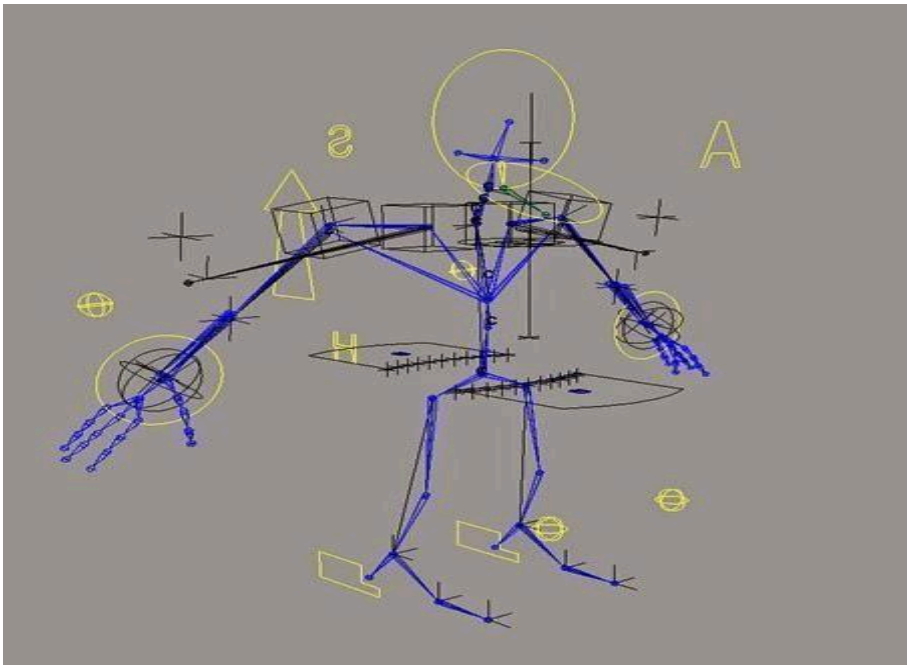

Figure 9. Rigging Skeleton (SKY, 2019)

The process of linking the newly produced rig with the appropriate model primitive, known as skinning, causes the model to move in accordance with the rig.

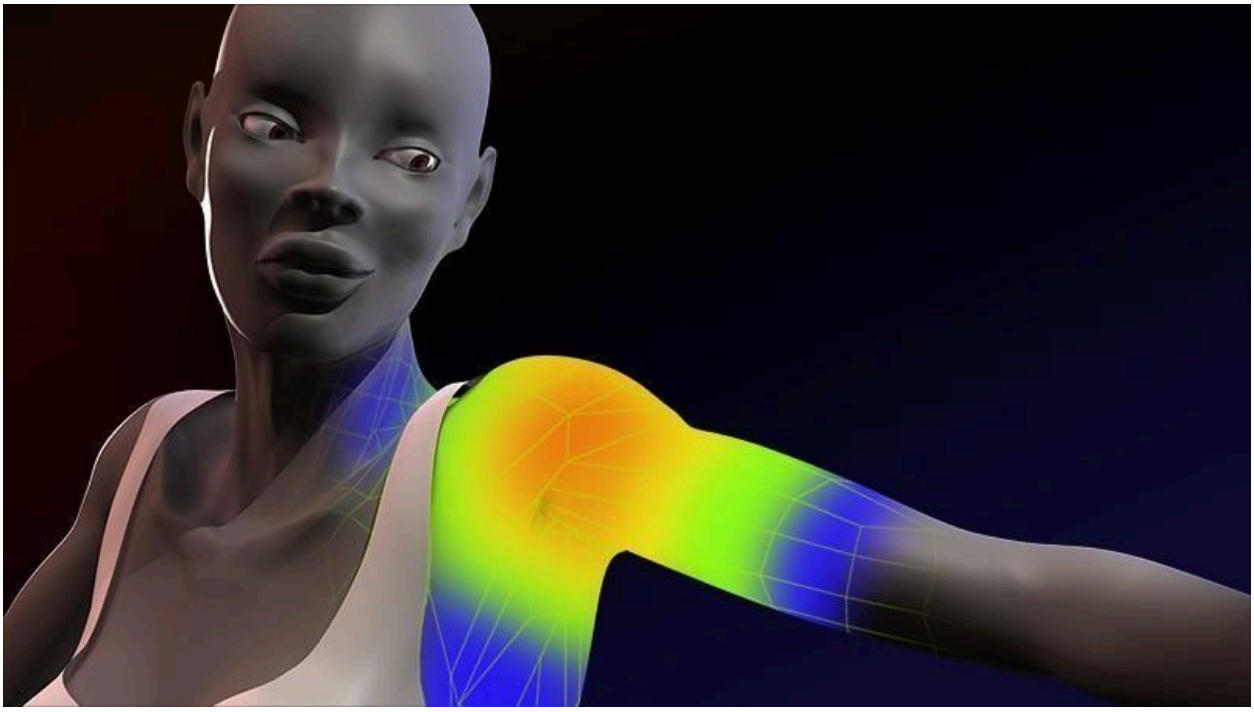

Figure 10. Skin area controlled by rig (Pluralsight, 2014)

Animation

The 3D production process has completed everything that has been done up to this point. Giving life to a 3D model's dead form is all that animation does. A constraint or vertex is given a value at one point, and then another value is provided to the same object at a later time since animation is directly proportional to time, which means it is based on time.

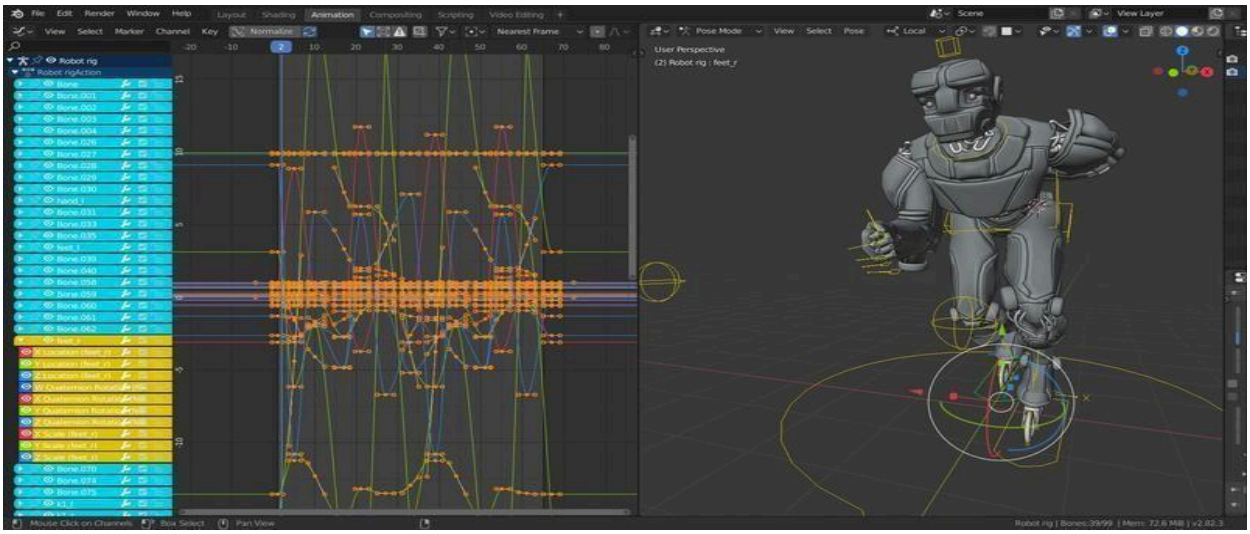

Figure 11. Animation Graph Blender (Digital manufacturing experts , 2005)

• Post-Production

The post-production stage is where all the technical elements developed up to this point are combined and assembled to give the finished film the necessary "soul."

Camera Composition

This section of the 3D pipeline is the most underappreciated because all the artists concentrate on the more technical components of the pipeline, such as modeling, rigging, or animation, with little attention paid to this section. The multimedia industry does not intend for information to result in art without camera composition, and without art there is no effect. Camera captures the project's central vision. By creating virtual cameras, 3D camera composition is done inside the 3D environment.

Figure 12. Camera composition (abolat, 2019)

Rendering

Technically speaking, rendering is the process of assigning RGB values from the actual 3D space to the vertices that are present in the 2D space that only contains x and y. In the employed program or application, hardware or software is used to create 3D animations.

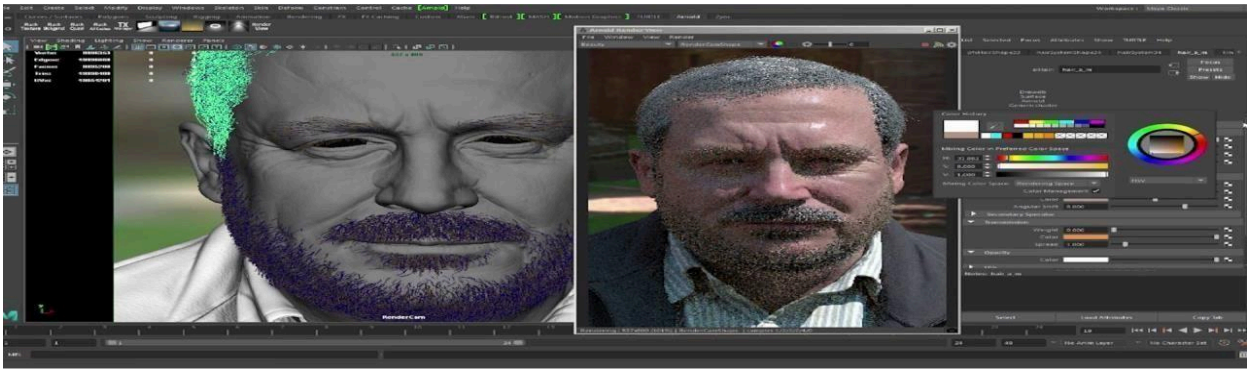

Figure 13. Rendering in MAYA (Autodesk, 2016)

Special FX

This pipeline step is one of the more intriguing ones because it combines modeling, texturing, and animation into one very compressed process. Artists may create anything using this method, from hair to the piercing sun beam.

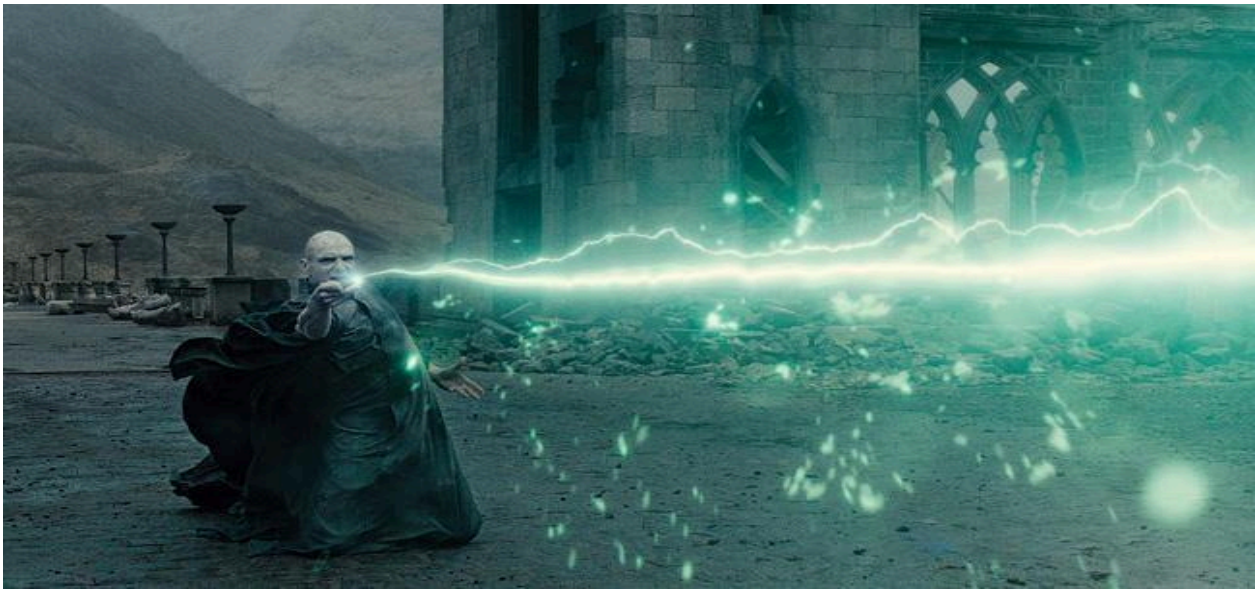

Figure 14. Magical Beam created by Special Effects (GIARDINA, 2011)

Music

We all know that the multimedia sector is impossible without sound, thus this technique applies to the entire industry, not just the 3D pipeline. Musicians are either hired or the sound for 3D projects is created using software.

Figure 15. North by Northwest(live musical performance) (PORTER, 2015)

Final Output

The pipeline's final step is to assemble all the data and information from the other steps, modify it carefully for the project, and then render the finished result once more before it is released to the market. Software from Adobe, The Foundry Visionmongers, da Vinci Systems, etc. is used to create 3D animation videos.

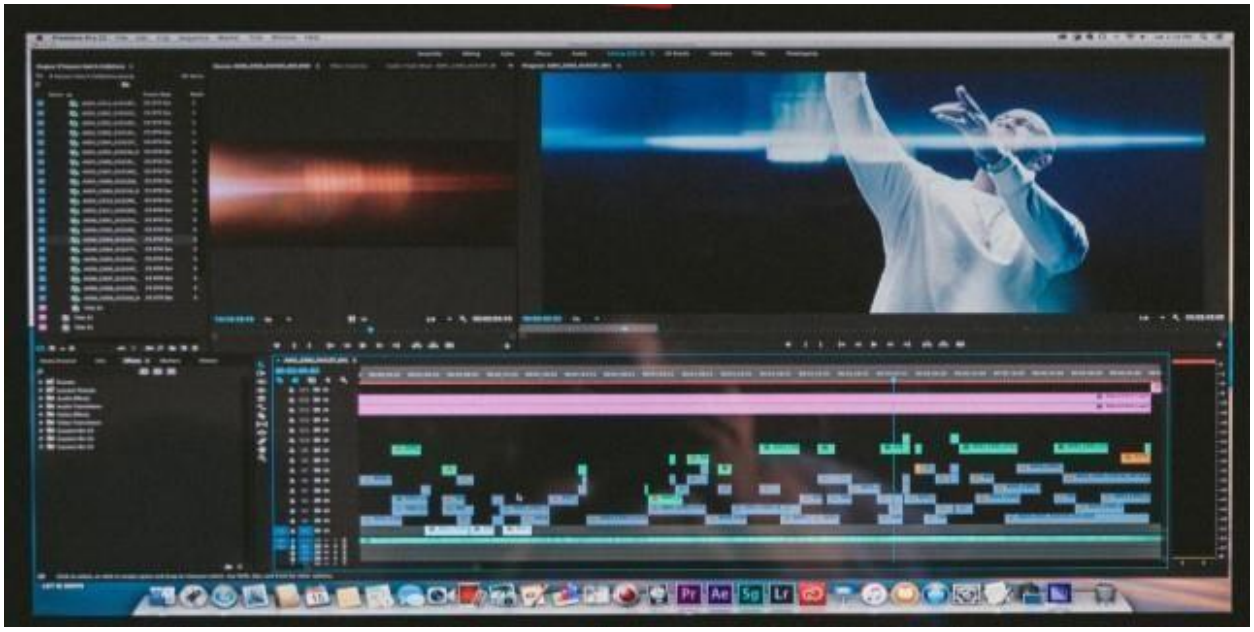

Figure 16. Video editing In Adobe software (Keith, 2020)

All the processes in the pipeline is the individual process, so it may not match with other Pipelines.

♦ Some examples

In the end, the question of why not skip all this trouble and shoot the desired scene still remains. The correct response is resources. For example, if a specific advertisement was needed to break a $30,000 watch into a thousand pieces, it would be very expensive to produce because the watch is too expensive to be treated like glass and the likelihood of achieving the desired result is low due to lack of control.

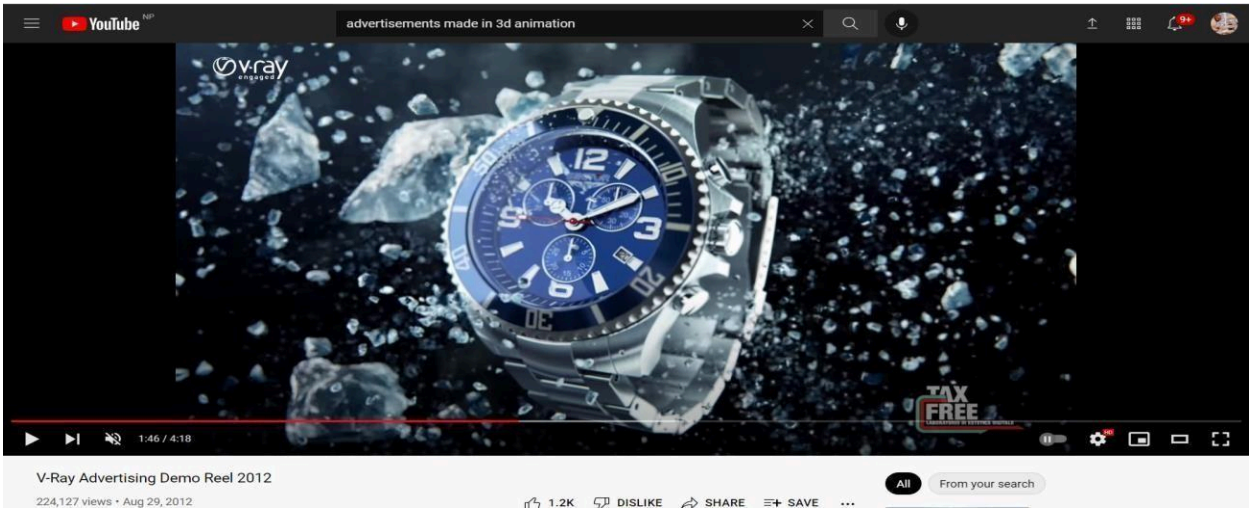

Figure 17. Watch/Effects created using 3D (ChaosTV, 2012)

Another reason 3D is employed is that some plot elements, such as a talking shark or a water man who can walk, are improbable.

Figure 18. Talking shark created in 3D (ChaosTV, 2012)

Figure 19. Water man created in 3d (ChaosTV, 2012)

□ ***PRODUCT REVIEW***

For this project, a television commercial for the app 'vostay' will be produced. The entire premise of the advertisement is around travel because the app company provides a service platform for the travel industry. The primary driving force behind this decision to create a 3D animation for a marketing campaign was the amount of resources required for the script. Additionally, and perhaps most importantly, this advertisement aims to combine the visual storytelling of cinema with its twists and plots with the lifeless advertisement animation, with the ultimate goal of selling the app.

Let’s see some Products

- AVATAR

With 2.8 billion dollars in box office revenue, it is the most grossing film of all time (Box office mojo, 2021). This is significant given that it had a 300 million dollar budget. With its motion tracking suits, sensors, and highly detailed environment, Avatar fundamentally changed the film business and continues to do so. It also opened up entirely new markets and revenue streams for visual artists.

Figure 20. Character in AVATAR created in 3D

- Spider-Man: Into the Spider-Verse

Viewers were made aware by this film that there is no barrier when using 3D and 2D elements together. The movie includes both 2D and 3D characters, yet the transitions were flawless, which allowed for this. The texturing of the 3D models gave the appearance of 2D, which was the movie's greatest strength. *(Solomon, 2018)*.

Figure 21. Miles Morales in action in “Spider-Man: Into the Spider-Verse (Solomon, 2018)

- Sandy Hook Promise: Gun violence warning signs

To raise awareness about school gun violence in the United States, this is not your typical advertisement (Sandy Hook Promise, 2016). This advertisement is here because it successfully alters its story. The project frequently alters the storyline, to put it mildly.

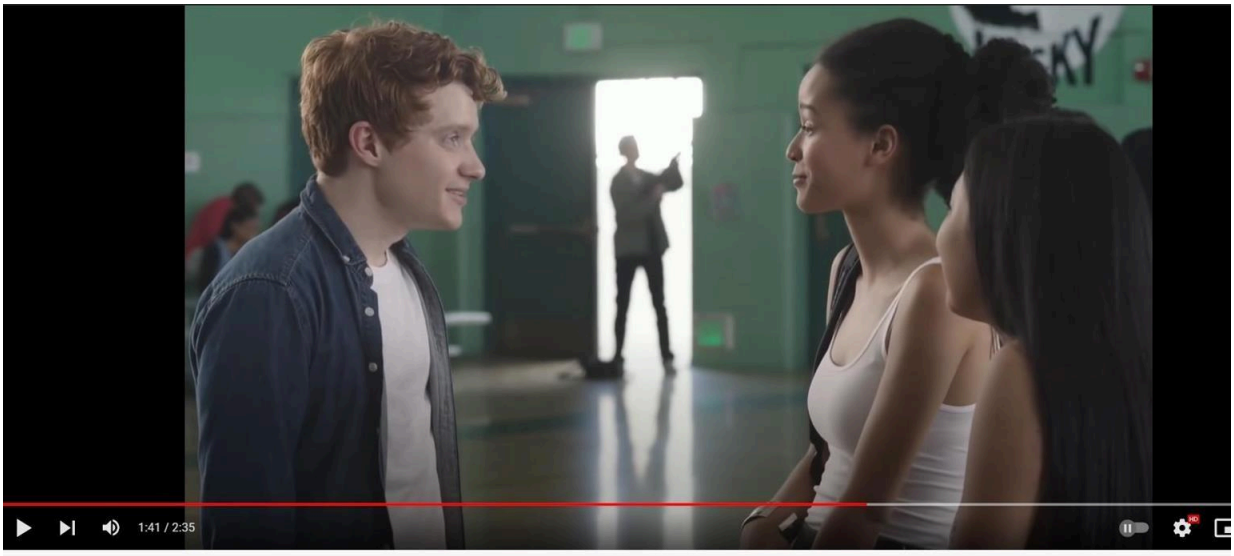

Figure 22. School shooting awareness TVC (Sandy Hook Promise, 2016)

□*Summary & Conclusion*

To sum up the report's main points, 3D industry is largely ignored in Nepal compared to 2D industry, yet there is roughly a 50/50 market distribution when compared to global industry. The basic argument is that since 3d is generally superior to 2d, it should serve as the default platform for visual effects art. However, this is not feasible due to a lack of understanding.

This three-dimensional advertisement aims to do this and more by bringing the limitless imaginary universe contained within the most potent graphics processor (the human mind) into reality.

Exhibit B: Project Proposal

□ *Project Title*

I once believed it to be a movie but it turned out to be an advertisement for an app. Due to the sensitive nature of the app's information, more app context is not to be provided in the 3D TVC that is to be produced regarding an app that is related to travel and tourism. However, the focus of this enterprise is advertising.

The narrative follows two tourists as they journey up a mountain and toward its summit. As the narrative progresses, giving the characters more depth, it eventually reveals itself to be an app commercial.

Figure 23. Plot Twist (Egloff, 2017)

□ *Research Question*

Nowadays, it seems like everything must be justified, explained, and studied in light of the social standards set by the current liberal-leaning society. Why can't justification come entirely from the sincere joy of "thinking and action" and from the innermost truth of our hearts? That is not the purpose of this paper.

What is the multimedia role in our society?

The primary factor that distinguishes this remarkable human civilization as "great" is knowledge. Unlike animals, humans can create and control fire because they understand what it is and how it works, rather than just fearing it. The rational mind surpasses the irrational mind because it is a wise mind, not yet consumed by the chain reactions of instinctual impulses within our brain. You might wonder how this connects to the multimedia industry.

As mentioned earlier in this report, the multimedia industry revolves around influence. While many of us agree with this notion, the question arises: does this influence solely aim to generate profits, or does it encompass a more profound purpose? To transcend mere monetary gain, we must place greater value on the quality of the influence we wield. In essence, to become the trailblazers or "brands" of the future world, where knowledge is cherished rather than belittled, we must begin now by embracing rationality and using multimedia as a platform to influence others towards rational thinking.

Figure 24. Hindu interpretation of 'irrational and rational' mind portrayed as *Arjun* and *Krishna* in *Shrimad Bhagwat Gita*

□ *Treatment*

The major goal of this commercial is to sell the software by first drawing the viewer into the story with its actions and then, at the ideal time, abruptly removing them from the virtual world. This will elicit responses like "what? It was an advertisement?!" or a "cheap shot," but the major inference would have already been made before then. Regardless of how the audience responds, the impact will remain in their minds. They will recall how an app ad tricked them and look for it.

Figure 25. Informative Meme

□ *Resources*

Different resources are to be used for the completion of a project, it varies from Internet to on to on discussion with peers. Some of them are listed below.

- **Platform used**

  Personal Computer – Acer Predator PH315-51

- **Software used**

  Windows 11 Home, Autodesk Maya 2022, Adobe Photoshop 2018, Adobe Premiere pro 2018, Adobe After Effects, Cubase.

- **Distribution Platform**

  YouTube, Google Drive, Facebook and other social media.

- **Hardware Used**

Processor	Intel(R) Core(TM) i7-8750H CPU @ 2.20GHz 2.21
GHzInstalled RAM	16.0 GB (15.8 GB usable)
Graphics	NVIDIA GeForce GTX 1060

- **Time**

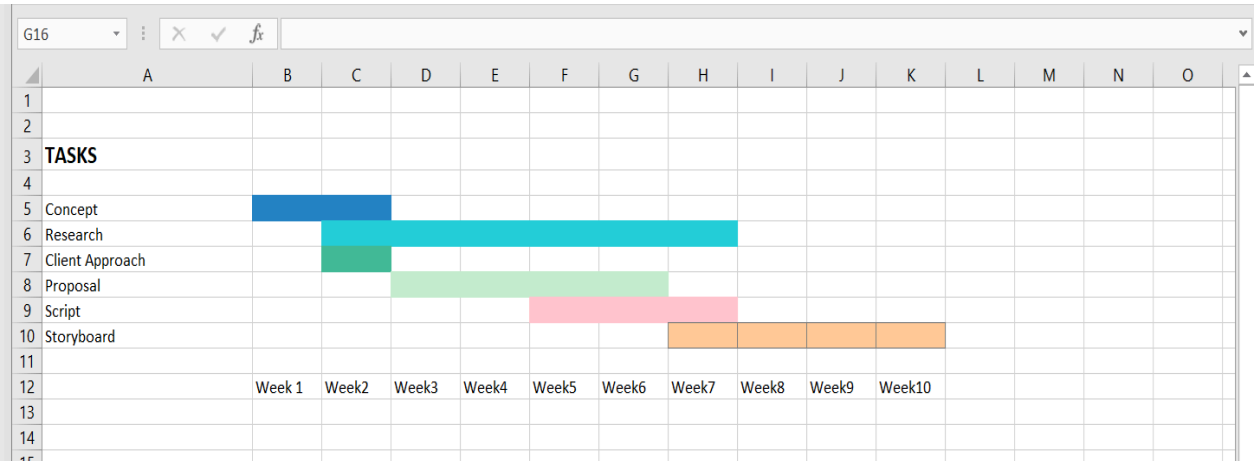

Figure 26. Gantt Chart

□ *Contribution of Others*

This project was only complete when it got help at the required time so it shall not be forgotten.

Friend/ Client – Since, my client is my friend it was not much of a hassle because we see eye to eye.

Supervisors – Internal and External Supervisors who gave me the required directions when I had no vision.

Internet – The technology which made all this happen.

□ *Evaluation and Testing*

The final output will be tested and evaluated in two parts which are *backend test* and *frontend test*. The technical terms are derived from coding mechanisms.

Backend test - This test will be done only for the technical parts like for bugs in FPS, Bitrate fluctuations, CODEC errors and more technical errors. It is done to make sure the technical parts are not buggy and with errors.

Frontend test – This is done for the betterment of the overall experience of the final product which includes things like opinions from peers, color corrections, and sound enhancements. This will also include a small beta screening and getting some reviews.

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