SIMULATING LOCAL (ASIAN SUBCONTINENT) COSTUMES FOR 3D ANIMATION AND VFX

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Multimedia and Creative Technology

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DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

13TH February, 2022

APPROVAL

This Project titled **"SIMULATING LOCAL (ASIAN SUBCONTINENT) COSTUMES FOR 3D ANIMATION AND VFX**",submitted by **MD SOJIB BISWAS (ID: 173-40-461)** to the Department of Multimedia and Creative Technology, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Multimedia and Creative Technology and approved as to its style and contents. The presentation has been held on 13th February, 2022.

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DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Arif Ahmed, Associate Professor, Department of MCT** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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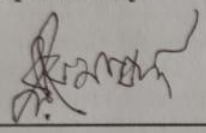

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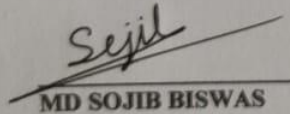

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I would like to express my heartiest gratitude to my beloved parents, Special thanks to my supervisor of this project Arif Ahmed, Dr. Shaikh Muhammad Allayear, Professor & Head**,** Department of MCT, Md. Salah Uddin for their kind help to finish our project and also to other faculty member and the staff of MCT department of Daffodil International University.

I would like to thank my entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, I must acknowledge with due respect the constant support and patients of my parents.

ABSTRACT

Cloth simulation is very important in 3d Animation and Vfx. If the simulation can be improved to the point that the fabric acts as it would in the actual world, it can be employed in a variety of scenarios. The process of simulating thin-shell materials such as fabric entails rendering intricate textile structures, rendering complex cloth structures more quickly, emulating actual textile behavior. In this project, we discussed how to overcome technological difficulties, problems and experimented with models and simulations methodologies, and examining the flaws and making any necessary modifications, which are subsequently combined to construct a new **Easy, Effective & Efficient workflow**. So that anyone with a little knowledge about simulation can use this workflow.

In computer graphics, cloth simulation and animation has proven a difficult problem. Simulation is a step farther in the cloth animation process, and it consists of the assembly of various idea from textile. With the rapid advancement of simulation technology in recent years, there has been an increase in demand for cloth simulation in both the digital entertainment and fashion industries. Virtual clothing animation created from simulation boosts the visual realism of the 3D virtual scene and virtual actor in the scene in the digital entertainment area, giving the spectator a more detailed, realistic visual experience. 3D garment design and virtual dressing, as new technology and business models in the apparel sector, are rapidly transforming people's traditional ways of life. But simulated 3D clothing design process is not carried out on a 3D animation and Vfx industries in Asian subcontinent such as Bangladesh, India.

The fabric simulation focuses on the variables that influence the way the cloth behaves finally, an evaluation is completed, demonstrating that the new technique is effective. It has the potential to produce lifelike behavior and can be used in 3d animation and Vfx workflow. The main objective of this research project was to provide an improved workflow methodology for people to use and inspire 3d Animation and Vfx industries to include simulation in their workflow.

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CHAPTER 1
INTRODUCTION

1.1. Definition of internship

An internship is a term of work experience provided by the employer in order to present students and graduates to the professional world, frequently within a specific industry, that is related to their topic of study. Internships can range in length from a week to a year. They can be paid or unpaid; nonetheless, it's crucial to understand your rights when it comes to getting paid before you start an internship. Internships are available in a variety of fields, including sales, marketing, engineering, graphic design, management, information technology, and a variety of others. One will gain a variety of soft skills during internship, including communication, personal effectiveness, presentation, and creative problem solving, and influencing skills. On-the-job training is just as important as classroom learning. After all, No one can truly appreciate what a job entails unless they've done it. Internships are a fantastic way to learn more about a certain field. [1]

During their internship program, a student can gain practical experience and be ready to accept the stress of workplace stress. During that time, I was supervised by a field professional. An internship also allows a student to bring new ideas and energy into the workplace, as well as to develop this capability, talent, and possibly construct a pipeline for future projects. Learn about the current state of your career, work patterns, recognizing issues, and more. [2]

1.2. Importance of internship

Academic knowledge is insufficient for professional aptitude, and while it may require us to engage in discussions, peer interaction, debate, and sharing of our learning experiences, it is also critical to apply and develop academic concepts in a professional situation. Internships not only help us develop our career, but they also help us grow as people, establish understanding, form relationships, get experience, and maintain our network. Internships are essential in preparing students for the workforce, and they are

the simplest method to gain first-hand experience in a desired professional sector without committing to a long-term commitment. [3]

Studying and working as a professional are two very different things. It is impossible to gain a true understanding of a certain industry without performing an internship, and it also prevents a student from becoming skilled at work. Today's industry necessitates competent labor and a well-equipped workforce. [4]

1.3. Introduction of my internship organization AAVA 3D

In Bangladesh, AAVA 3D was the first to offer 3D animation training. Arif Ahmed, the creator and director of AAVA 3D, has been involved in the realm of 3D animation since 1995. He gained a lot of expertise in the 3D animation and visual effects production sector during this time. AAVA 3D is a 3D Animation Research and Development Center. Bangladesh's first 3D animation and visual Effects learning institute. Since 1995, AAVA 3D has been involved in the realm of 3D animation.

It is a non-profit organization that brings together professionals from both the technical and artistic disciplines with the goal of delivering acceptable solutions and to produce professional and knowledgeable workforce in the multimedia industry. AAVA3D wishes to contribute to the development of a wealthy Bangladesh and a knowledge-based society.

Our mission is to provide 100% customer satisfaction by providing high-quality products, services, and training at a reasonable price. Our long-term goal is to establish ourselves as a leader in technology-based corporate solutions capable of eliciting an unequivocal response from the target market. [5]

1.4. Why I choose AAVA 3D

The first and foremost reason I choose AAVA 3D among other 3d animation and Vfx organization is because Arif Ahmed sir, the creator and director of AAVA 3D. Not only is that he also Associate professor in the department of Multimedia and Creative

Technology at Daffodil International University. Moreover, He is my class teacher and my supervisor for my final project.

AAVA 3D is the first to offer student 3d animation training which we need to progress in my research project. AAVA 3D also provide skilled mentor to guide internship student in every steps. AAVA 3D is also being a 3D animation Research and Development Center gave us a heads up in my research project. AAVA 3D is always aware about modern technology. They are also providing 100% scholarship for the students. They also arrange regular seminars & workshops. [6]

1.5. Duration of my internship

We started our internship on 1st May, 2021 and finished the internship on 31st August 2021.

CHAPTER 2
EXPLANATION OF SOME WORKS IN SAME AREA

2.1. Introduction of previous similar work

There are so many 3d animation and Vfx movies the implemented cloth simulation for the character and their local costume. Such as

3D Animation Movies [9]:

1. White Snake (2019)
2. Ne Zha (2019)
3. Nezha Reborn (2021)
4. Dragon Nest: Warriors' Dawn (2014)

VFX Movies [10]:

1. Batman v Superman: Dawn of Justice (2016)
2. Doctor Strange (2016)
3. Warcraft (2016)
4. Spider-Man: No Way Home (2021)

2.2. 3d Animated Movies

White Snake (2019) is American – Chinese movie where they really focused on the cloth simulation and simulated every cloth type object in this movie with real world physics. Inside this movie all the character are from china. So, all the cloth costume in this movie are from Chinese cutler. Examples are given in the Figure 2.2.1. In this figure, we can see some really Complex Cloth Wrinkles. This type of result can't be achieved only from manual cloth animation. The reason is quite simple. No one can guess the movement of cloth. Not only that in real world cloth don't follow any pattern for their movement and it's always completely random. So, if someone were to make cloth animation manually, they will have to manually animate every frame of animation which is just impossible. So, that's why simulating the cloth make it way easier.

Figure 2.2.1: White Snake (2019) Complex cloth Wrinkles

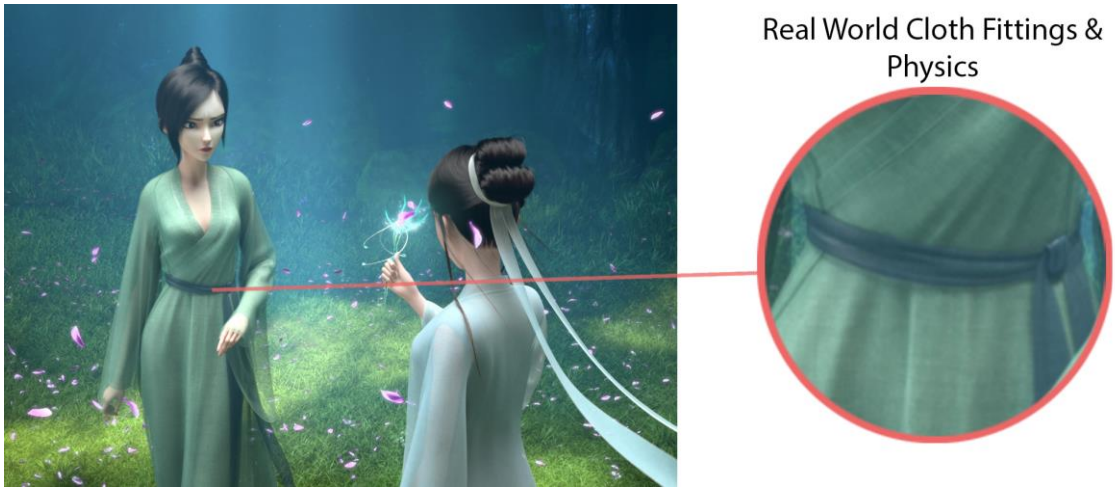

Figure 2.2.2: White Snake (2019) Real-world Cloth Fitting and Physics

In the above figures2.2.2, we can see some example where we see some complex Real-world Cloth Fitting and Physics used in traditional costumes from local chines people tradition. This kind of cloth movement is just not possible through animating manually that's why simulation is must have.

2.3. VFX Movies

Doctor Strange (2016) and Man of Steel (2013) are some major example where we can see some major implementation of cloth simulation.

Figure 2.3.1: Doctor Strange (2016) Simulated cloak of levitation

In the Figure 2.3.1, we can see cloak of levitation which is 100% simulated cloak. This type of result is only possible through simulation.

Figure 2.3.2: Doctor Strange (2016) Simulated cloak of levitation -2

In the figure 2.3.2, we can see a cloth made cloak put in a glass cabinet. If we look carefully, we can see that nothing is holding the cloak but the cloak is behaving like

someone is wearing the cloak. It's not possible in real world because the human that wear this cloak have to be invisible in order to make that happen. That's where cloth simulation comes in. With cloth simulation, we can make the cloak behave like a human wearing it without any human visible in the scene.

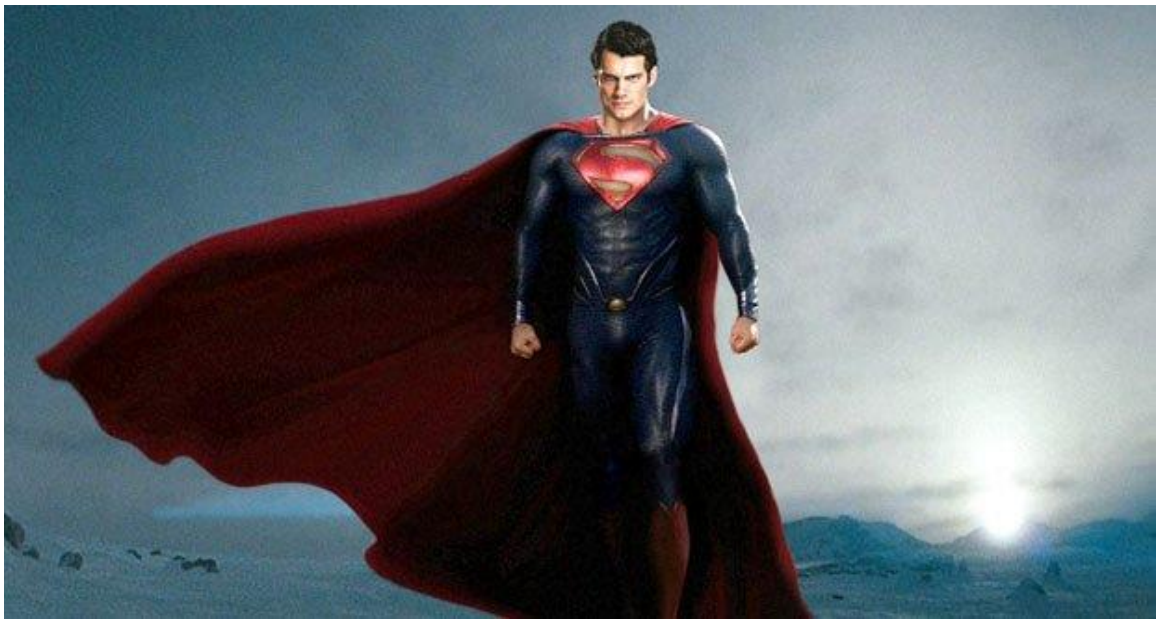

Figure 2.3.3: Man of Steel (2013) Simulated cape

In figure 2.3.3, we can see a picture from the movie called Man of Steel. In this picture superman is wearing a red cape. When superman flies around, his cape behaves like it has no gravity around it. So, in real-world where gravity is always presence how can this cape have no gravity around it? The answer is cloth simulation. With cloth simulation we can achieve Zero gravity cape.

2.4. History of Traditional Costume uses in 3D Animation and VFX

Figure 2.4.1: White Snake 2019

Have anyone watched this movie? If not I would recommend you to check this movie out. It's a Chinese movie based on Chinese culture. So, the costume of all the character in this movie is inspired by Chinese cloth tradition.

Figure 2.4.2: Traditional Chinese Cloth used in White Snake 2019

Figure 2.4.3: Traditional Chinese Cloth used in White Snake 2019

Figure 2.4.4: Traditional Chinese Cloth used in White Snake 2019

CHAPTER 3

DETAILS OF USED SOFTWARE

3.1. Autodesk Maya

Figure 3.1.1: Autodesk Maya

Autodesk Maya is a 3D computer graphics tool that works on Windows, Mac OS X, and Linux. It was initially developed by Alias and is now owned and developed by Autodesk. It's used to make assets for interactive 3D applications (such video games), animated films, television shows, and visual effects.

Users create a virtual workplace (scene) in which they can create and edit media. In the picture down below we can take a look at Autodesk Maya user interface and our work is being done in this software.

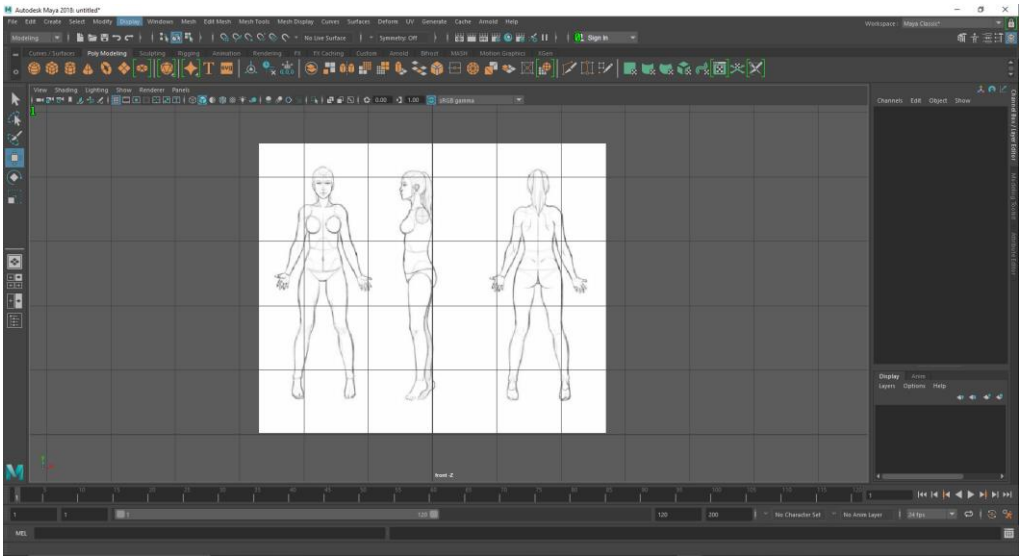

Figure 3.1.2: Using Autodesk Maya for character Modeling, Rigging, Animation

3.2. Autodesk 3ds Max

Figure 3.2.1: Autodesk 3ds Max

Autodesk 3ds Max is a professional 3D computer graphics tool for creating 3D animations, models, games, and photographs. It was previously known as 3D Studio and 3D Studio Max. Autodesk Media and Entertainment created and produced it. It requires the Microsoft Windows platform and provides modeling capabilities as well as customizable plugin architecture. Video game makers, various TV commercial studios, and architectural visualization studios all use it. It's also utilized for pre-visualization and movie effects. Shaders (such as ambient occlusion and subsurface scattering), dynamic simulation, particle systems, radiosity, normal map creation and rendering, global illumination, a customizable user interface, new icons, and its own scripting language are all included in the latest version of 3ds Max's modeling and animation tools. Many films, including Avatar and 2012, have used 3ds Max (or previous versions of the program under different names) in CGI animation. Mudbox, which is closely connected to 3ds Max, was also used in the final texturing of the set and characters in Avatar. In the development of 3D computer graphics for a number of video games, 3ds Max has been employed. Concept art and previsualization are created in 3ds Max by architectural and engineering design organizations. [12]

Figure 3.2.2: Using Autodesk 3ds Max for lighting & Rendering

3.3. Marvelous Designer

Figure 3.3.1: Marvelous Designer

Bringing fashion designing efficiency to computer graphics, with our cutting-edge design software, Marvelous Designer, you can create amazing 3D virtual apparel. Finally, give your designs new life with tools that improve quality while saving you time.

Marvelous Designer can digitally duplicate fabric textures and physical features down to the last button, fold, and accessory on everything from basic shirts to delicately pleated skirts and tough uniforms. You can instantly alter and drape clothing onto 3D shapes with high-fidelity simulation thanks to the wide compatibility with various 3D software and interactive design interface.

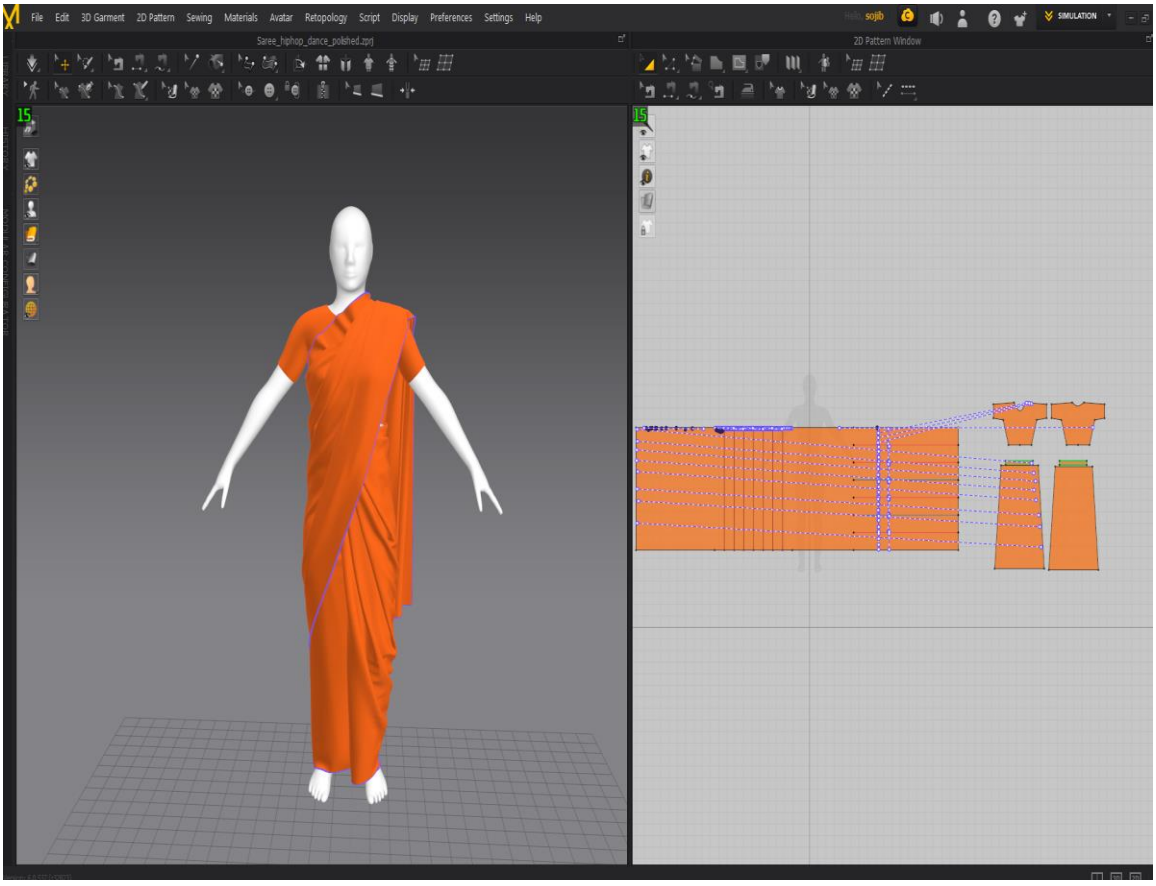

Figure 3.3.2: Using Marvelous Designer for cloth simulation

Top game firms like EA Konami have already adopted Marvelous Designer's groundbreaking pattern-based technique, which can be seen on the big screen in animated blockbusters like The Hobbit and The Adventures of Tintin. [13]

3.4. V-Ray

Figure 3.4.1: V-Ray

Bulgarian Chaos Group, which was founded in Sofia in 1997, produced V-Ray, a biased computer-generated imagery rendering software tool. V-Ray is a commercial plug-in for third-party 3D computer graphics software packages that is used in industries such as media, entertainment, film and video game production, industrial design, product design, and architecture for visualizations and computer graphics. Peter Mitev and Vladimir Koylazov are the company's primary architects.

In architectural visualization, Vray is most likely the market leader for still images. It is noted for its quickness and generates excellent quality utilizing either biased or unbiased rendering methods. The main distinction between biased and unbiased rendering is speed. Unbiased render algorithms analyze illuminance at each pixel in a picture, making them more precise but slower than biased render algorithms.

Biased algorithms, in general, divide a scene into 'cells' with equal (or nearly equal) illuminance and interpolate between them. This is a major improvement. To reduce blotchiness, some extremely sophisticated sampling approaches allocate more samples to locations with stronger contrast. Although biased renders are more accurate than unbiased renderings, with a decent engine configured properly, you may not notice a difference in quality, but the speed difference could be significant. You could be looking at a five-fold difference in speed. You'd have to wait 3 hours or more for an unbiased version of a 20-minute biased render.

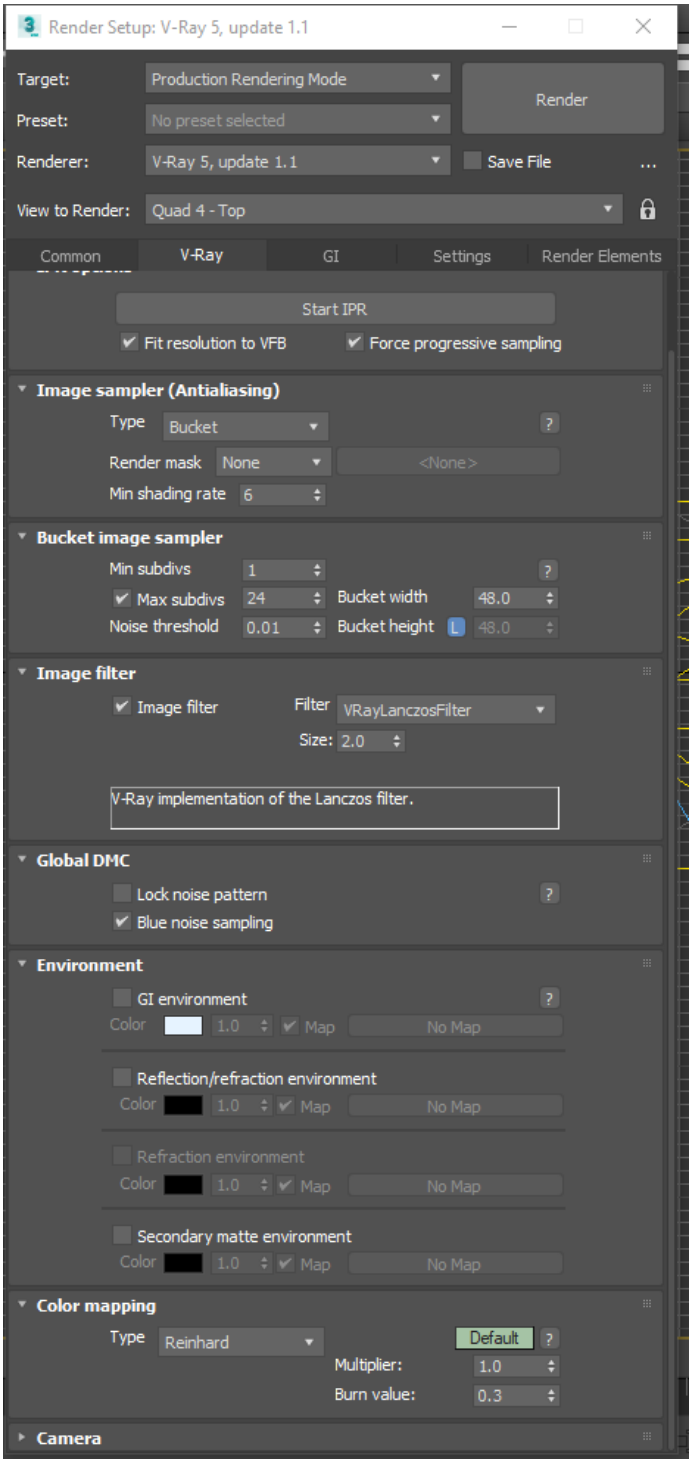

Figure 3.4.2: Using V-Ray Render Animation

VRay, on the other hand, is a complicated program. It has a steep learning curve because it is extremely powerful and flexible. [14]

3.5. Adobe Photoshop

Figure 3.5.1: Adobe Photoshop

Photoshop is Adobe's photo editing, image creation and graphic design software. The software provides many image editing features for raster (pixel-based) images as well as vector graphics. It uses a layer-based editing system that enables image creation and altering with multiple overlays that support transparency. Layers can also act as masks or filters, altering underlying colors. Shadows and other effects can be added to the layers. Photoshop actions include automation features to reduce the need for repetitive tasks. An option known as Photoshop CC (Creative Cloud) allows users to work on content from any computer.

Photoshop been the industry standard image manipulation program for so long that its name has become a verb: It is common parlance to say that an image has been “photo shopped” or even just “shopped." Shopped, in this context, is synonymous with edited, manipulated, often regardless of the software actually used. [15]

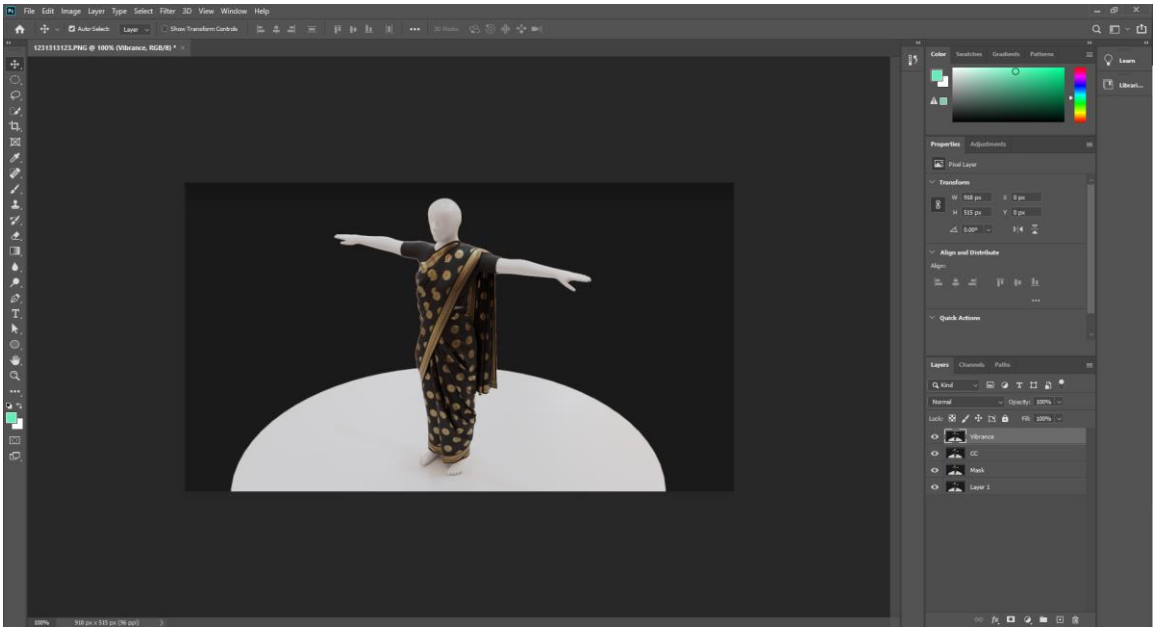

Figure 3.5.2: Using Adobe Photoshop to make/edit textures

3.6. Adobe Illustrator

Figure 3.6.1: Adobe Illustrator

Adobe Illustrator is a vector graphics editor and design tool created by Adobe Inc. and distributed worldwide. Adobe Illustrator was first developed in 1985 for the Apple Macintosh computer. Illustrator CC was released alongside Creative Cloud (Adobe's transition to a monthly or annual subscription service supplied over the Internet).

Illustrator 2022, the most recent version, was released on October 26, 2021, and is the product's 25th iteration. PC Magazine named Adobe Illustrator the finest vector graphics editing application in 2018. [16]

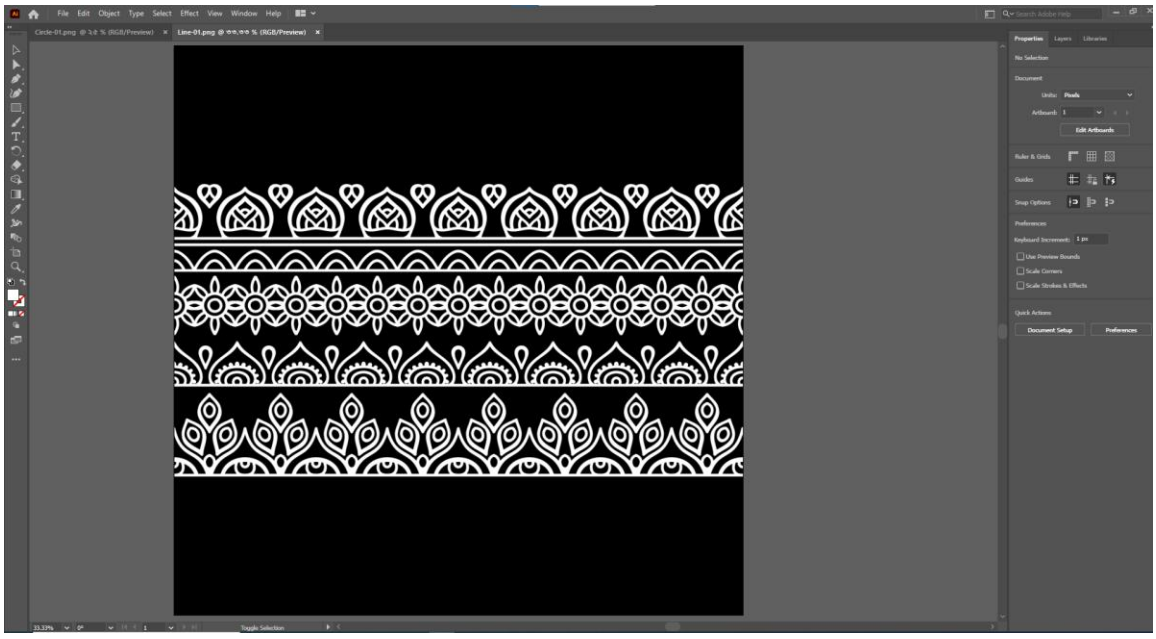

Figure 3.6.2: Using Adobe Illustrator to make texture patter

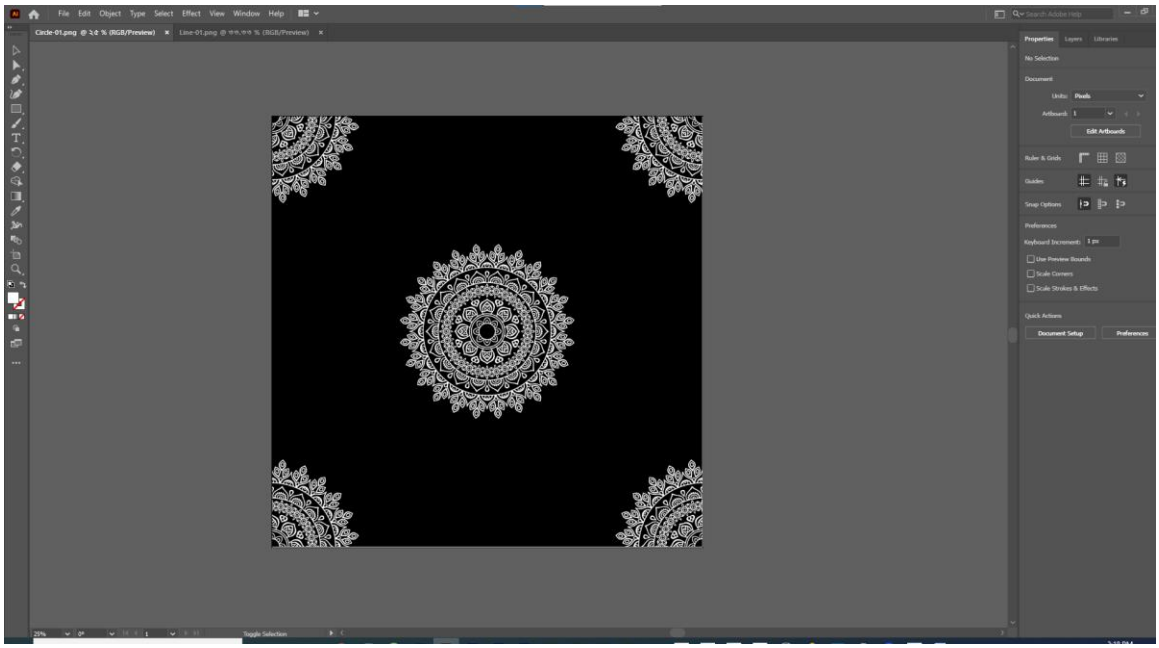

Figure 3.6.3: Using Adobe Illustrator to make texture patter – 2

3.7. Adobe After Effects

Figure 3.7.1: Adobe After Effect

Adobe After Effects is a virtual visual effect, motion graphics, and compositing software evolved by Adobe Systems and used in the post-manufacturing technique of moviemaking, video games, and TV manufacturing. Among different things, After Effects may be used for keying, tracking, compositing, and animation. It additionally capabilities as a totally fundamental non-linear editor, audio editor, and media transcoder. After finishing all the work in pre-production then we shift to the post production work though after effect were we also added sound to the work and doing some color correction, masking etc. [17]

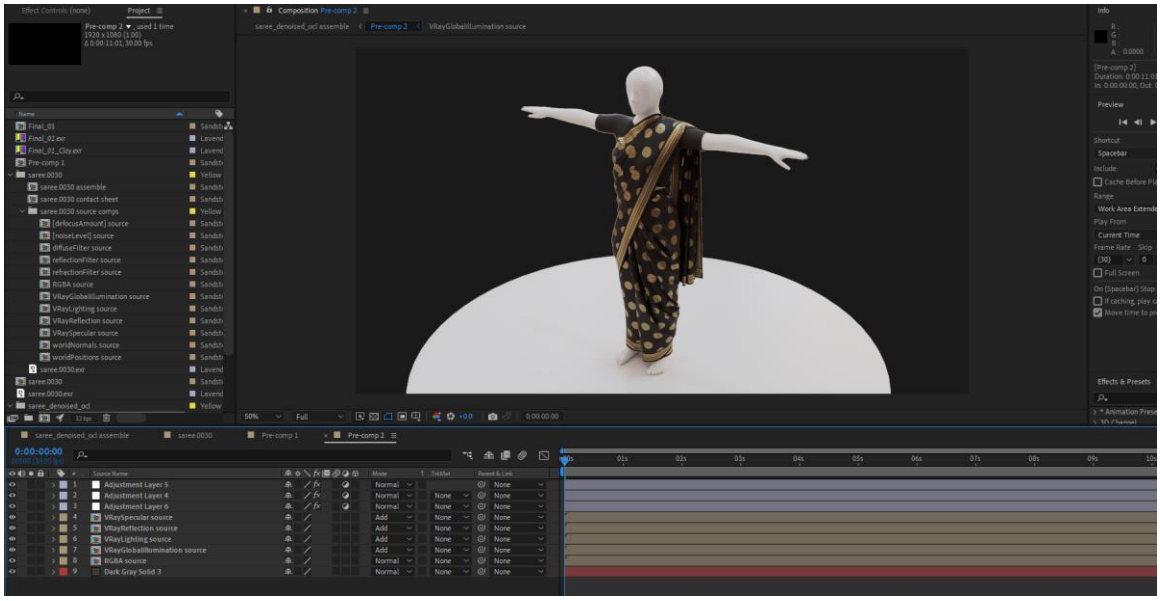

Figure 3.7.2: Using Adobe After Effect to composite frames into animation

3.8. Adobe Media Encoder

Figure 3.8.1: Adobe Media Encoder

Adobe's Media Encoder is a piece of software that allows you to create multimedia content for the web and other platforms. It gives you the ability to transform material in a variety of ways, including changing the format. Media Encoder shrinks the size of media files by compressing them.

Here's an example of how Encoder works to help you understand it better. Assume you have a project from which you want to export files. You'd open this project in Encoder, then edit the export parameters to get the file format you want (MP4, PNG, MPEG2, etc.).

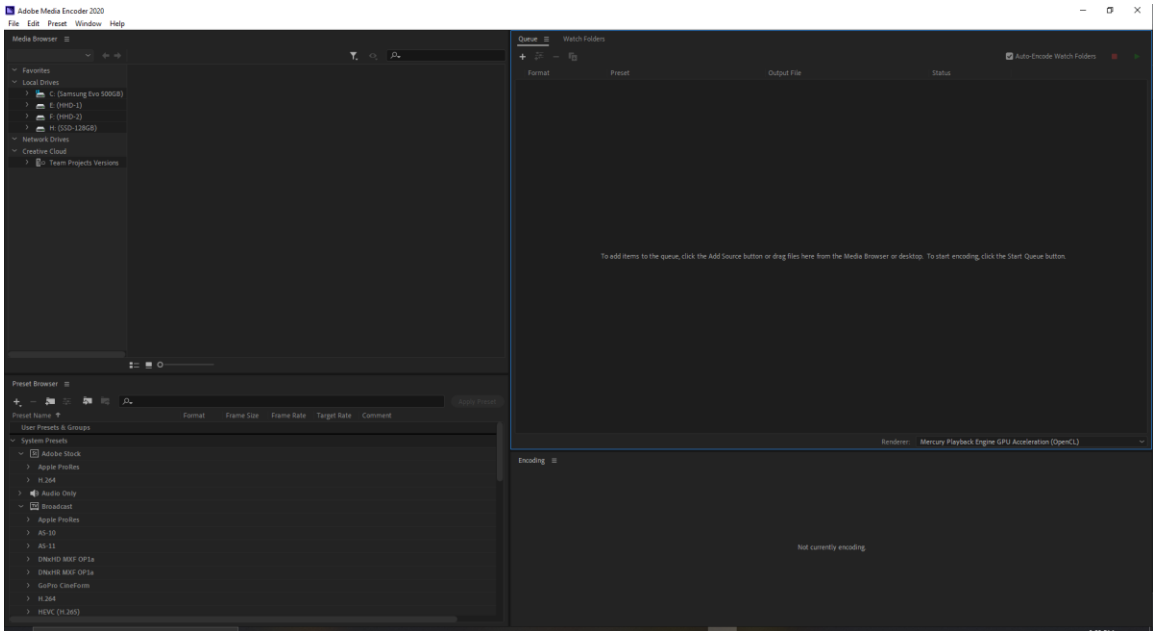

Figure 3.8.2: Using Adobe Media Encoder to render composite file into mp4 video

3.9. Adobe Substance 3D Painter

Figure 3.9.1: Adobe Substance 3D Painter

For 3D experts and hobbyists, Adobe Substance 3D Painter is the go-to texturing software. Painter is used by the industry to bring their works to life, from AAA game developers to indies, from Feature Animation to Visual Effects teams, because to its unequaled speed, versatility, and visual quality. Use Smart materials to have textures wrap around your objects automatically, use the integrated physics engine to effortlessly apply weathering effects, or paint exact micro-details across complex assets spanning thousands of texture sets or UDIMs. Unity, Unreal, Amazon Lumberyard, VRay, Arnold, Renderman, and Substance 3D Painter are all compatible with Substance 3D Painter. Painter can convert your textures into the correct format and offer you results that are as near to what you want as possible, no matter what your end platform is.

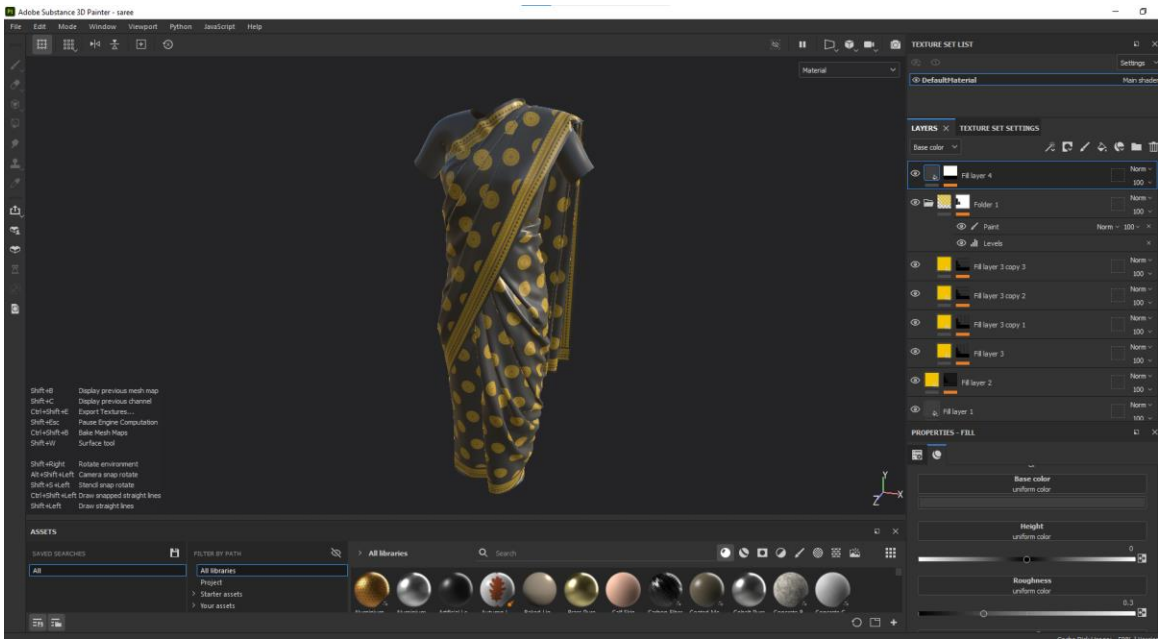

Figure 3.9.2: Using Adobe Substance 3D Painter for Texturing

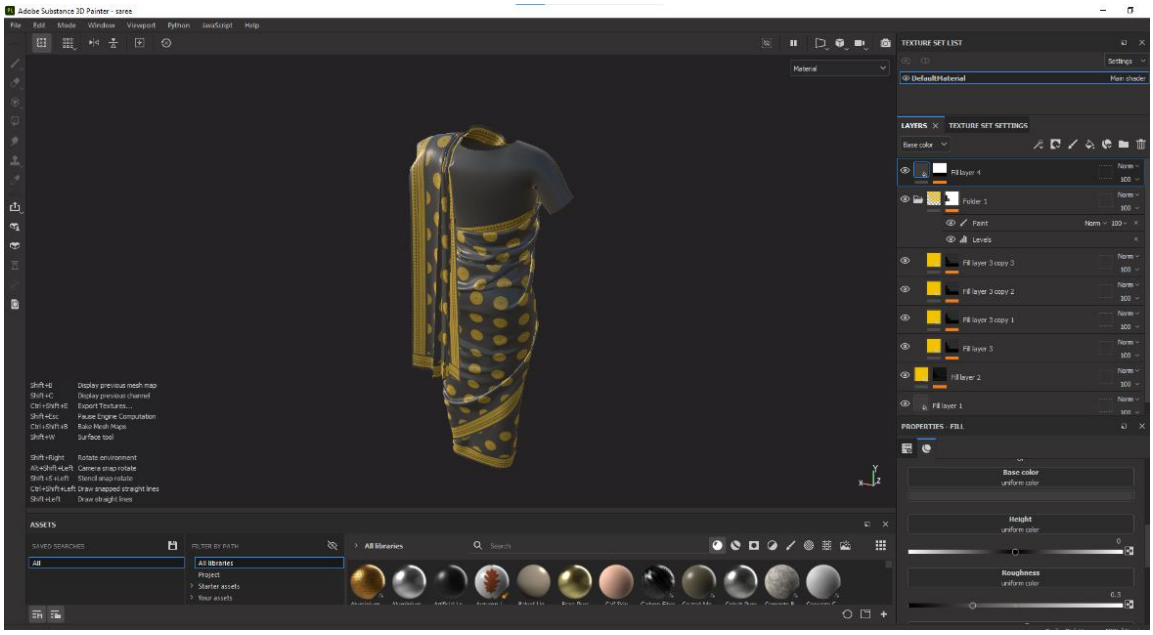

Figure 3.9.3: Using Adobe Substance 3D Painter for Texturing - 2

CHAPTER 4

DETAILS OF MY INTERNSHIP/RESEARCH PROJECT

4.1. Description of client work/research project during internship

During my internship period, I have done mainly two types of works.

1. Client work
2. Research Project

4.2. Client Work

During my internship period, I was assigned in a team of two members. At first, I was given some test work to understand my skill level. After that I was assigned with real client work under a supervision of skilled professional mentor from AAVA 3D. I was assigned in very few small part of some client work like modeling simple object. But only one client complete work was assigned to me. This was my best and well-reviewed client work. It was under the category of "Product Visualization" Where I had to do everything from start to finish. Starting from modeling to rendered output and post production.

Figure 4.1.1: Keyboard Product Visualization - 1

Figure 4.1.2: Keyboard Product Visualization – 2

Figure 4.1.3: PS5 Product Animation – 1

Figure 4.1.4: PS5 Product Animation – 2

4.3. Research Project

During my internship half of my work was product modeling and other half was my research project which is also my main project. This research project is called "SIMULATING LOCAL (ASIAN SUBCONTINENT) COSTUMES FOR 3D ANIMATION AND VFX". This research work was assigned by AAVA 3D under the supervision of Arif Ahmed.

Figure 4.3.1: Local Costume Simulation Sari

4.3.1. Definition of cloth simulation

Cloth simulation is a process of creating and animating realistic looking fabrics according to the laws of physics such as collision, gravity, friction and much more. [7]

4.3.2. Importance of cloth simulation

Most animation programs and dedicated tools, such as Marvelous Designer, include cloth simulations (MD). Marvelous Designer Version 8 is definitely one of the greatest standalone apps for CG artists to produce gorgeous 3D apparel quickly and efficiently. Users can simply develop and simulate excellent clothing that are compatible with most applications using a pattern-based approach to modelling. The application, like others like CLO3D and Optitex, is used in the entertainment sector as well as in real-world clothing design. [8]

CHAPTER 5

MY PART IN INTERNSHIP/RESEARCH PROJECT

5.1. Client Work: Keyboard Product Visualization

5.1.1. Opening 3ds Max 2020 & Start a new project

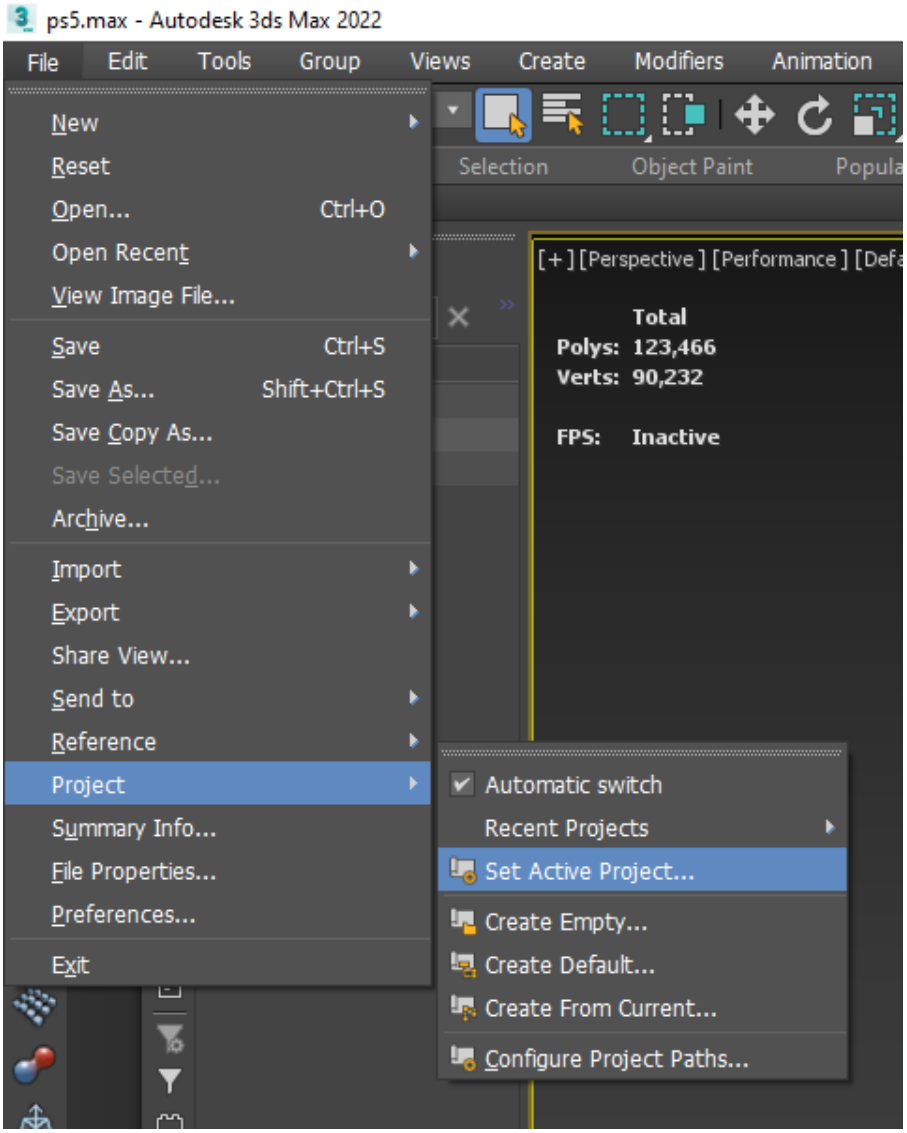

Figure 5.1.1.1: Opening 3ds Max 2020 & Start a new project

In Figure 5.1.1.1, I am opening 3ds Max 2020. Then go to file located on the top left corner and click on it. In file option select “Project” and select “Create Empty” option. After that chose the preferred location you want to save your files.

5.1.2. Selecting Reference Image

Figure 5.1.2.1: Selecting Reference Image

In Figure 5.1.2.1, this is the reference image that we got from our client and after selecting this image, we start modeling process in 3ds Max 2020.

5.1.3. Starting front panel and blocking out

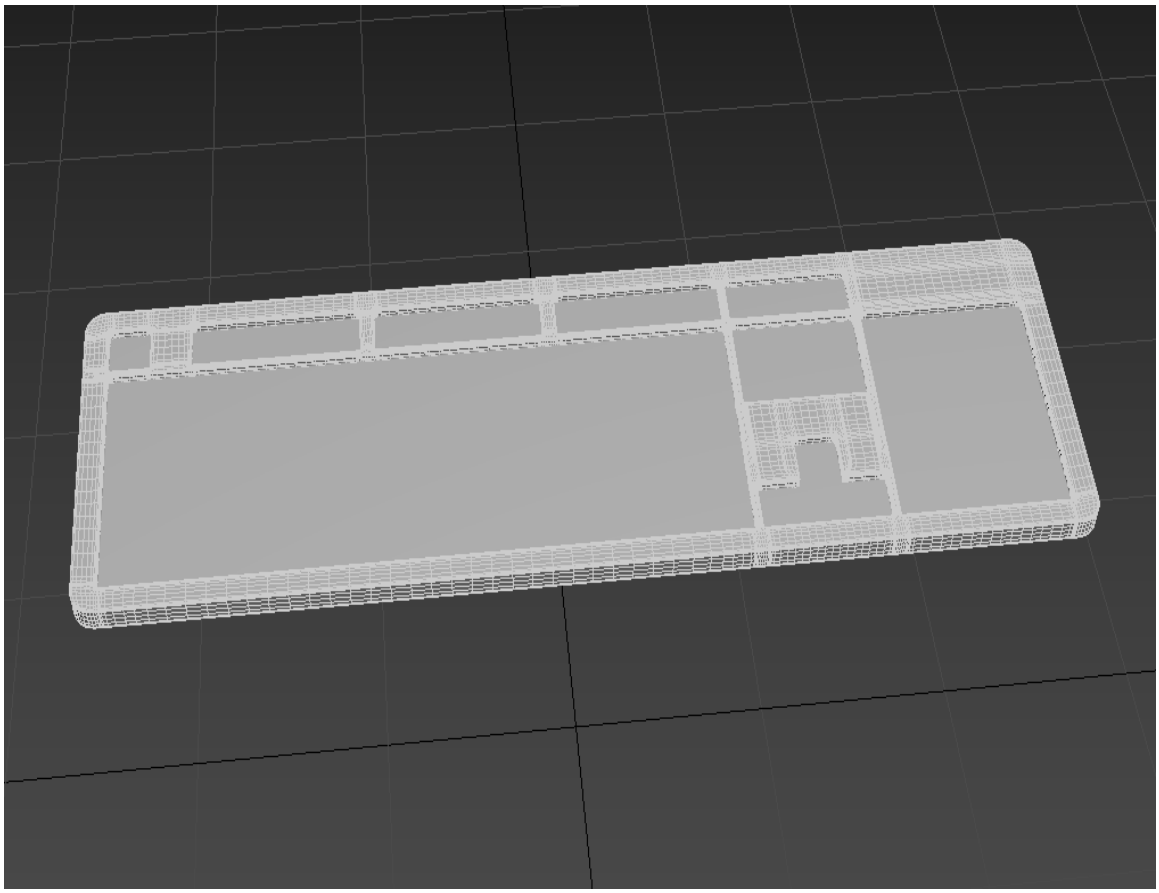

Figure 5.1.3.1: Starting front panel and blocking out

In Figure 5.1.3.1 We model front part of keyboard. First we block out all the holes where the key sits. Now we select the entire polygon and extrude them inside and delete the polygon. After that we select all edges where we want to make edge smooth and chamfer them. After that we apply turbo smooth modifier from modifier list and get a better view.

5.1.4. Making back panel

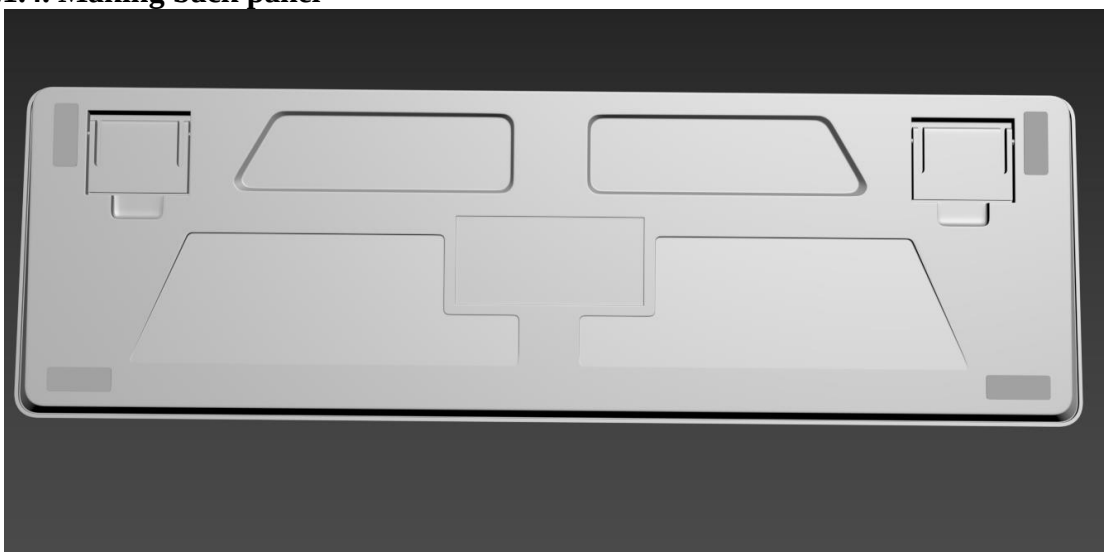

Figure 5.1.4.1: Making back panel

Figure 5.1.4.2: Making back panel rubber pads

Now we make back panel of keyboard and we make all the little details. Also we put the rubber pads.

5.1.5. Making mechanical key holder

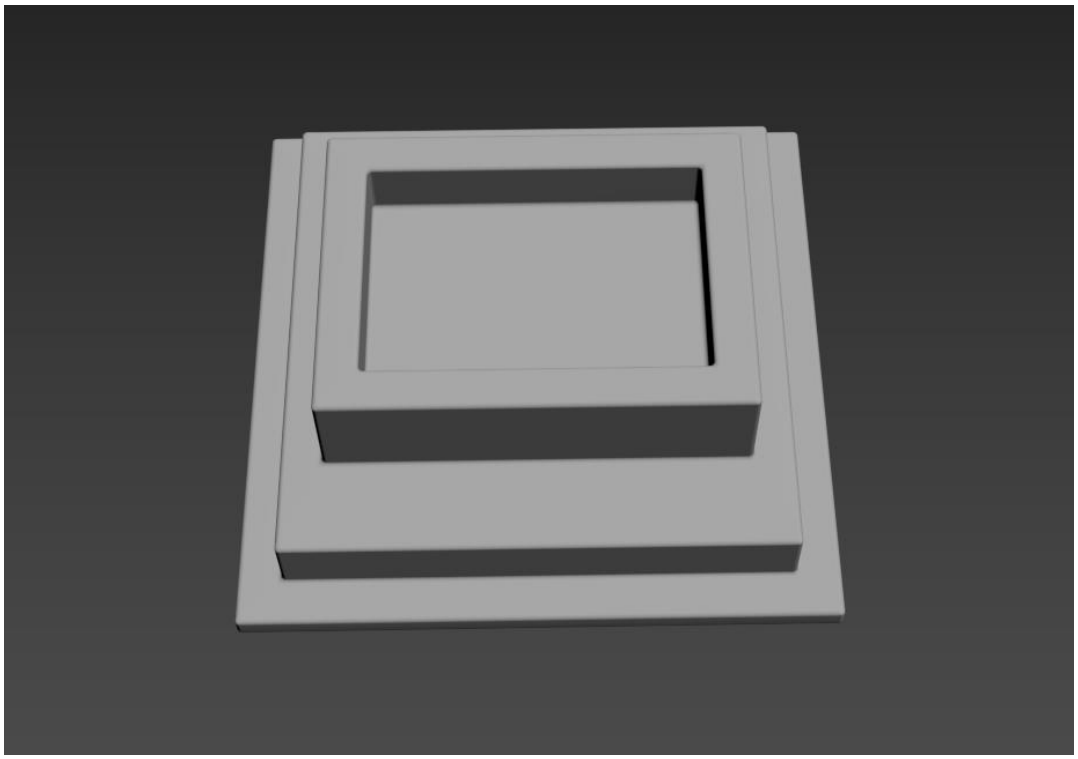

Figure 5.1.5.1: Making mechanical key holder

Now we make mechanical key holder. First take a box and add edit poly or convert to edit poly to adjust the way we need. After that use chamfer on the front top edge to make is smooth like the reference.

5.1.6. Copy paste all key holder

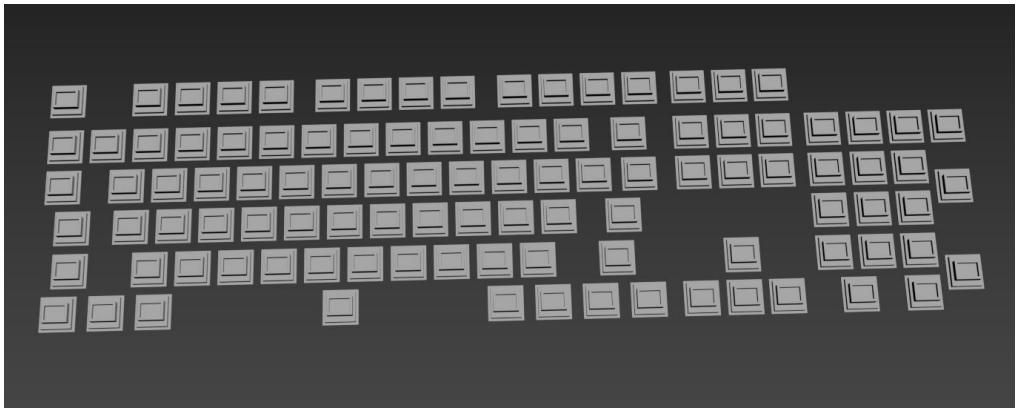

Figure 5.1.6.1: Copy paste all key holders

5.1.7. Making customizable control button

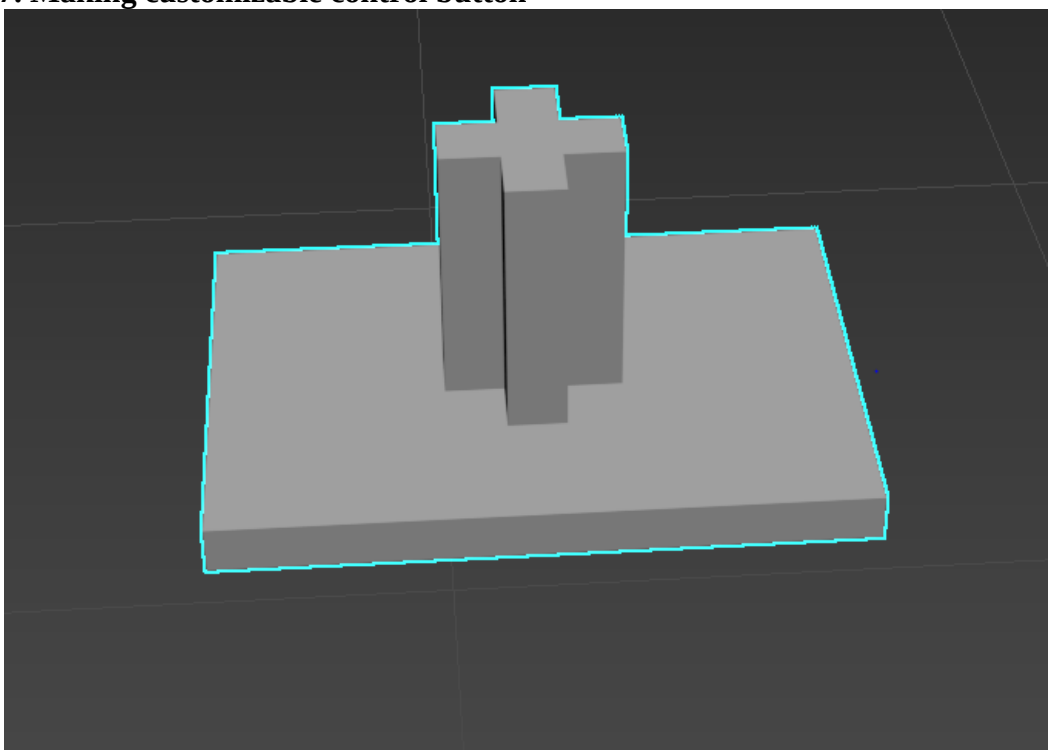

Figure 5.1.7.1: Making customizable control button

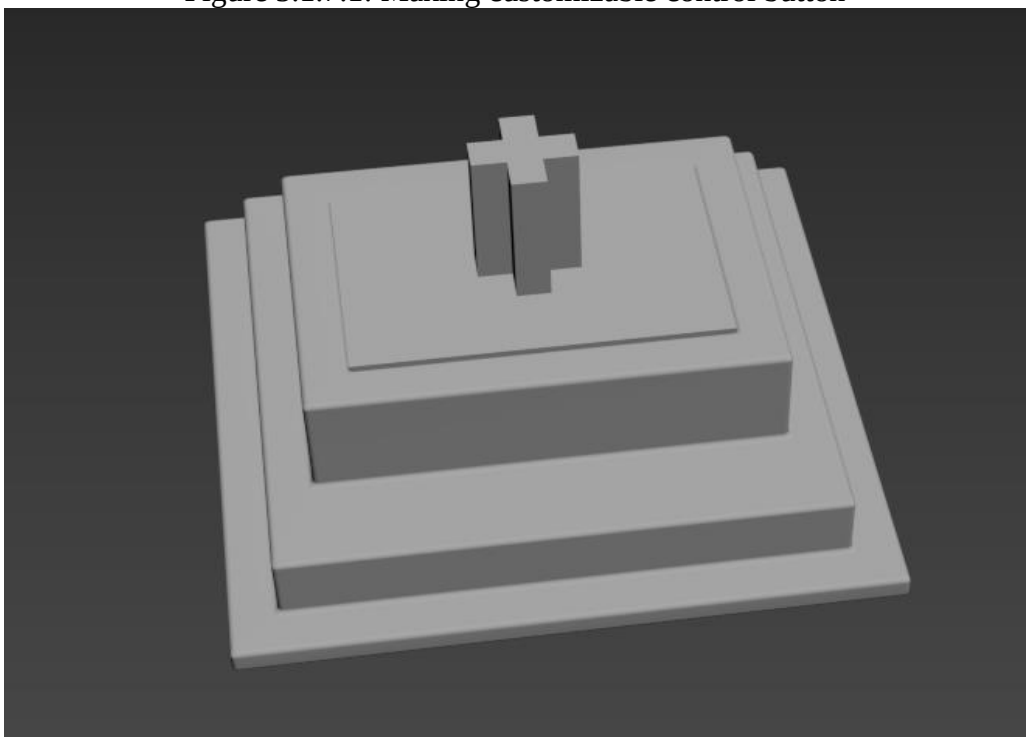

Figure 5.1.7.2: Making customizable control button 2

Figure 5.1.7.3: Making customizable control button 3

Now we will make some start shaped sockets that will hold our keys in the keyboard. To make that we will take a plane and make it like a plus sign. After that we will add shell modifier to give thickness to the key holder sockets. Once we make one after that we can copy and paste it the way we want in the reference.
Now we take a cylinder and delete the bottom part. This will help us to make our object low poly. After that we will select the edge that we want to be smooth and add more edges and apply turbo smooth.

5.1.8. Making big key first

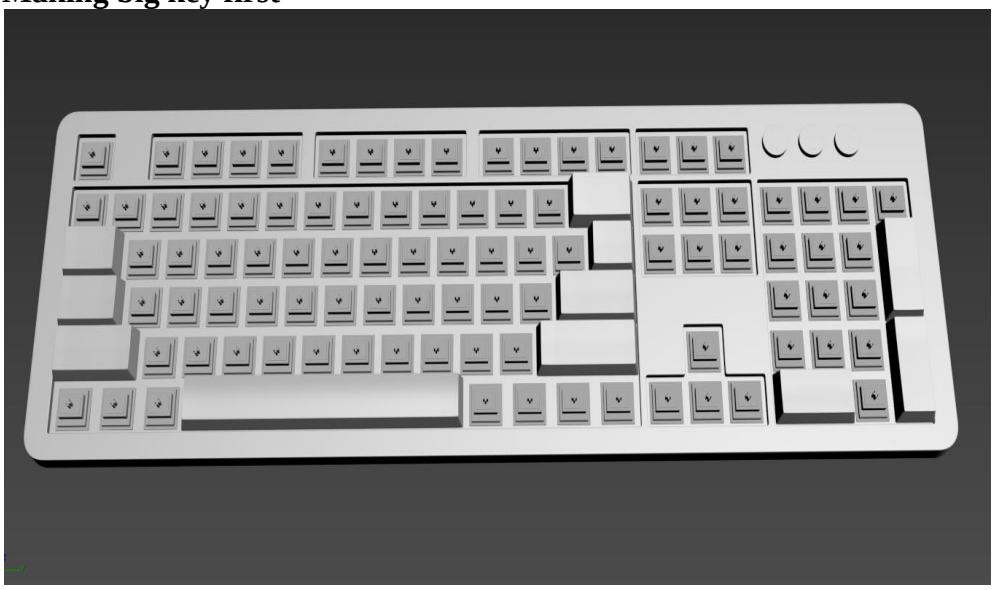

Figure 5.1.8.1: Making big key first

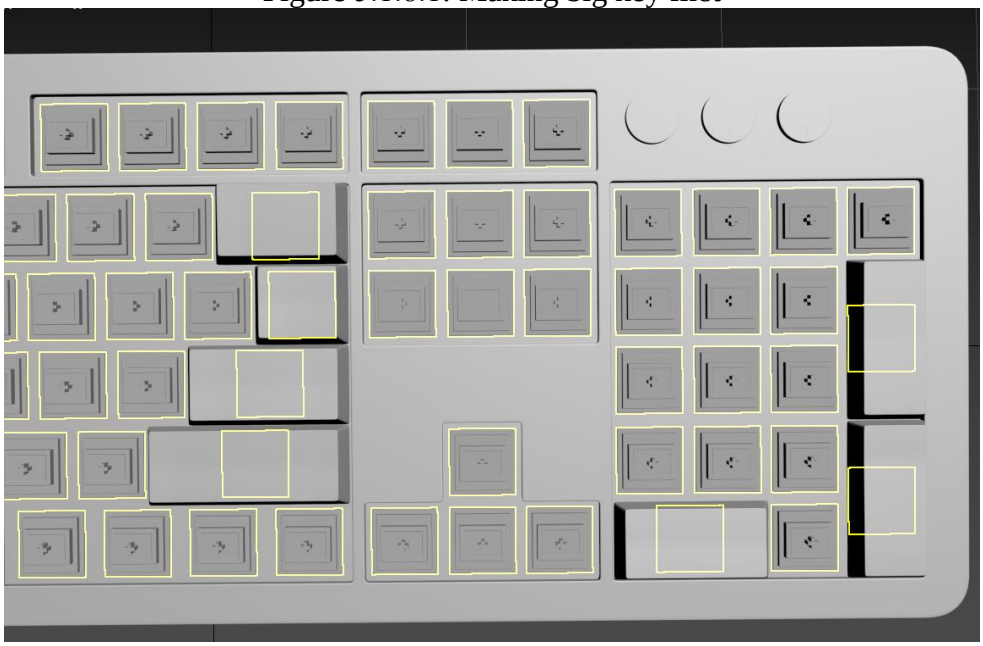

Figure 5.1.8.2: Making big key first 2

Now we make all key caps that are not similar like tab key, enter key, shift key, ctrl key space bar, number 0 key etc. To make them we take a box and select top vertexes and scale down a bit. After that we go to bottom polygon and extrude it inside. After that we have to use turbo smooth and smooth all edges.

5.1.9. Making all key and finishing modeling

Figure 5.1.9.1: Making all key and finishing modeling

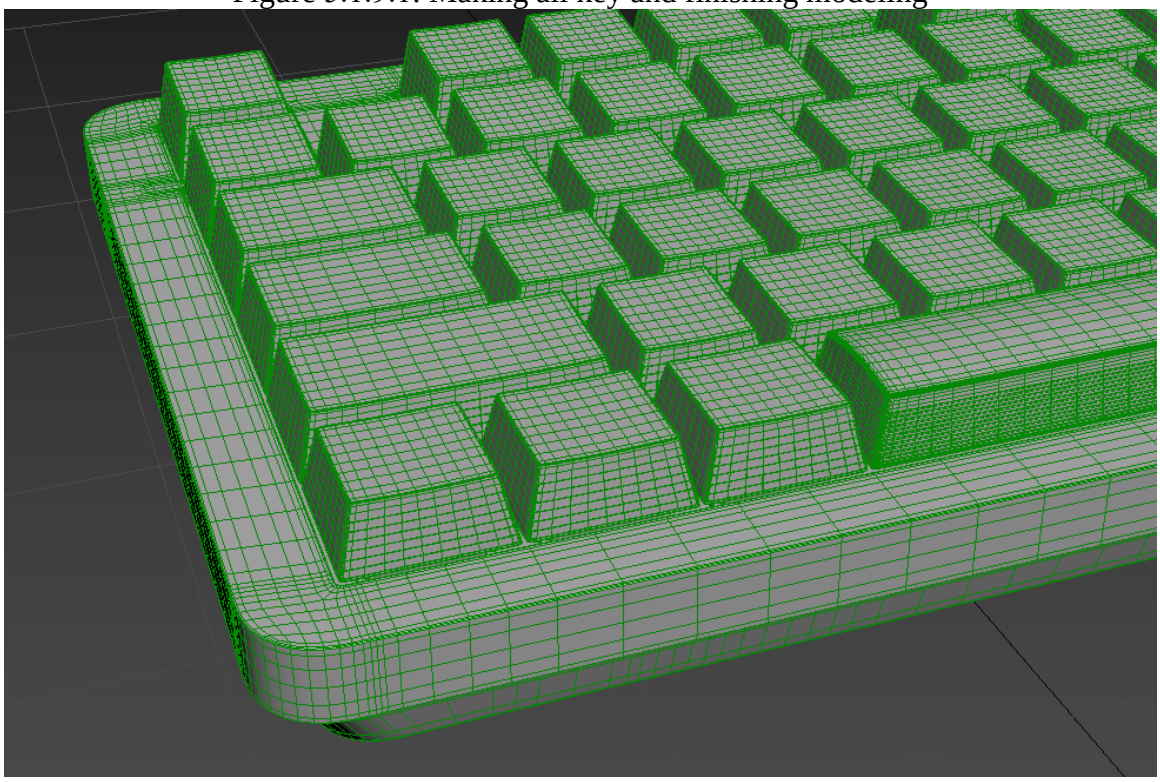

Figure 5.1.9.2: Making all key and finishing modeling 2

Now we make all key caps and finish out product keyboard. To do that, we have to make one key cap at first. After that we just have to copy and paste them. Then we arrange them in orders according to reference image.

5.1.10. Making V Ray Materials

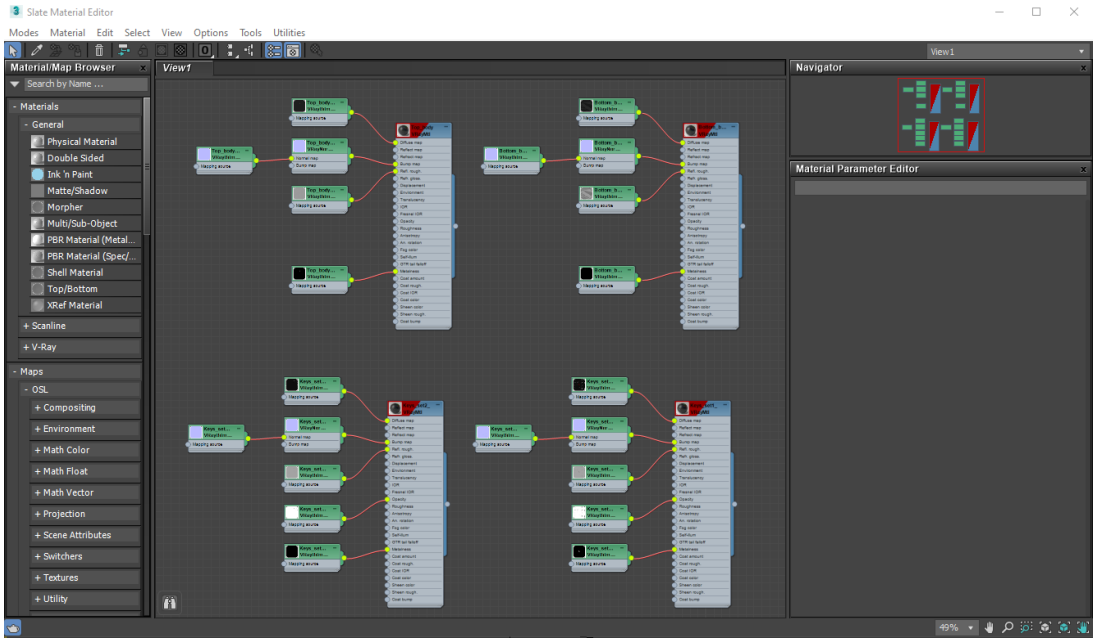

Figure 5.1.10.1: Making V Ray Materials

Figure 5.1.10.2: Making V Ray Materials 2

Now we make textures in substance painter and assign material in 3ds max using V Ray Material library. We also make the entire font in adobe illustrator and create alpha maps which we can use in substance painter.

5.1.11. Setting all RGB lights and studio light for keyboard

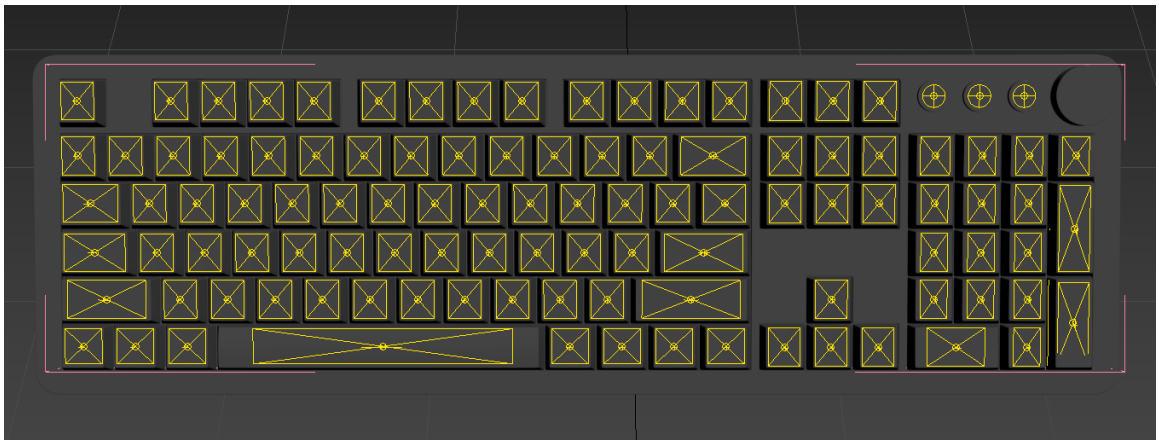

Figure 5.1.11.1: Setting all RGB lights and studio light for keyboard

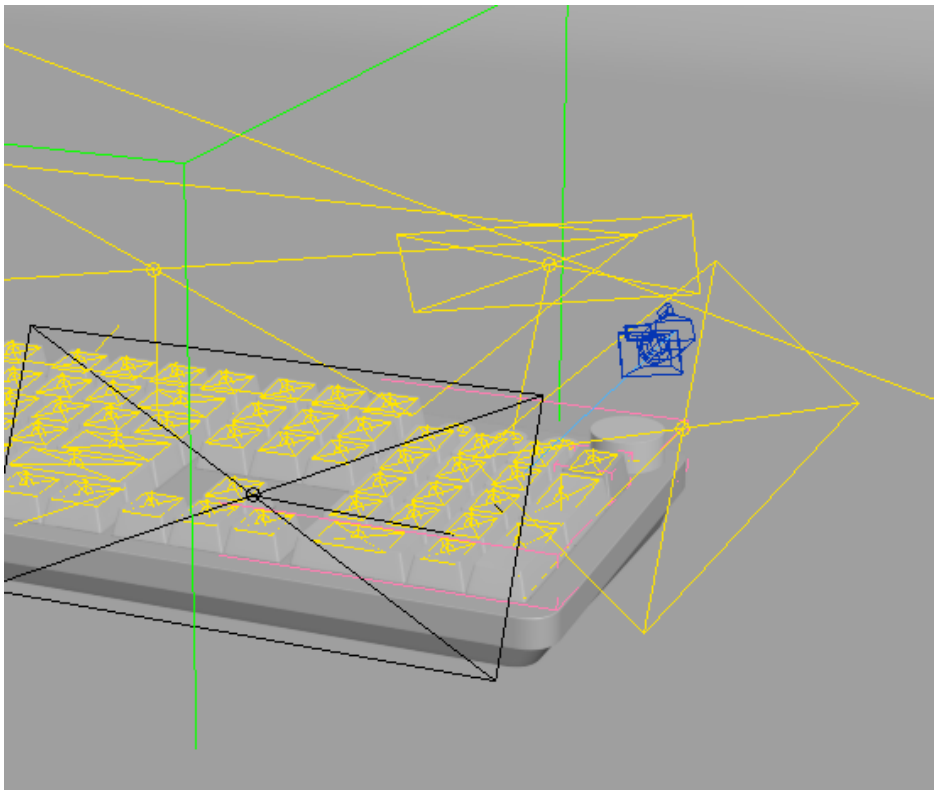

Figure 5.1.11.2: Setting all RGB lights and studio light for keyboard 2

Now we make RGB backlight for every key caps in the keyboard. After that we set studio setup light for lighting. We use V Ray light and light lister for quickly edit all light parameter. Now we animate all light on off parameter to make RGB effect as client wanted.

5.1.12. Appling texture on keyboard

Figure 5.1.12.1: Appling texture on keyboard

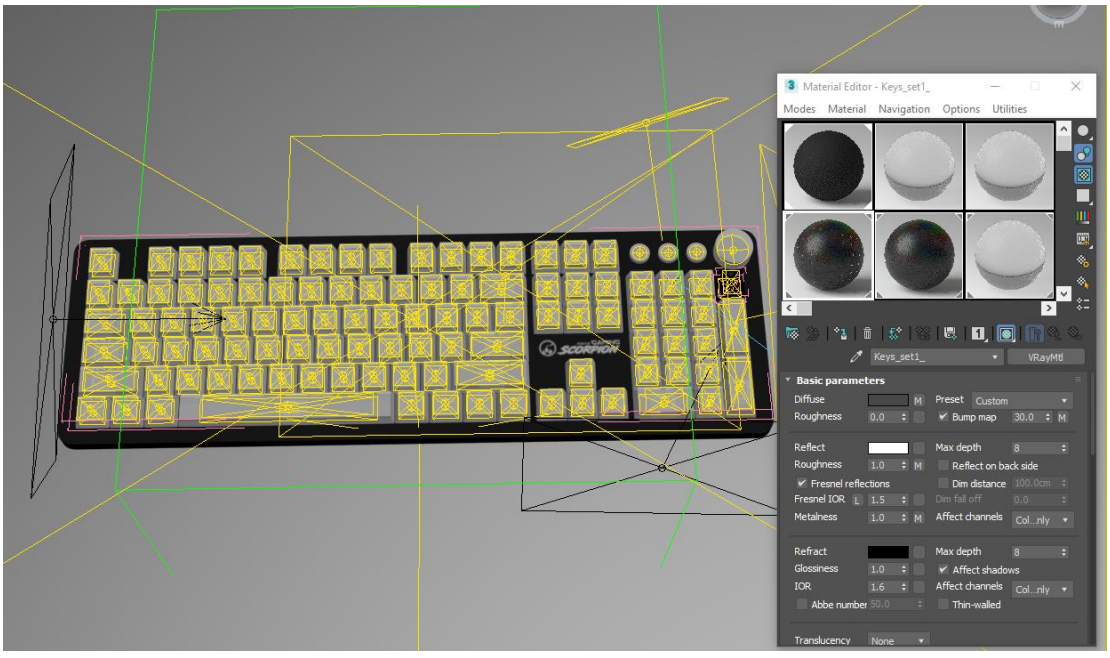

Figure 5.1.12.2: Appling texture on keyboard 2

Now we go to material editor. Select the object we want to apply material and from material editor option select assign to selection and turn on view material on viewport to see the result.

5.1.13. Setting up camera

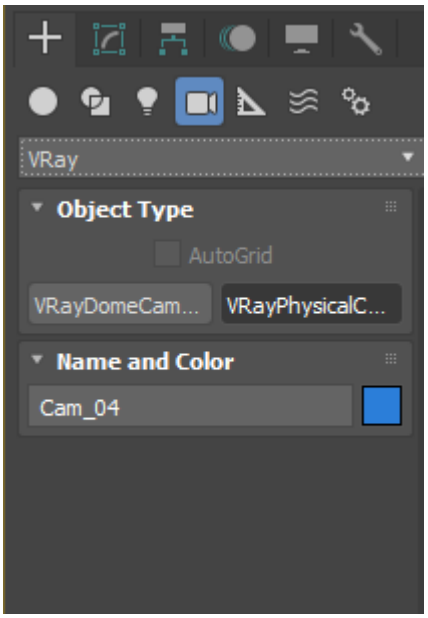

Figure 5.1.13.1: Setting up camera

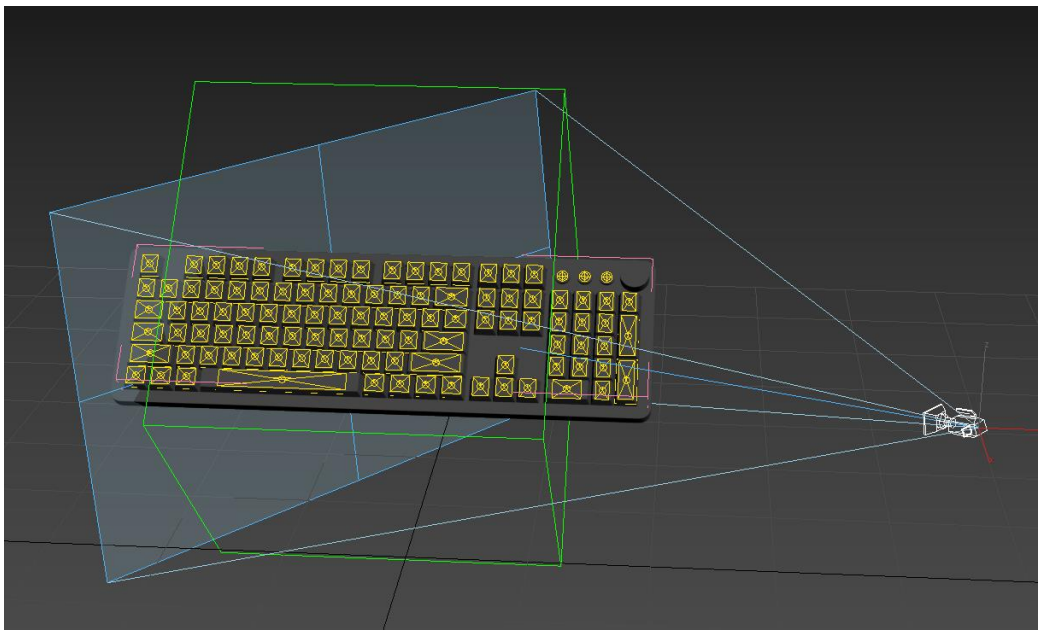

Figure 5.1.13.2: Setting up camera 2

Now we go to camera and select V Ray from the camera selection. After that select V Ray Physical Camera and click and drag on the viewport where you want to create your camera and point the camera target towards you objects.

5.1.14. Animating camera for multiple scenes

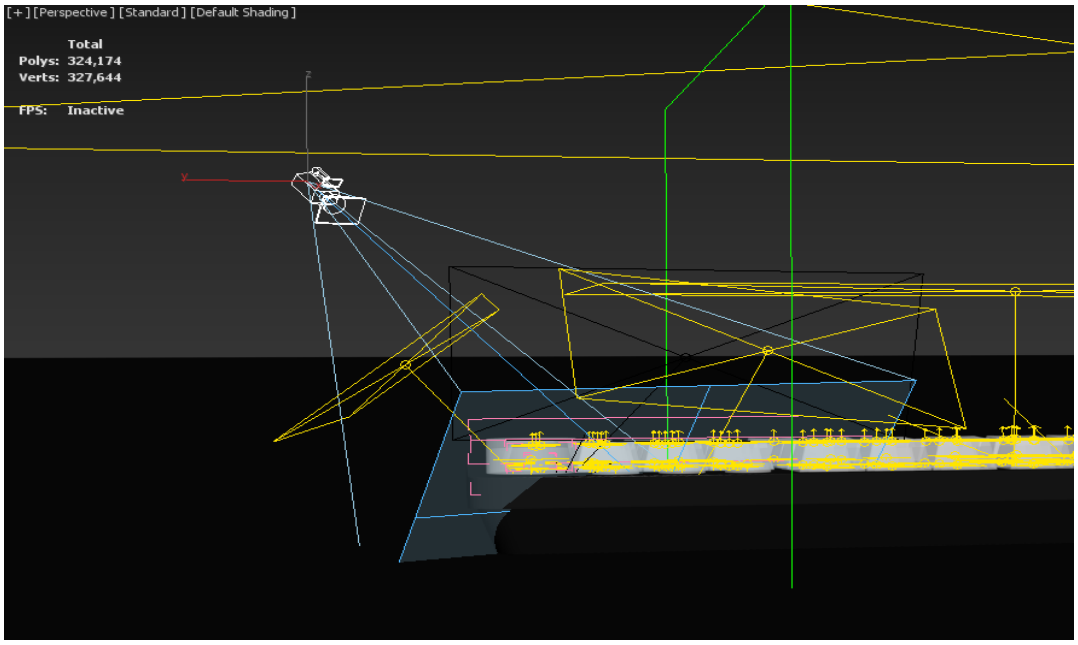

Figure 5.1.14.1: Animating camera for multiple scenes 1

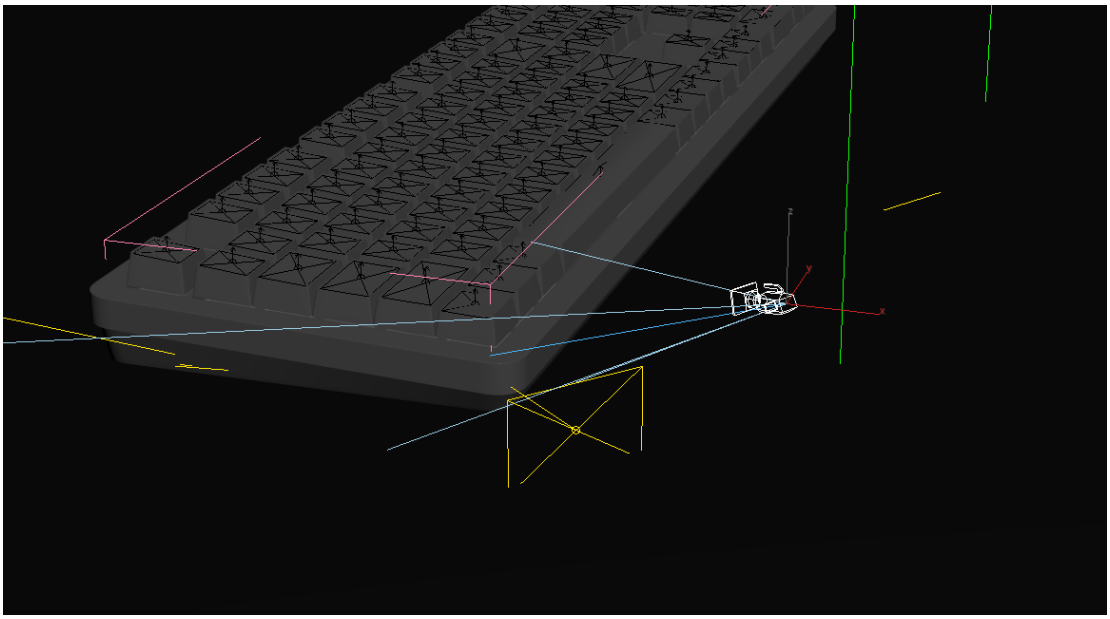

Figure 5.1.14.2: Animating camera for multiple scenes 2

Now we take multiple cameras according to our scenes or shots. After that we animate all cameras to crate animation. Sometime to get extra control we link our camera to a dummy object and animate dummy object so that camera rotation stay same.

5.1.15. Using V Ray Render

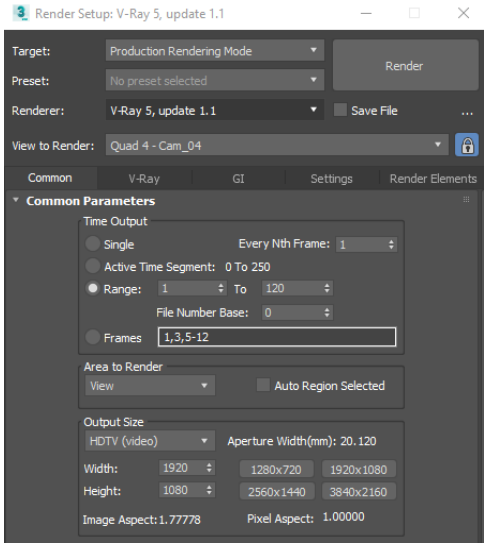

Figure 5.1.15.1: Using V Ray Render

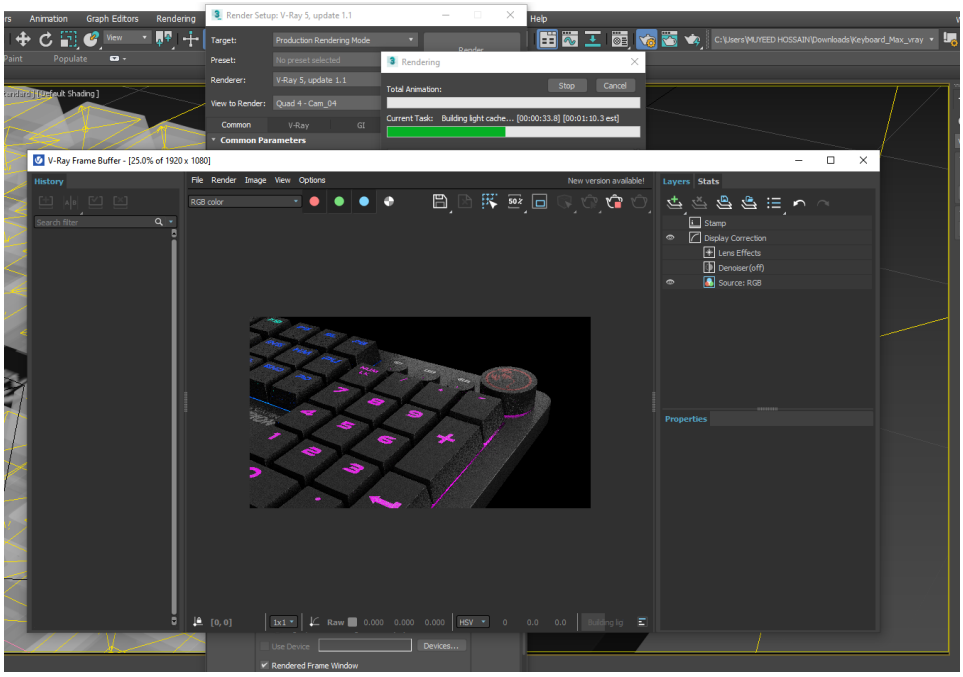

Figure 5.1.15.2: Using V Ray Render 2

Once camera animation done, it's time for rendering. Go to render setup and select V Ray from renderer dropdown menu. Now adjust V Ray parameter according to you needs and set range for your animation.

5.1.16. Using After Effect for compositing

Once rendering finish, we got many images. Each of the images is called frame. As we did our animation in 30fps (Frame per Second), we will need 30 images to make 1 sec animation. Now we open after effect and import all images. Now create a composition with parameter 30 fps.

Now we drag and drop image folder in composition. Now we can preview our animation although it's not recommended because it will lag during its play through. Now add adjustment layer and do some color correction to make the animation look better.

5.1.17. Using Media Encoder for rendering mp4

Figure 5.1.17.1: Media Encoder rendered mp4

Now add render que in Media Encoder. This will open media encoder. In media encoder select your desired video format like mp4, avi or mov etc. Now select the folder you want to save and name your file. After that click render and it will start rendering your video.

5.1.18. Final Output

Figure 5.1.18.1: Final Output

Figure 5.1.18.2: Final Output 2

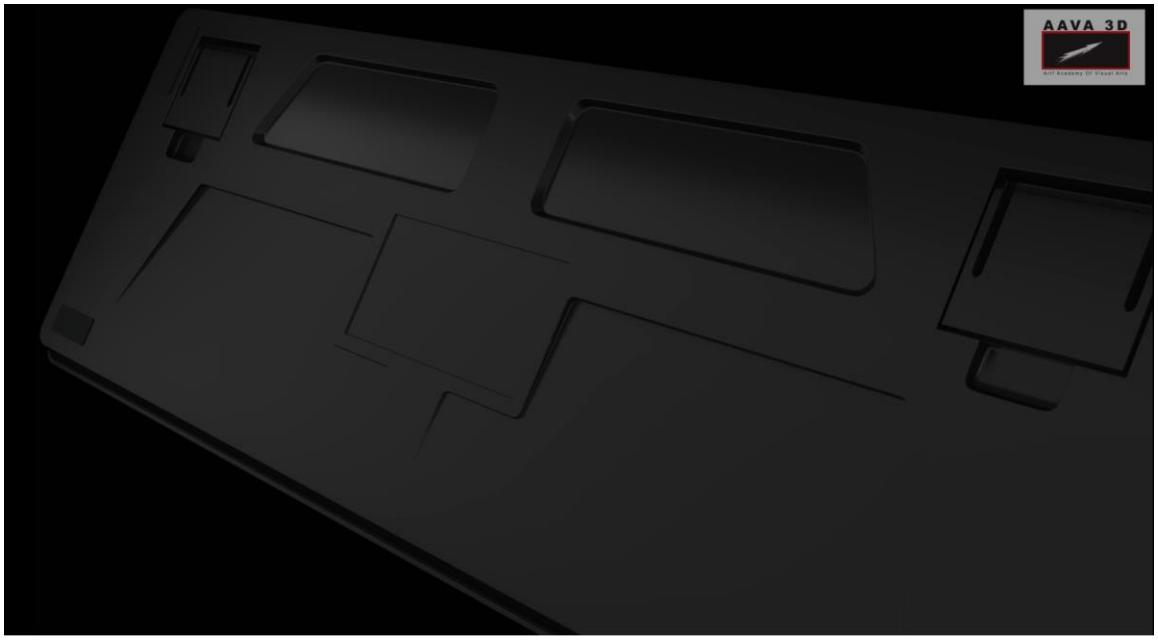

Figure 5.1.18.3: Final Output 3

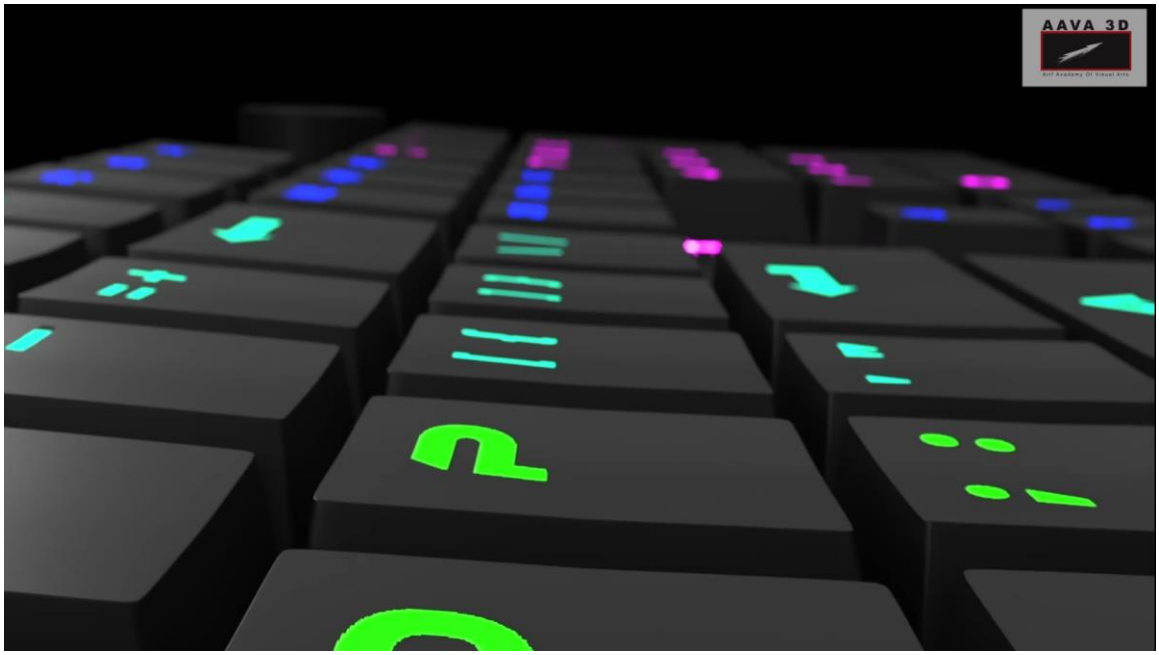

Figure 5.1.18.4: Final Output 4

5.2. Research Work: Simulating local (Asian subcontinent) costumes for 3D animation & VFX

For the research project we decided to simulate an Asian sub-continental traditional female dress called “Saree” with an animated 3d character.

5.2.1. Importing animated character into Marvelous Designer

On an empty Marvelous designer scene, we went to file from top left corner, and then we selected Import and after that clicked Alembic as showed in figure 5.2.1.1.

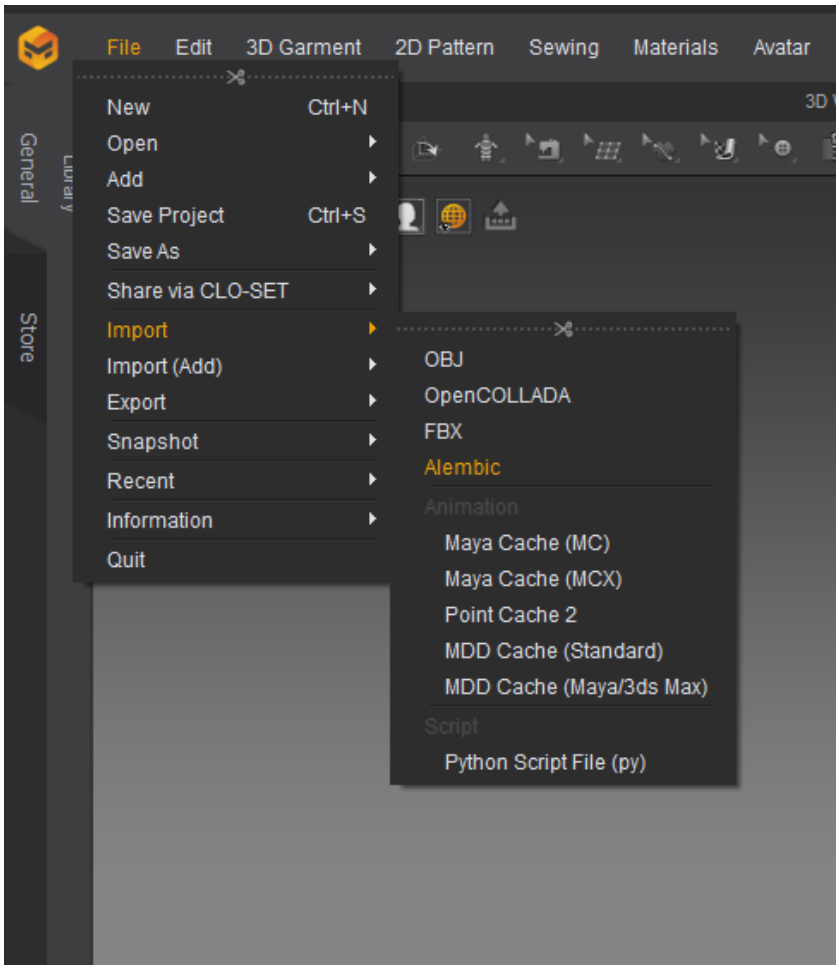

Figure 5.2.1.1: Importing alembic cache into Marvelous Designer - 1

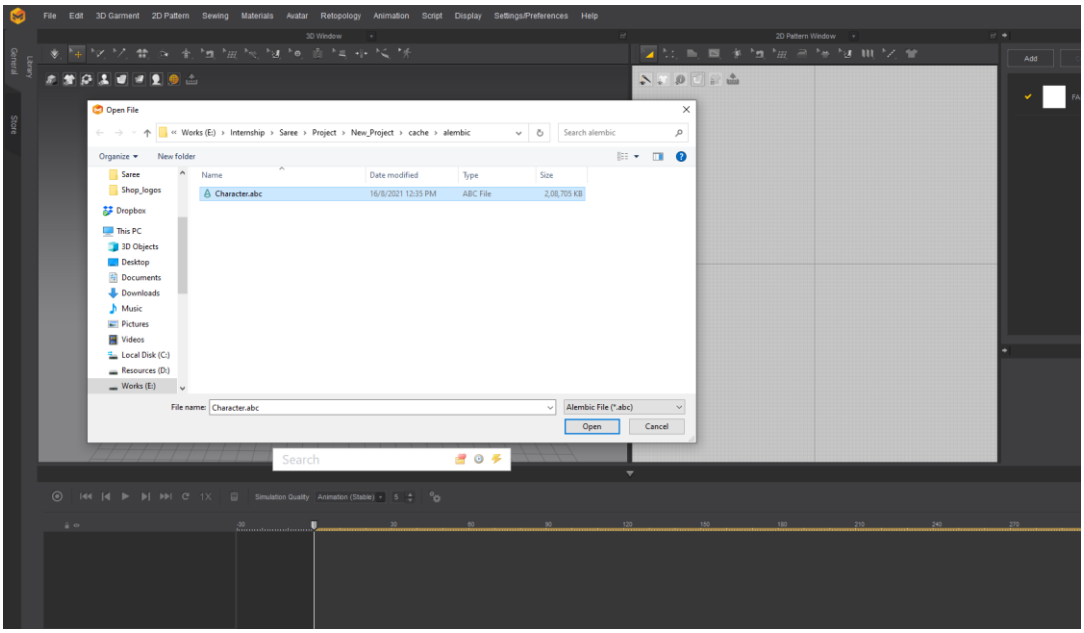

Figure 5.2.1.2: Importing alembic cache into Marvelous Designer – 2

A new pop up window appeared. Then we found the alembic file location in our hard drive, selected the right file and clicked open as showed in figure 5.2.1.2.

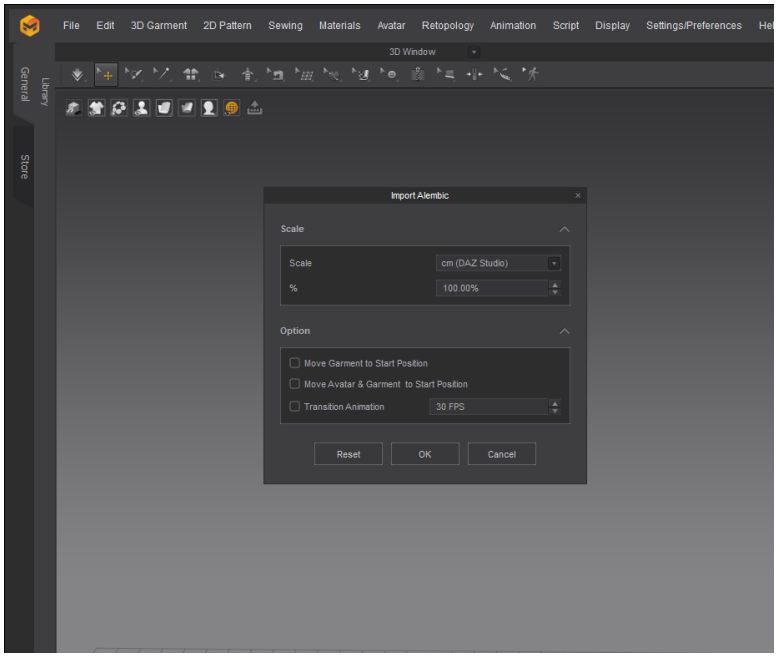

Figure 5.2.1.3: Importing alembic cache into Marvelous Designer – 3

Another pop up window appeared to set the proper unit. We selected the unit in “cm” and frame rate at 30 fps same as the 3d software we exported from and clicked ok as showed in figure 5.2.1.3. After that the character came into the scene with proper animation as showed in figure 5.2.1.4.

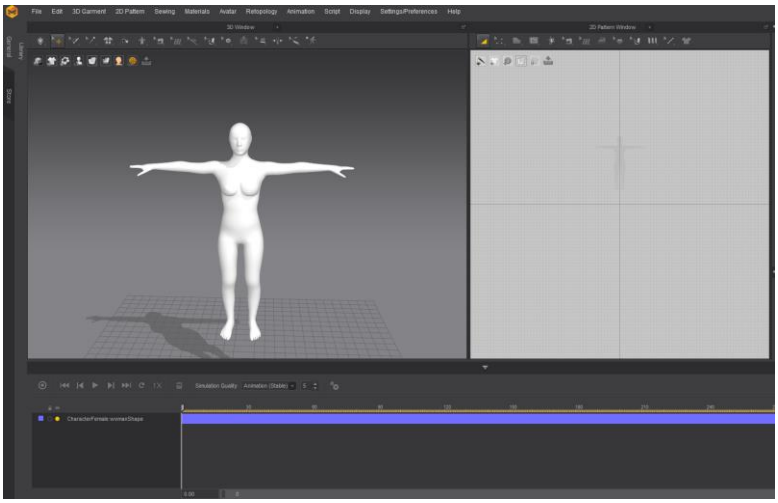

Figure 5.2.1.4: Importing alembic cache into Marvelous Designer – 4

5.2.2. Creating blouse patterns

Inside the 2D pattern window, we selected polygon tool from the toolbar as showed in figure 5.2.2.1.

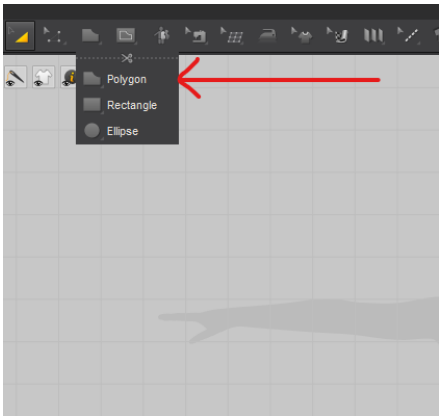

Figure 5.2.2.1: Selecting polygon tool

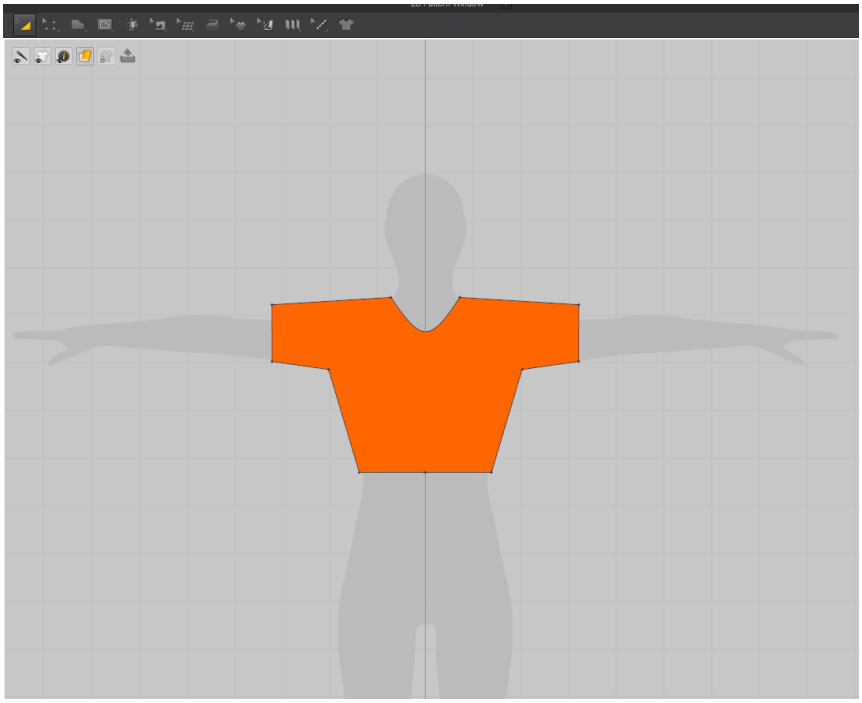

Figure 5.2.2.2: Creating front pattern of the blouse

With the polygon tool, we created the front pattern of the blouse with the help of the silhouette present in the 2D pattern window as a guide as showed in figure 5.2.2.2.

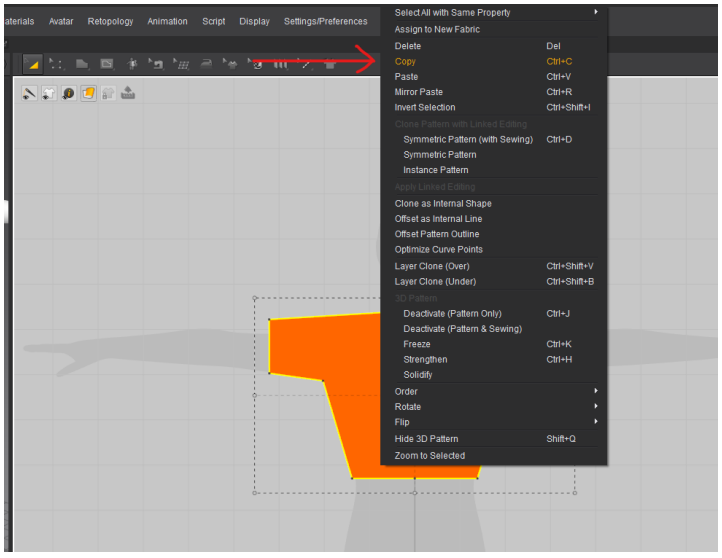

Figure 5.2.2.3: Copying the front pattern

After that, we clicked right button of the mouse while selecting the front pattern and selected the copy option as showed in Figure 5.2.2.3. Then we again clicked right button on an empty space and selected the paste option as showed in figure 5.2.2.4. A new pattern same as the front pattern arrived in the window as showed in figure 5.2.2.5. It was the backside of the blouse.

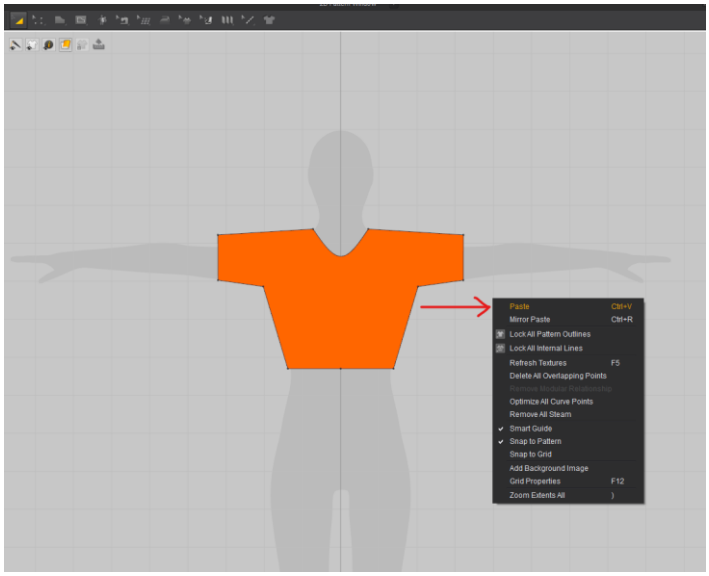

Figure 5.2.2.4: Pasting the front pattern as back pattern – 1

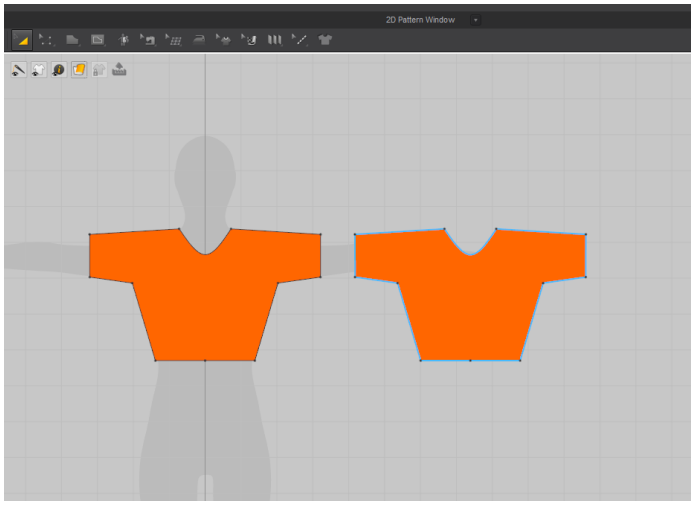

Figure 5.2.2.5: Pasting the front pattern as back pattern - 2

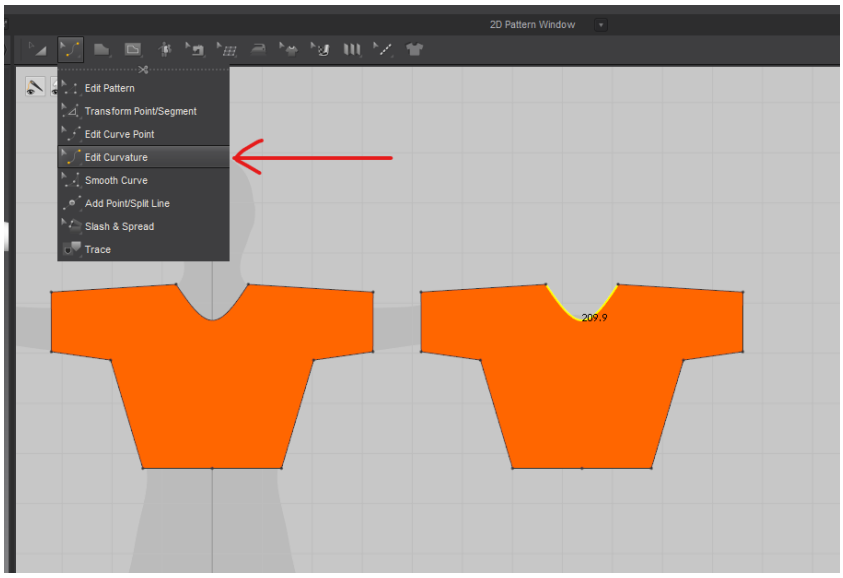

Figure 5.2.2.6: Selecting Edit Curvature tool

After that we had to shorten the neck of the backside pattern. For that we selected the Edit Curvature tool from the toolbar in 2D Pattern Window as showed in figure 5.2.2.6. Then with the help of the edit curvature tool we shorten the neck of the backside pattern as showed in Figure 5.2.2.7.

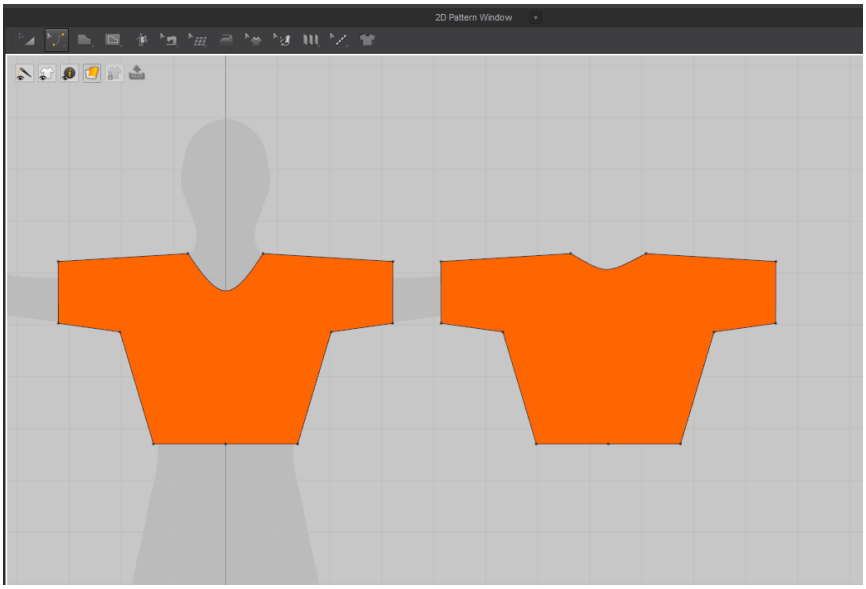

Figure 5.2.2.7: Editing the neck of backside pattern

5.2.3. Simulating blouse patterns

In the 3D window, we placed the front and backside patterns in front of the character and back of the character respectively as showed in figure 5.2.3.1 by using the move tool.

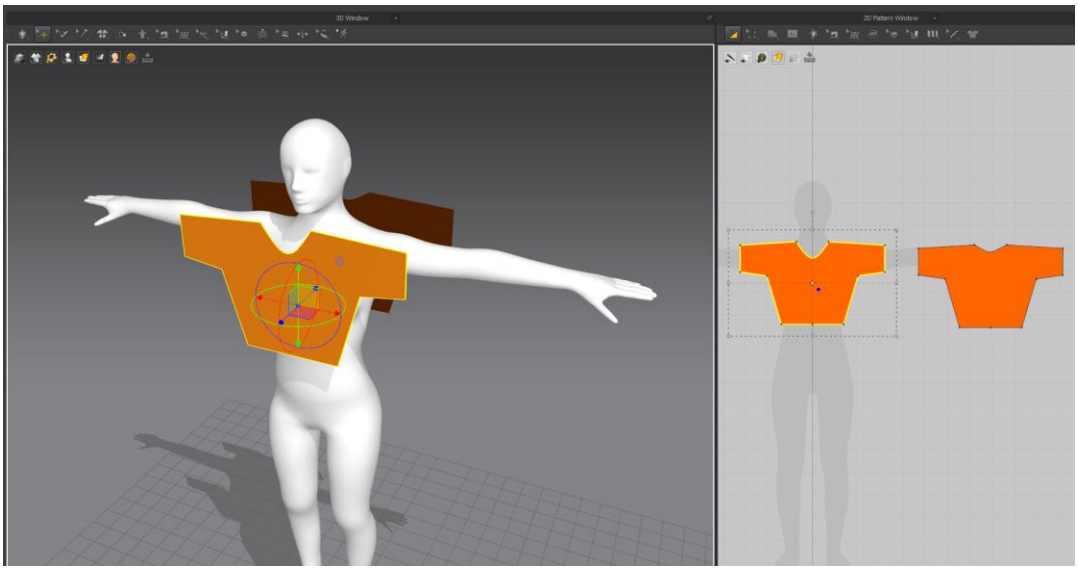

Figure 5.2.3.1: Positioning the Patterns in 3d window

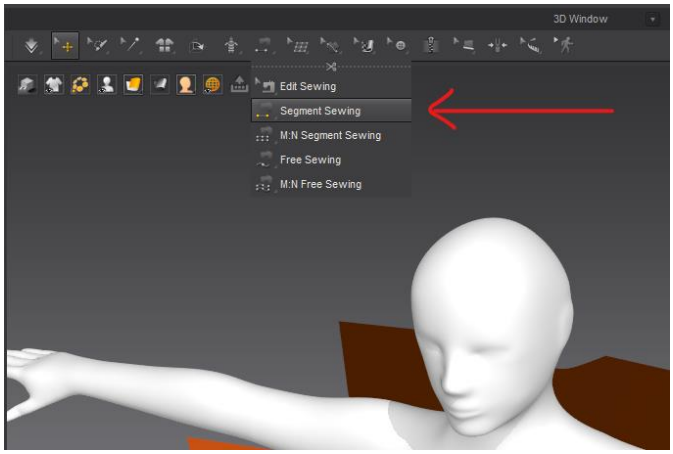

Figure 5.2.3.2: Selecting segment sewing tool

From the 3D window toolbar, we selected the segment sewing tool inside the sewing panel as showed in figure 5.2.3.2. With the segment sewing tool we sewed segments of

the front pattern with the segments of the back pattern facing to each other as showed in figure 5.2.3.3.

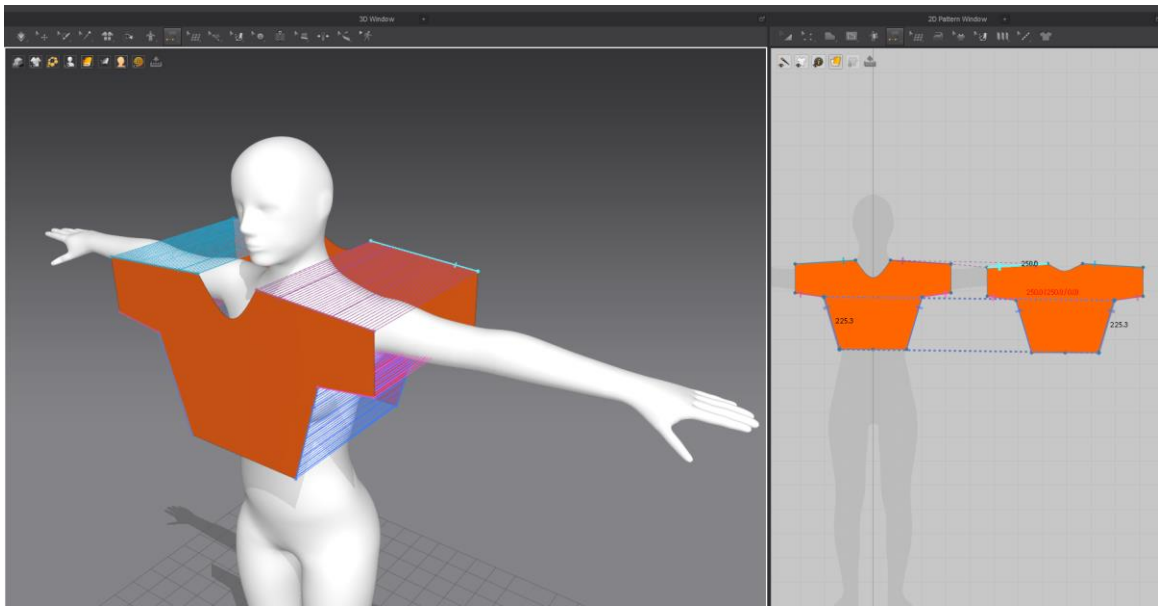

Figure 5.2.3.3: Sewing front and back patterns of the blouse

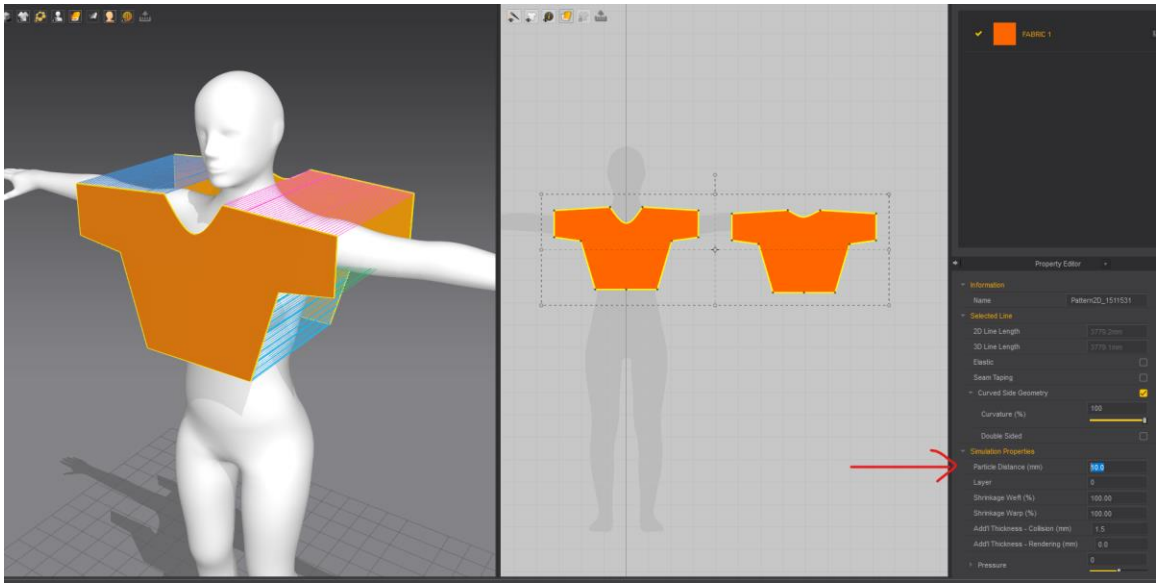

Figure 5.2.3.4: Putting the particle distance value

Then we selected the patterns and in the property editor set the particle distance value 10 showed as figure 5.2.3.4. Lower value of this parameter gives more details in the simulation with the cost of simulation time. For this case, the value 10 was fine for us.

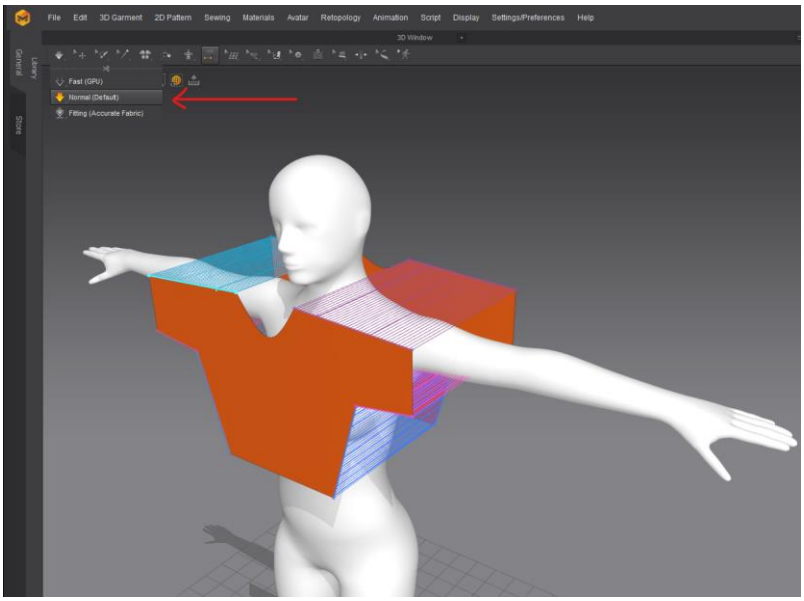

Figure 5.2.3.5: Setting simulation quality to Normal (Default)

From the 3D window toolbar, we set the simulation quality Normal (Default). After that we hit the “Space” from the keyboard to start the simulation process. It took some time to get the result we were looking for. After that we pressed “Space” again to stop the simulation. The end result of the simulation is showed in figure 5.2.3.7 and 5.2.3.8.

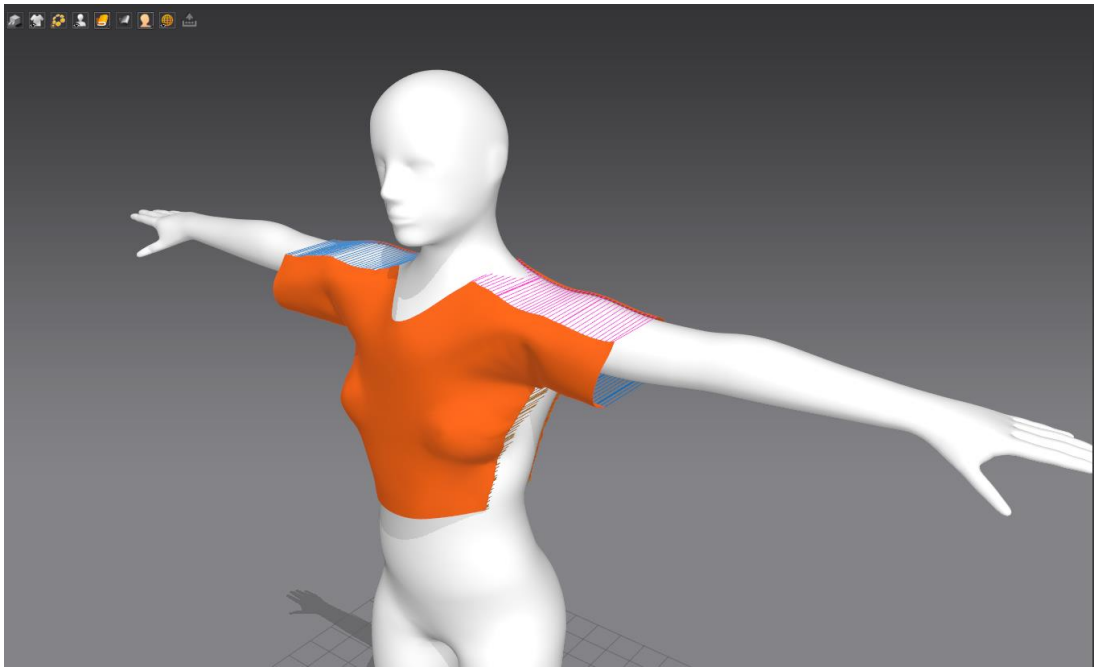

Figure 5.2.3.6: Simulation is processing

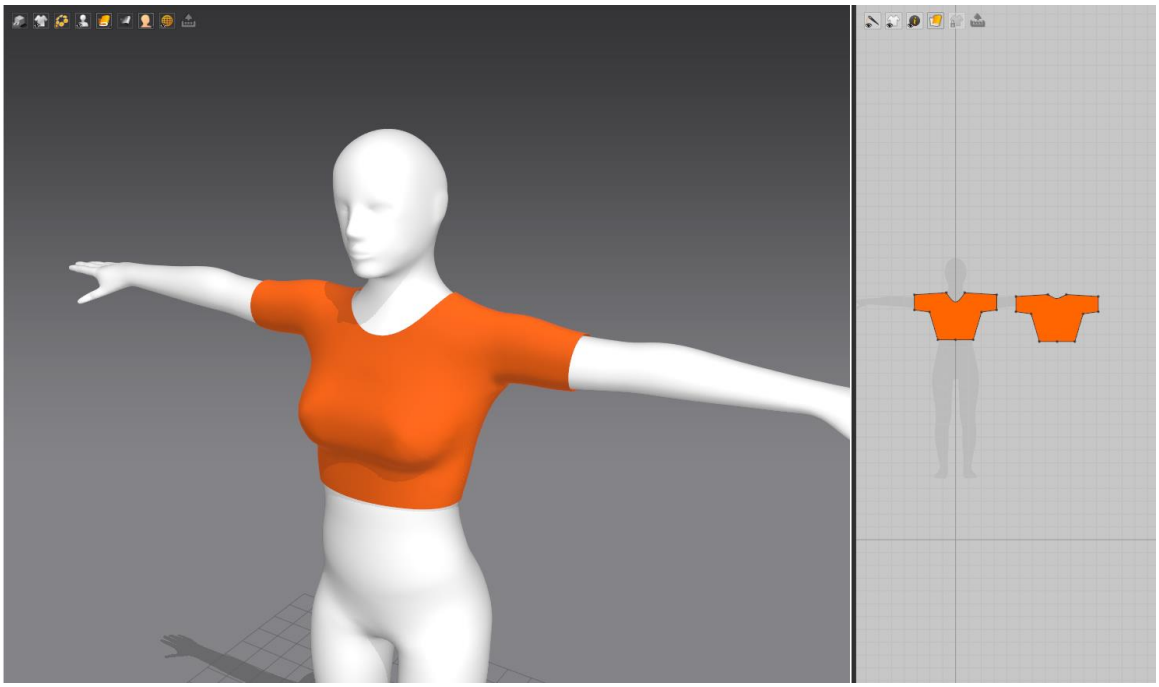

Figure 5.2.3.7: End result blouse simulation - 1

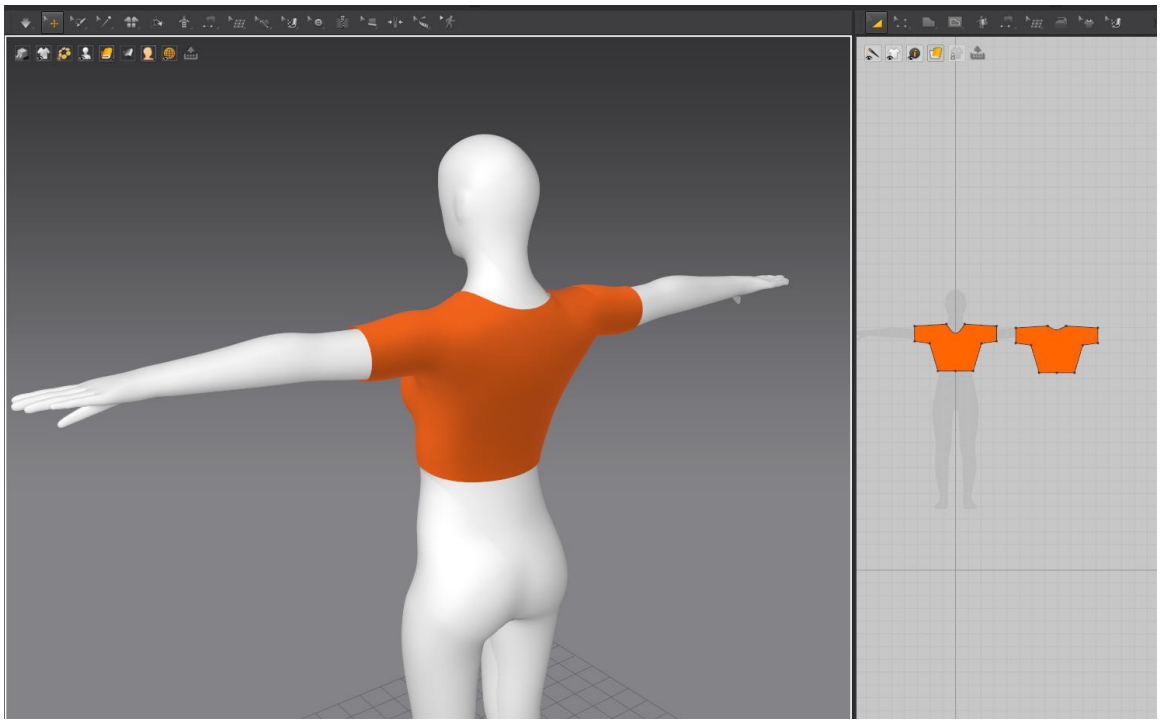

Figure 5.2.3.8: End result blouse simulation – 2

5.2.4. Creating petticoat patterns

Inside the 2D Pattern Window, we selected the Rectangle tool from the toolbar as showed in figure 5.2.3.8.

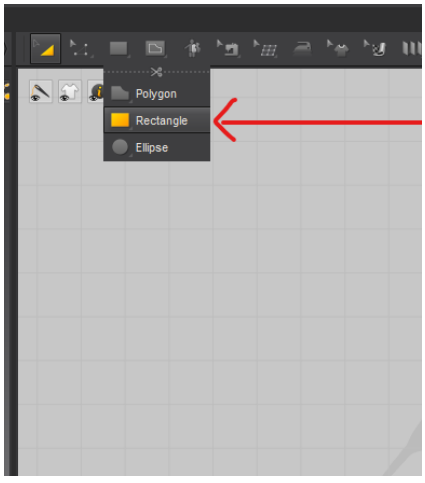

Figure 5.2.4.1: Selecting Rectangle tool

After that, we clicked left mouse button on an empty space inside the 2D window. A new pop up window appeared on the screen called “Create Rectangle”. We set the width 450 millimeter and height 900 millimeter of the rectangle and clicked OK.

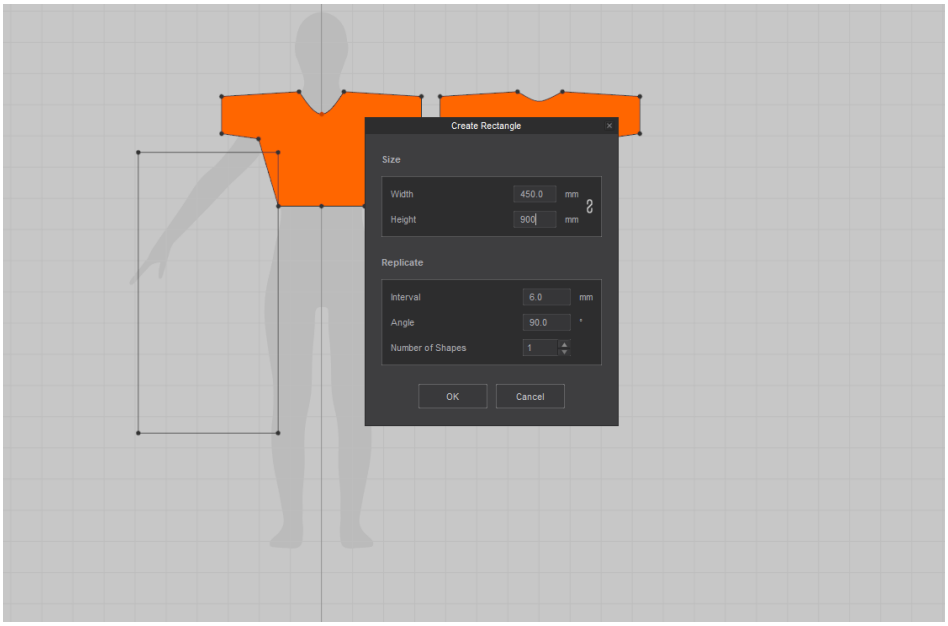

Figure 5.2.4.2: Creating rectangle shape – 1

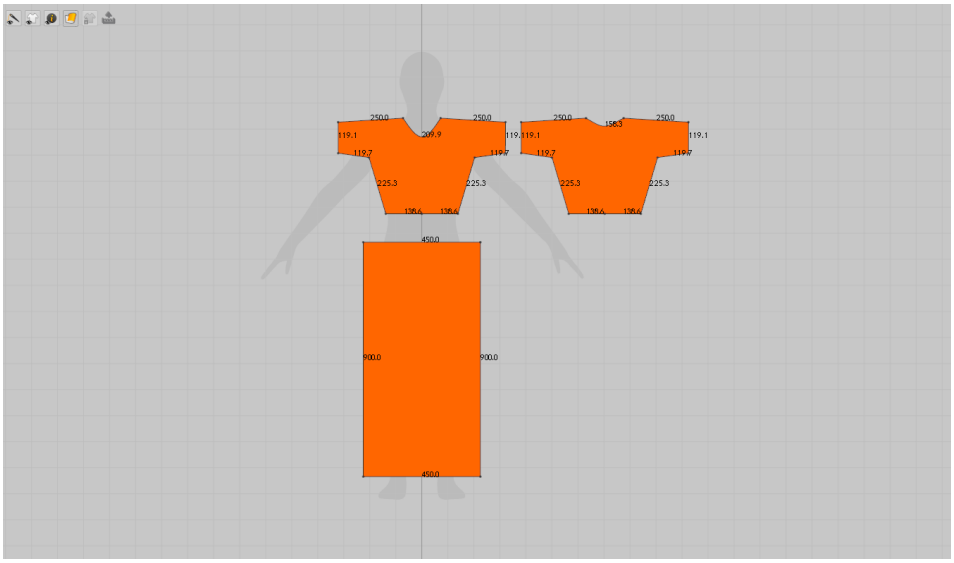

Figure 5.2.4.3: Creating rectangle shape – 2

A new rectangular pattern appeared in the 2D window. After that we created another rectangular pattern with the width of 330 millimeter and height of 35 millimeter using the same method.

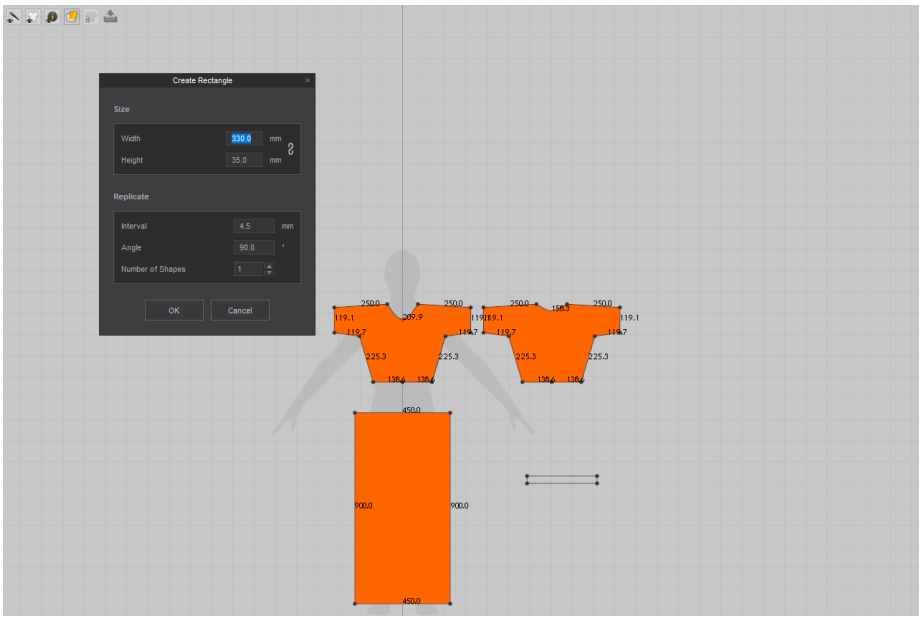

Figure 5.2.4.4: Creating small rectangle shape – 1

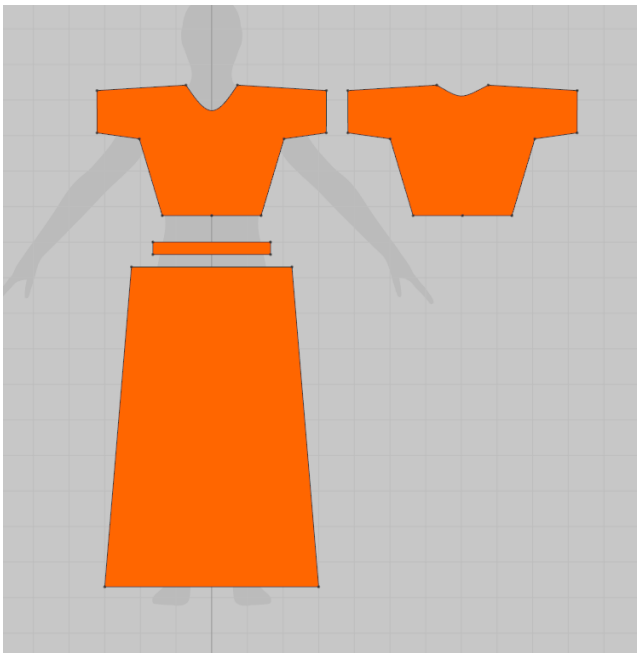

Figure 5.2.4.5: Creating small rectangle shape - 2

A new small rectangular pattern appeared in the window. These two patterns were the front part of the petticoat. After that we selected edit pattern tool from the toolbar.

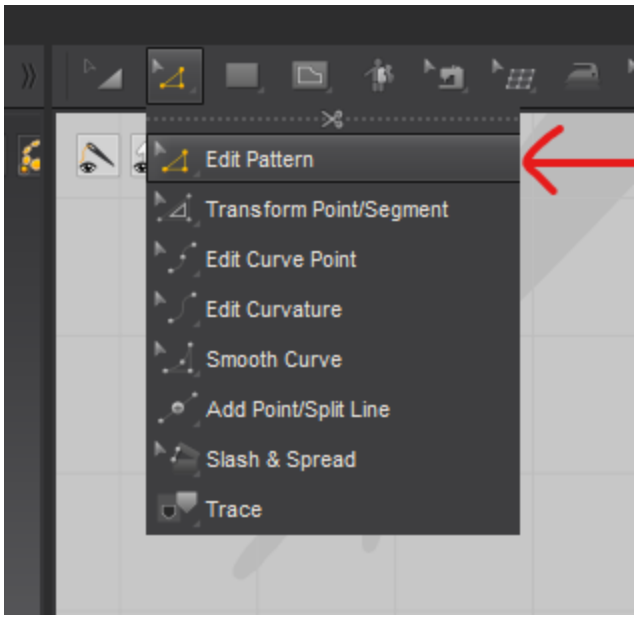

Figure 5.2.4.6: Selecting Edit Pattern tool

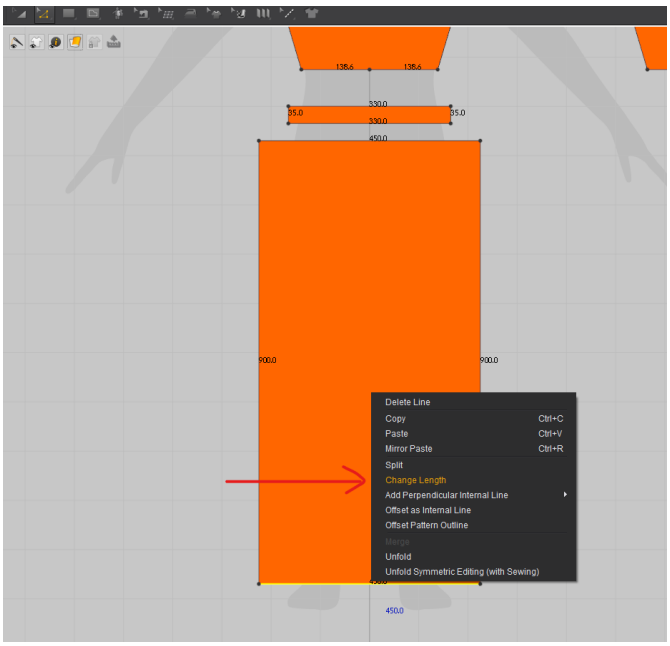

Figure 5.2.4.7: Changing pattern length – 1

With the edit pattern tool being active, we selected the bottom segment of the front pattern. Then we clicked right mouse button and selected change length option as showed in figure 5.2.4.7. A new window called “Change Length” appeared on the screen. We set the length value 600 millimeters and Direction “Both”.

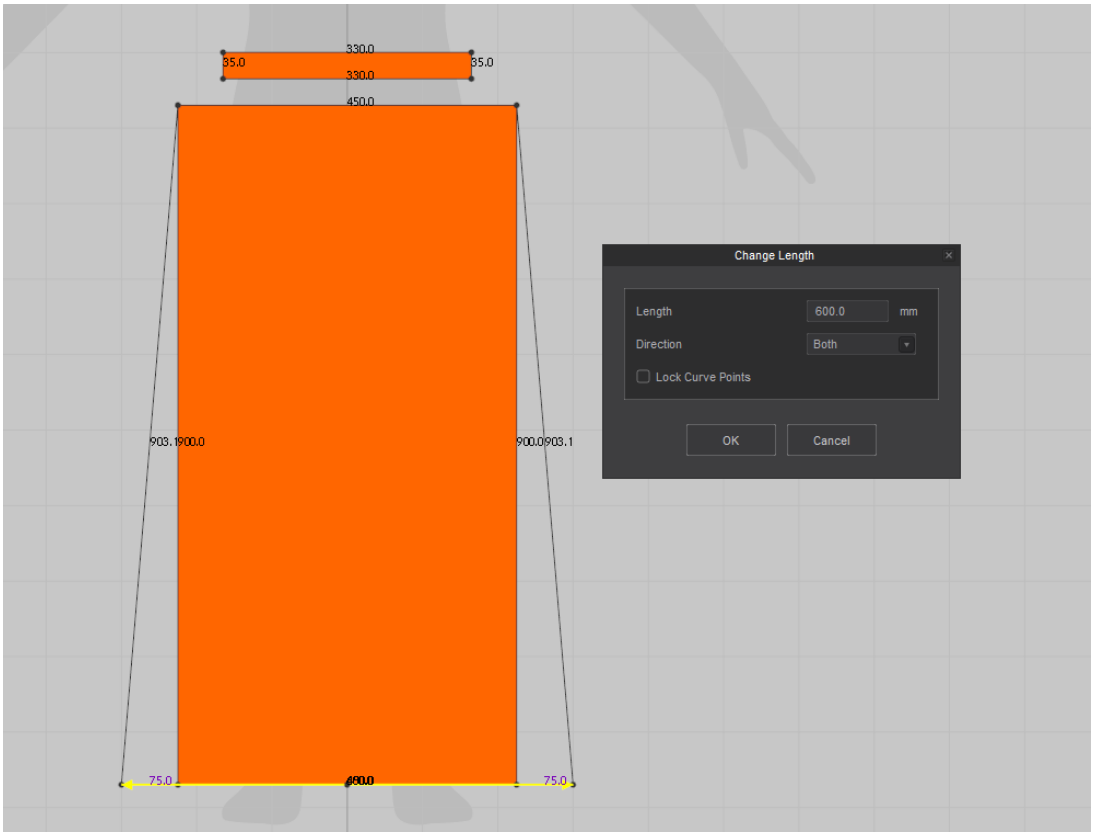

Figure 5.2.4.8: Changing pattern length - 2

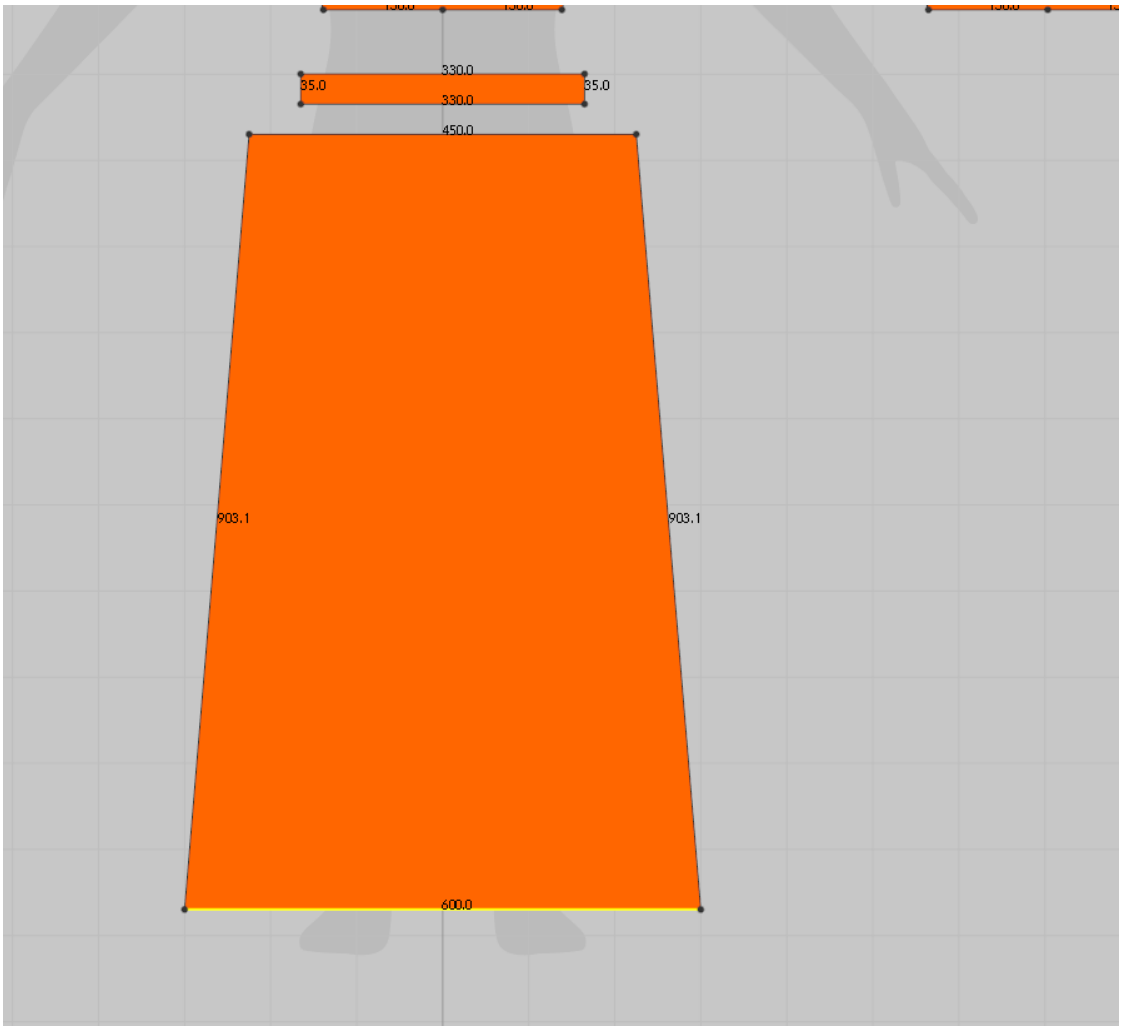

Figure 5.2.4.9: Changing pattern length – 3

By doing that, we got the shape we were looking for. After that we copied the front patterns and pasted that as like we did for the blouse patterns. These patterns were the backside of the petticoat.

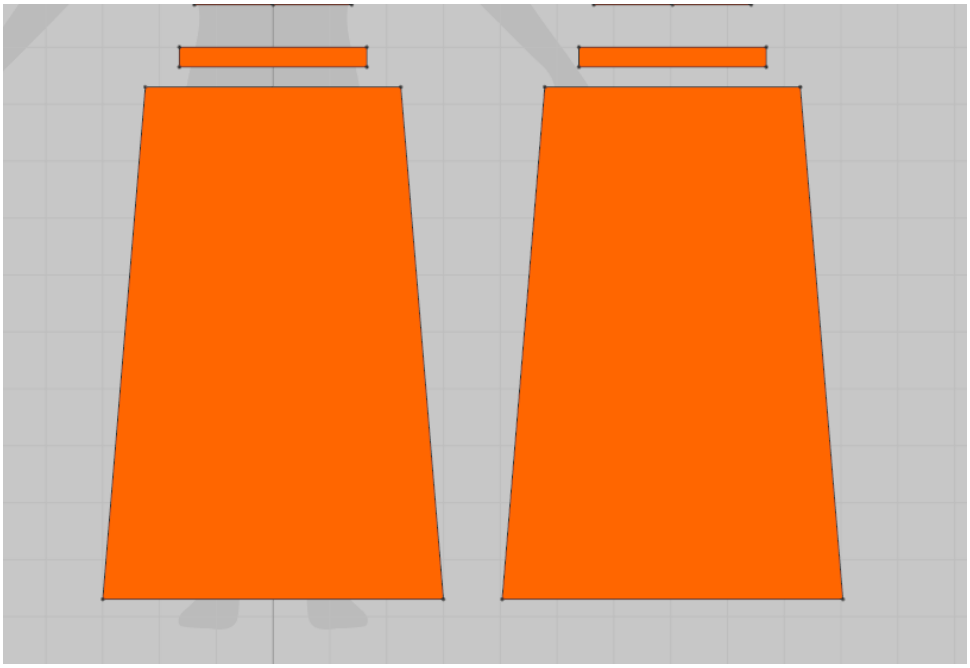

Figure 5.2.4.10: Copying the front patterns as back patterns

5.2.5. Simulating petticoat patterns

After creating the petticoat patterns, we selected the patterns and set the particle distance value to 10 from the property editor as showed in figure 5.2.5.1.

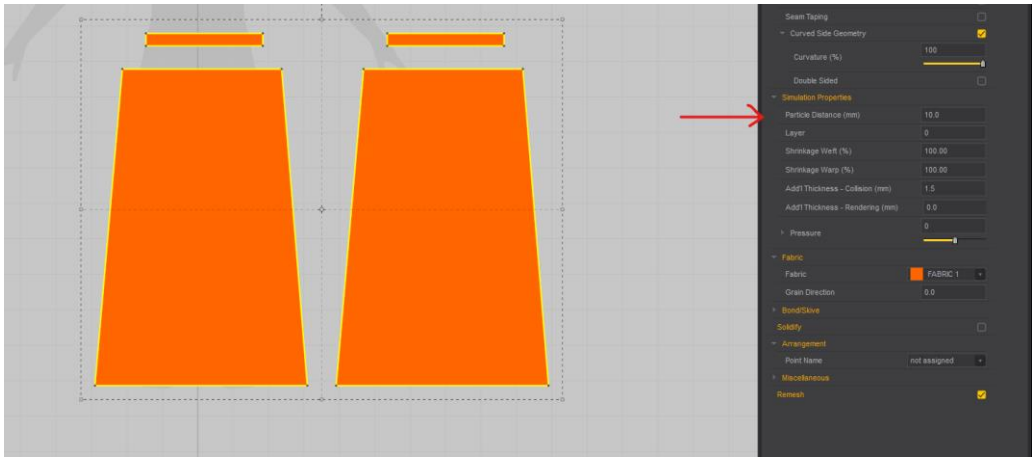

Figure 5.2.5.1: Setting the particle distance of petticoat patterns

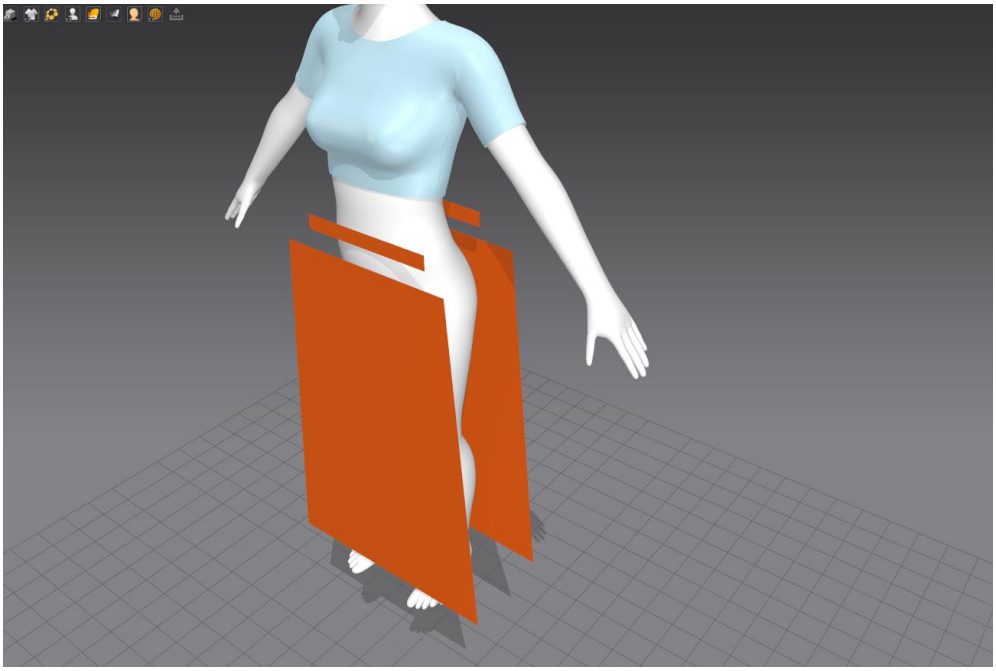

Figure 5.2.5.2: Positioning the petticoat patterns in 3D Window

In the 3d window, we moved the petticoat patterns in the right position according to the character position as showed in figure 5.2.5.2.

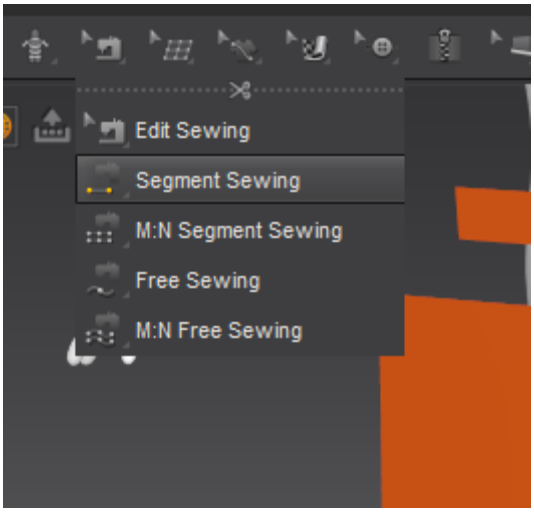

Figure 5.2.5.3: Selecting segment sewing tool

Then we selected the segment sewing tool from the toolbar in the 3D window. With the help of segment sewing tool we sewed the segments of the front and back patterns of the petticoat as showed in figure 5.2.5.4.

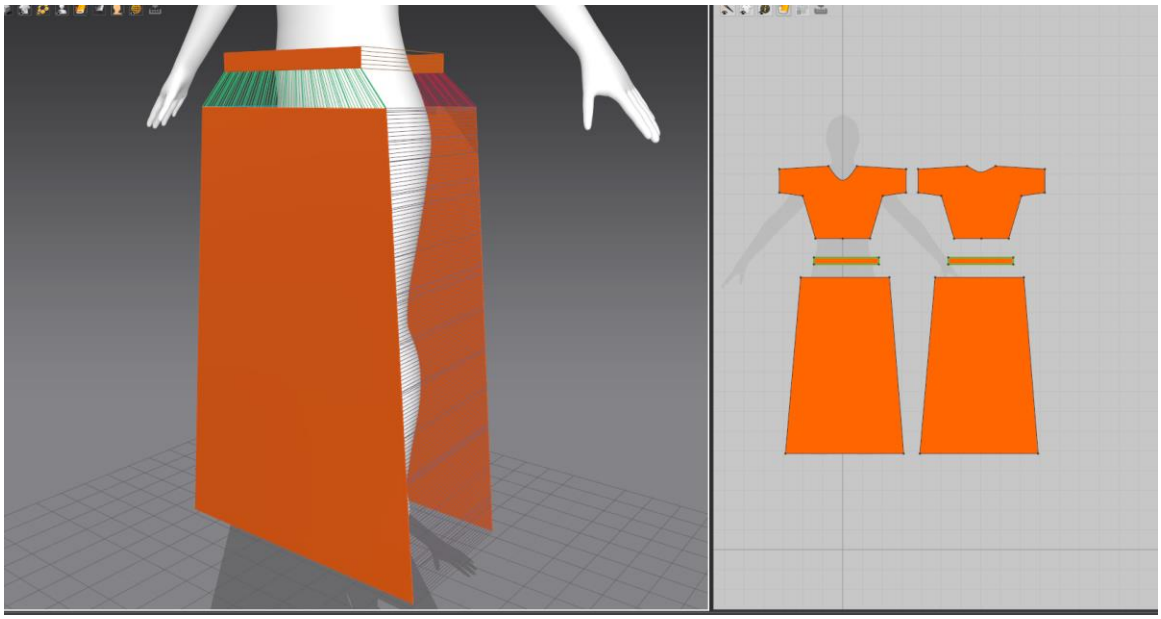

Figure 5.2.5.4: Sewing petticoat patterns

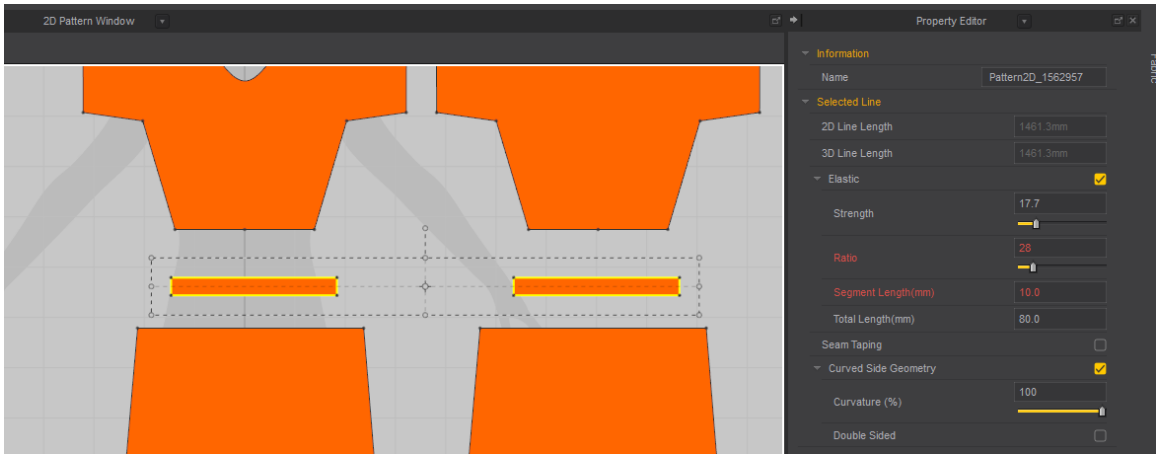

Figure 5.2.5.5: Adding Elastic attributes

After that we selected the small patterns of the petticoats, and in the property editor, we activated the elastic attribute by ticking the checkbox as showed in figure 5.2.5.5. We set

the strength value to 17.7 and ratio 28. Then we hit the space bar from keyboard and started the simulation. It took some time to finish the simulation and we got our expected result as showed in figure 5.2.5.7 and figure 5.2.5.8.

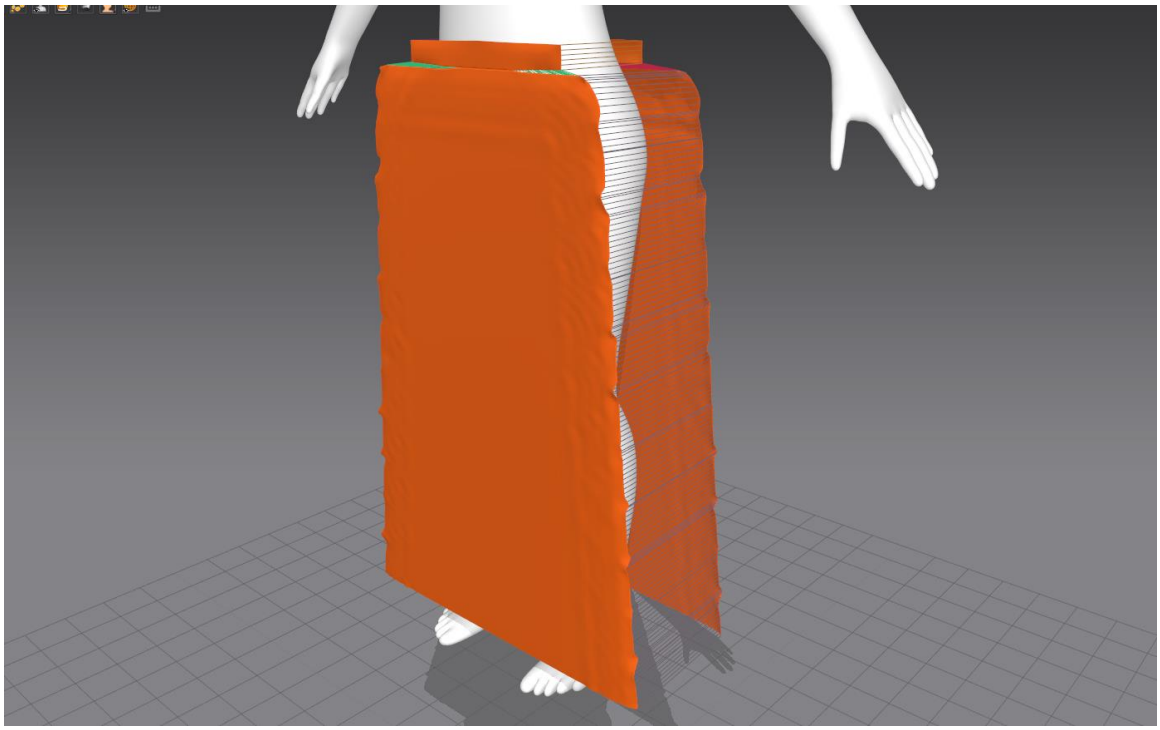

Figure 5.2.5.6: Simulation is processing

Figure 5.2.5.7: End result of petticoat simulation - 1

Figure 5.2.5.8: End result of petticoat simulation – 2

5.2.6. Putting on the saree to the character

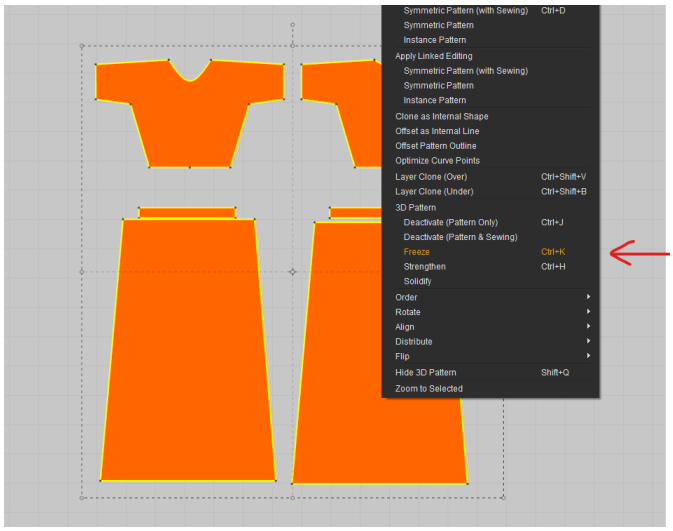

Figure 5.2.6.1: Freezing blouse and petticoat patterns – 1

In the 2d window, we selected all the patterns of blouse and petticoat, and then clicked right mouse button and selected freeze option as showed in figure 5.2.6.1. The frozen patterns changed their color in 3d viewport as showed in figure 5.2.6.2.

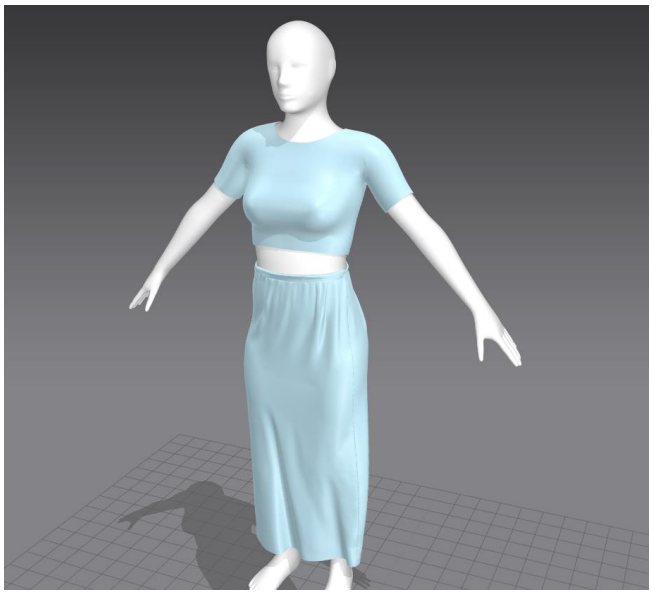

Figure 5.2.6.2: Freezing blouse and petticoat patterns - 2

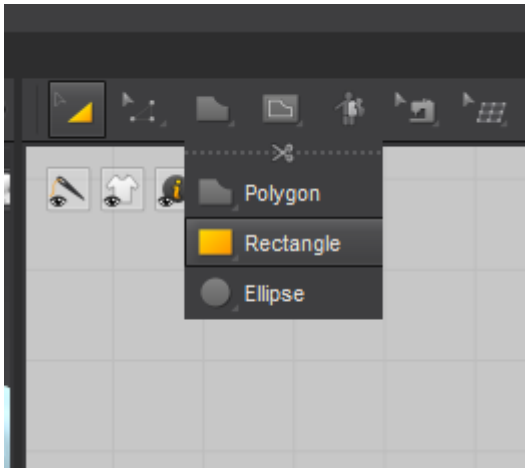

Figure 5.2.6.3: Selecting rectangle tool

From the 2D window, we selected the rectangle tool. With that tool, we created a rectangle with the width of 950 mm and height of 1060 mm. That rectangular pattern was the first piece of the saree pattern.

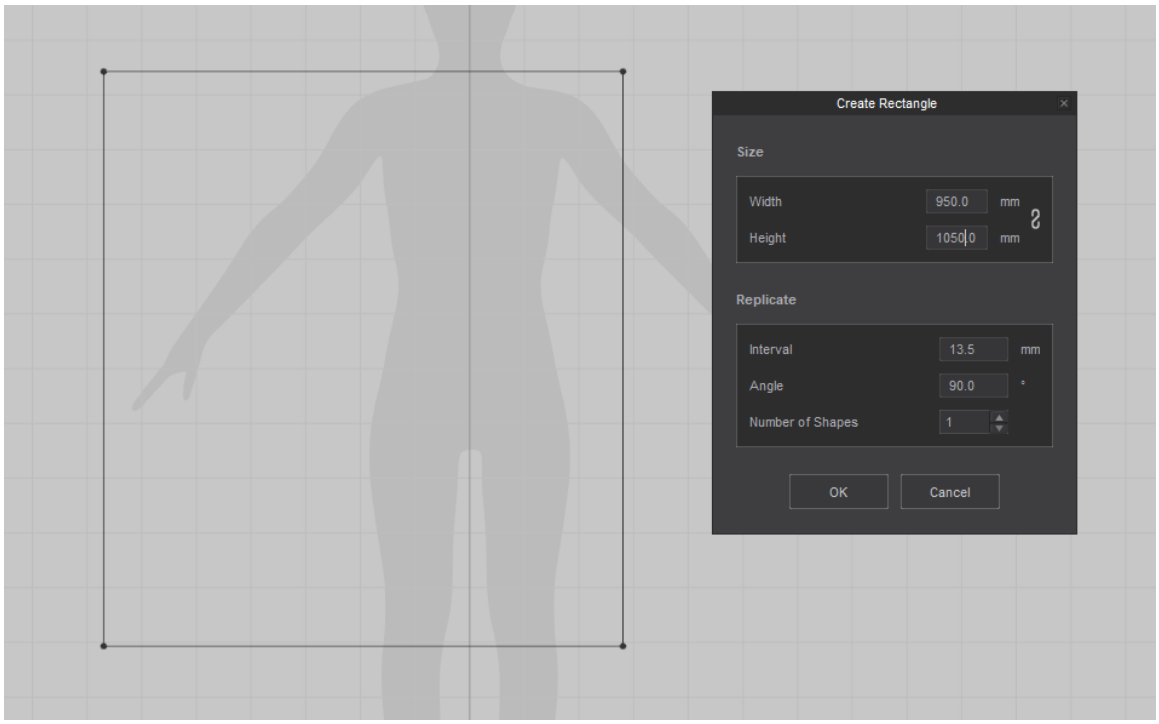

Figure 5.2.6.4: Creating first rectangle pattern for saree

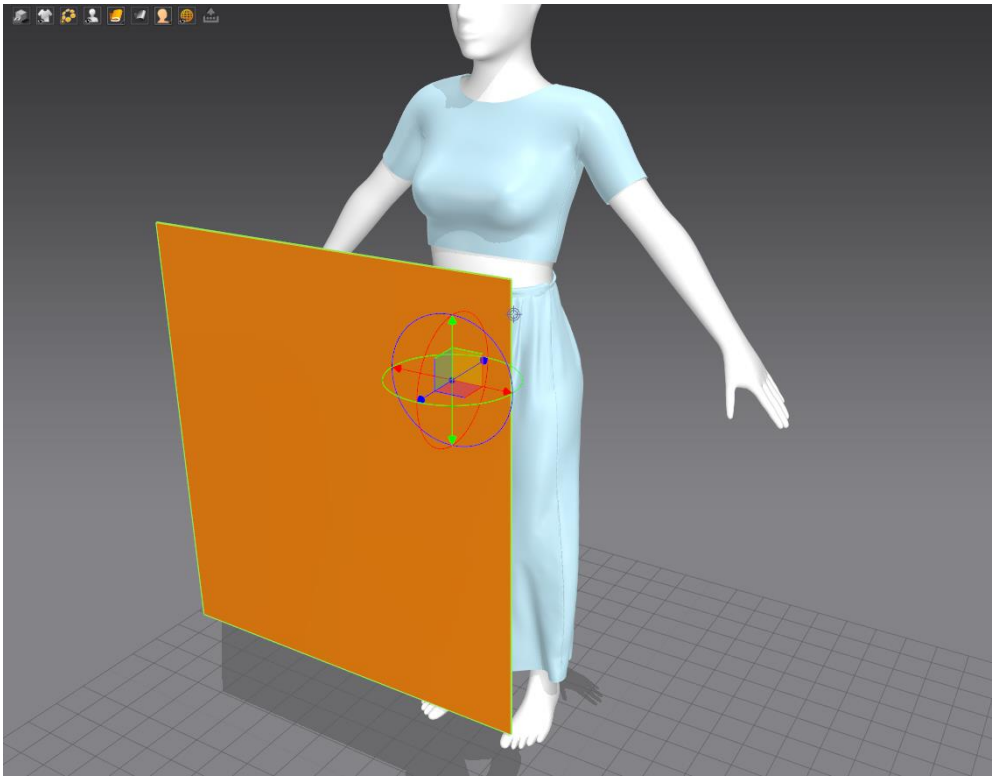

Figure 5.2.6.5: Positioning the pattern in 3d window

In the 3d window, we positioned the rectangular pattern using the move tool in front of the character as showed in figure 5.2.6.5. Then inside the 3d window, we selected the tool called Pin (Box) from the toolbar as showed in figure 5.2.6.6.

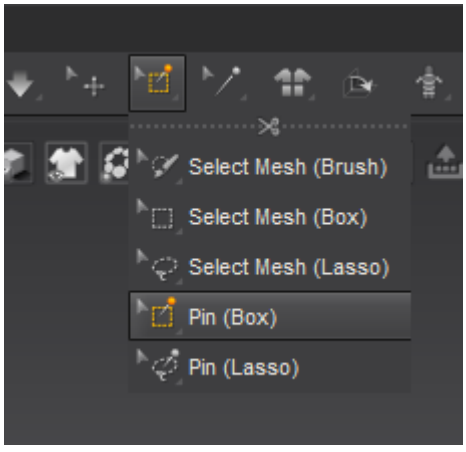

Figure 5.2.6.6: Selecting Pin (Box) tool

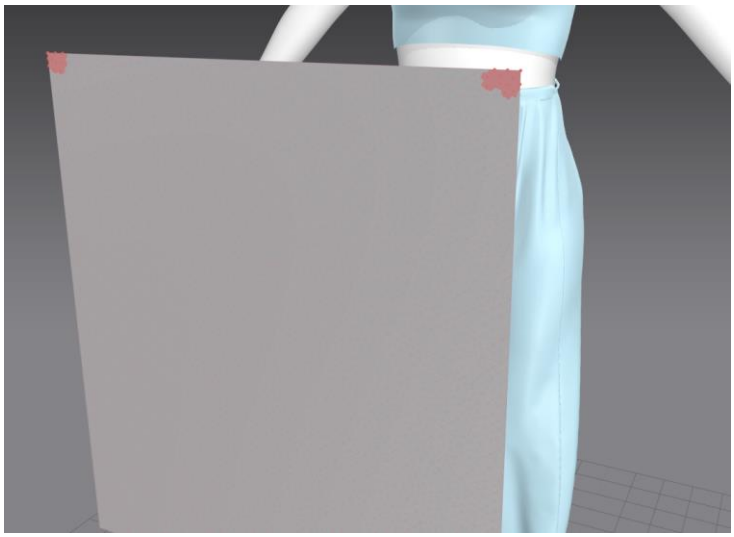

Figure 5.2.6.7: Pinning the first rectangular pattern

With the Pin (Box) tool selected, we pinned the top two corners of the rectangle as showed in figure 5.2.6.7 so that the pattern could not fall into the ground due to gravity. Then we hit the space bar to start the simulation.

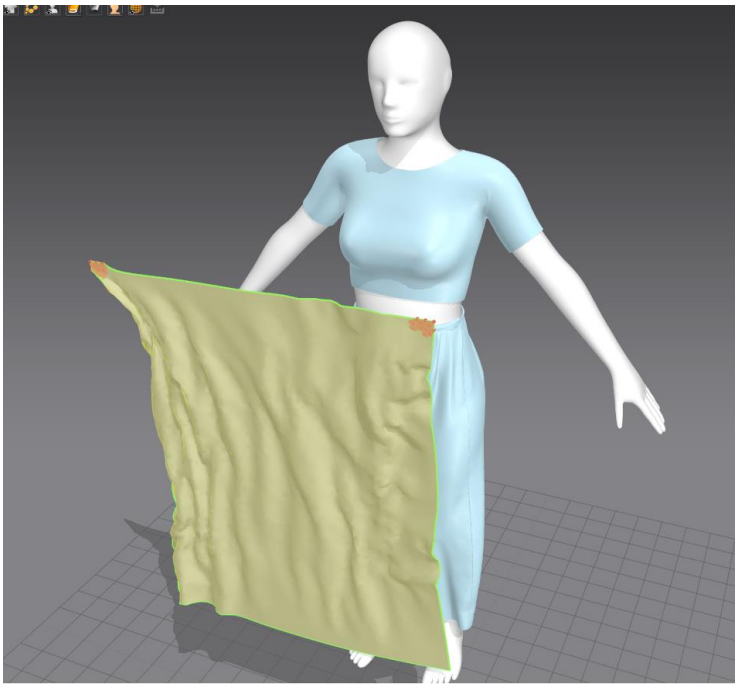

Figure 5.2.6.8: Simulating the first rectangular pattern

Figure 5.2.6.9: Positioning the first pattern around the character

After starting the simulation, we held the pinned areas and moved them so that the pattern could be positioned around the character as showed in figure 5.2.6.9. That process was done in real time while the simulation was turned on. Otherwise it could not be done.

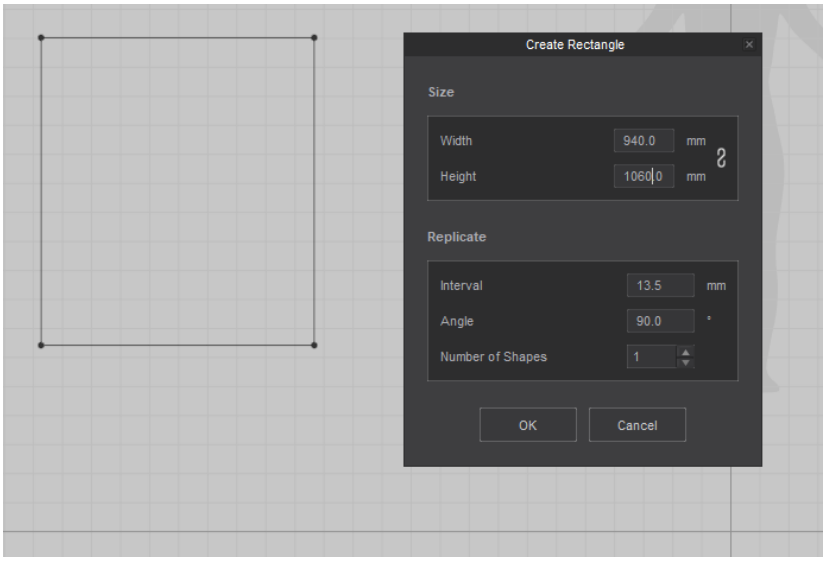

Figure 5.2.6.10: Creating second rectangle pattern for saree – 1

Again from the 2D window toolbar, we selected the rectangle tool. With that tool, we created a rectangle with the width of 940 mm and height of 1060 mm. That rectangular pattern was the second piece of the saree pattern.

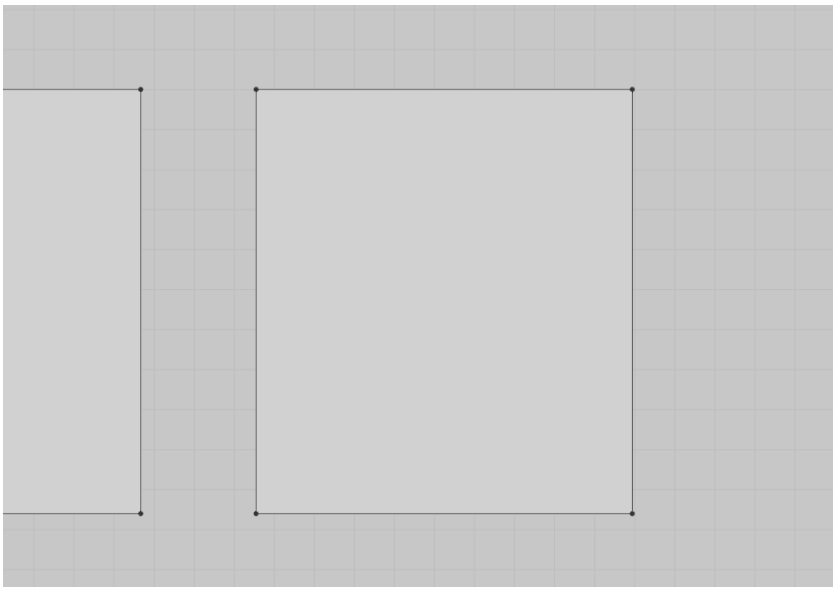

Figure 5.2.6.11: Creating second rectangle pattern for saree – 2

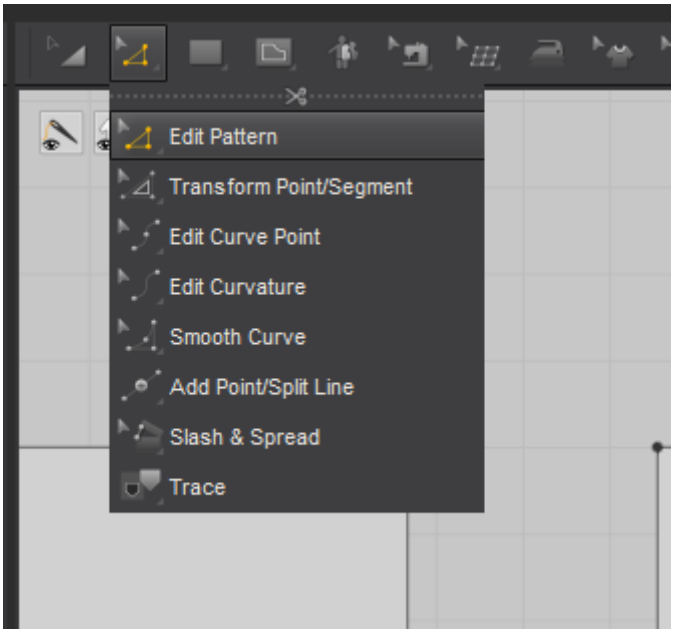

Figure 5.2.6.12: Selecting edit pattern tool

Inside the 2d window, we selected the edit pattern tool from the toolbar. Then we selected the top segment of the second rectangular pattern of the saree and clicked right mouse button. After that we selected the split option as showed in figure 5.2.6.13.

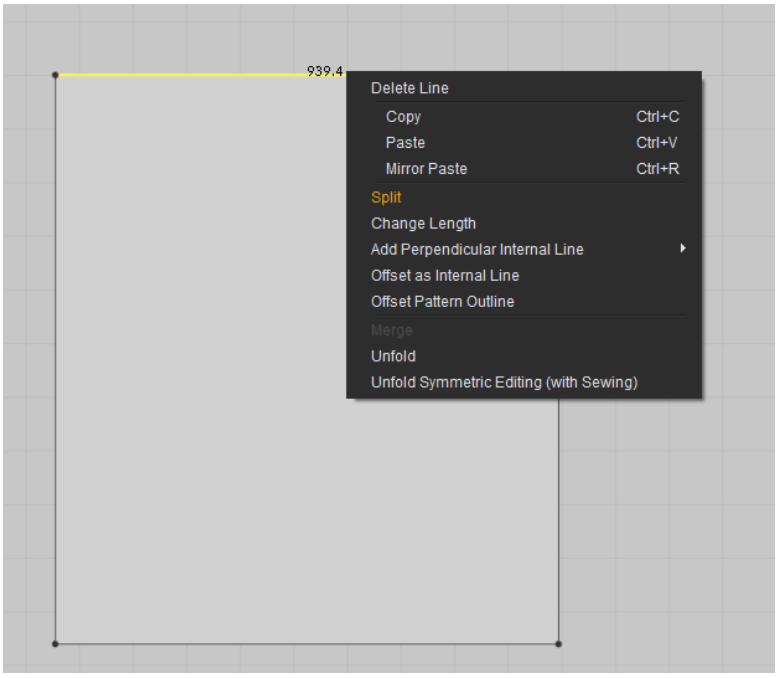

Figure 5.2.6.13: Selecting split tool

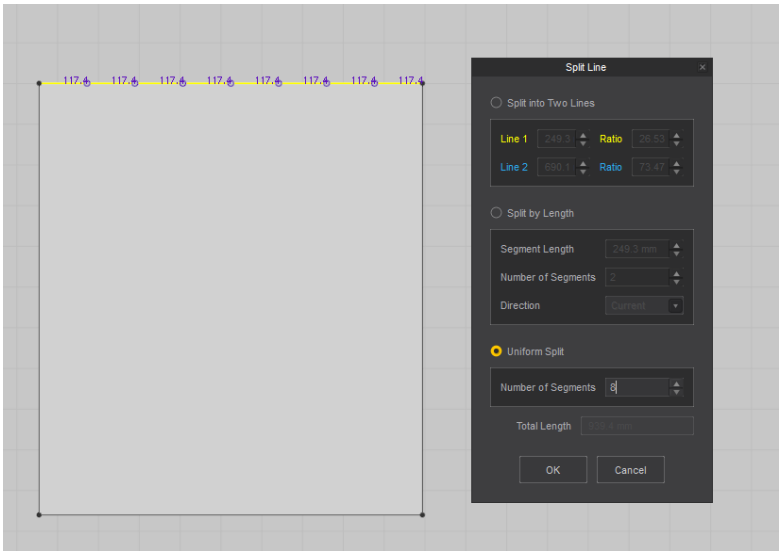

Figure 5.2.6.14: Using split option

A new window called “Split Line” appeared in the screen. We set the split type as uniform split and number of segments to eight and clicked OK as showed in figure 5.2.6.14. The top segment was divided into 8 segments. Then we selected the internal polygon/line tool from the toolbar.

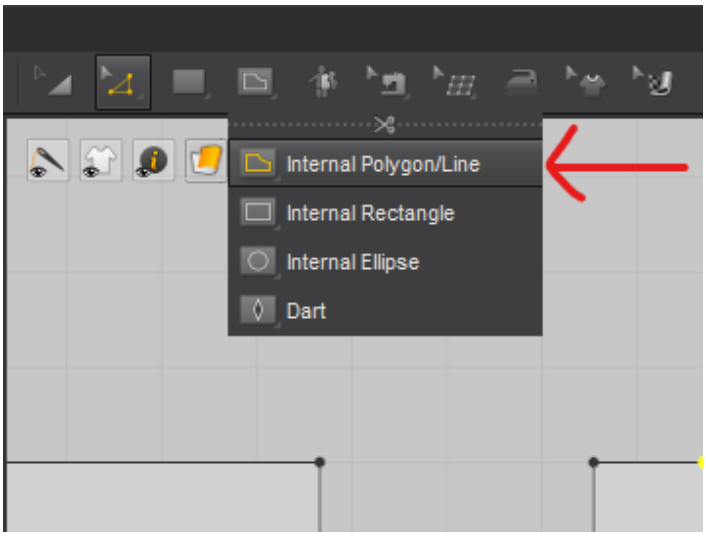

Figure 5.2.6.15: Selecting internal polygon/line tool

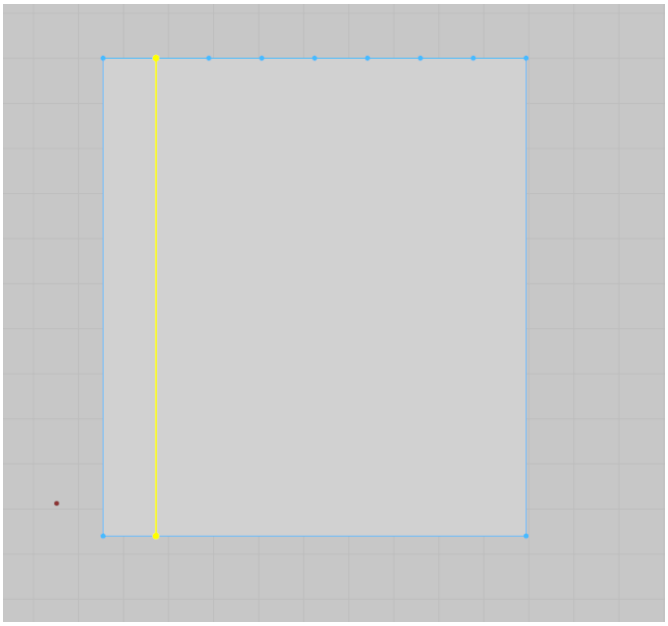

Figure 5.2.6.16: Creating internal lines -1

With the internal polygon/line selected, we clicked the point on the left side of the top segment of the rectangle, held shift button and double clicked on the bottom segment of the rectangle. One internal line was created as showed in figure 5.2.6.16. We applied the same process for the rest of the points and got the result as showed inn figure 5.2.6.17.

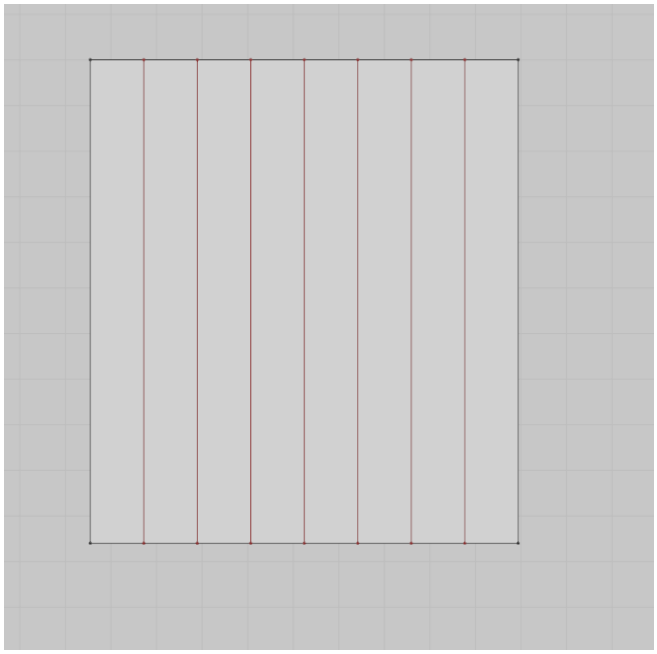

Figure 5.2.6.17: Creating internal lines -2

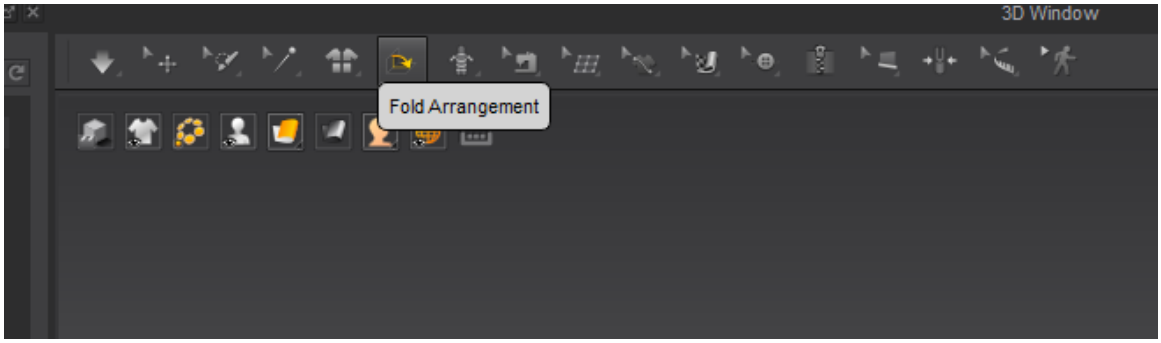

Figure 5.2.6.18: Selecting fold arrangement tool

Inside the 3d window, we selected the fold arrangement tool from the toolbar as showed in figure 5.2.6.18.

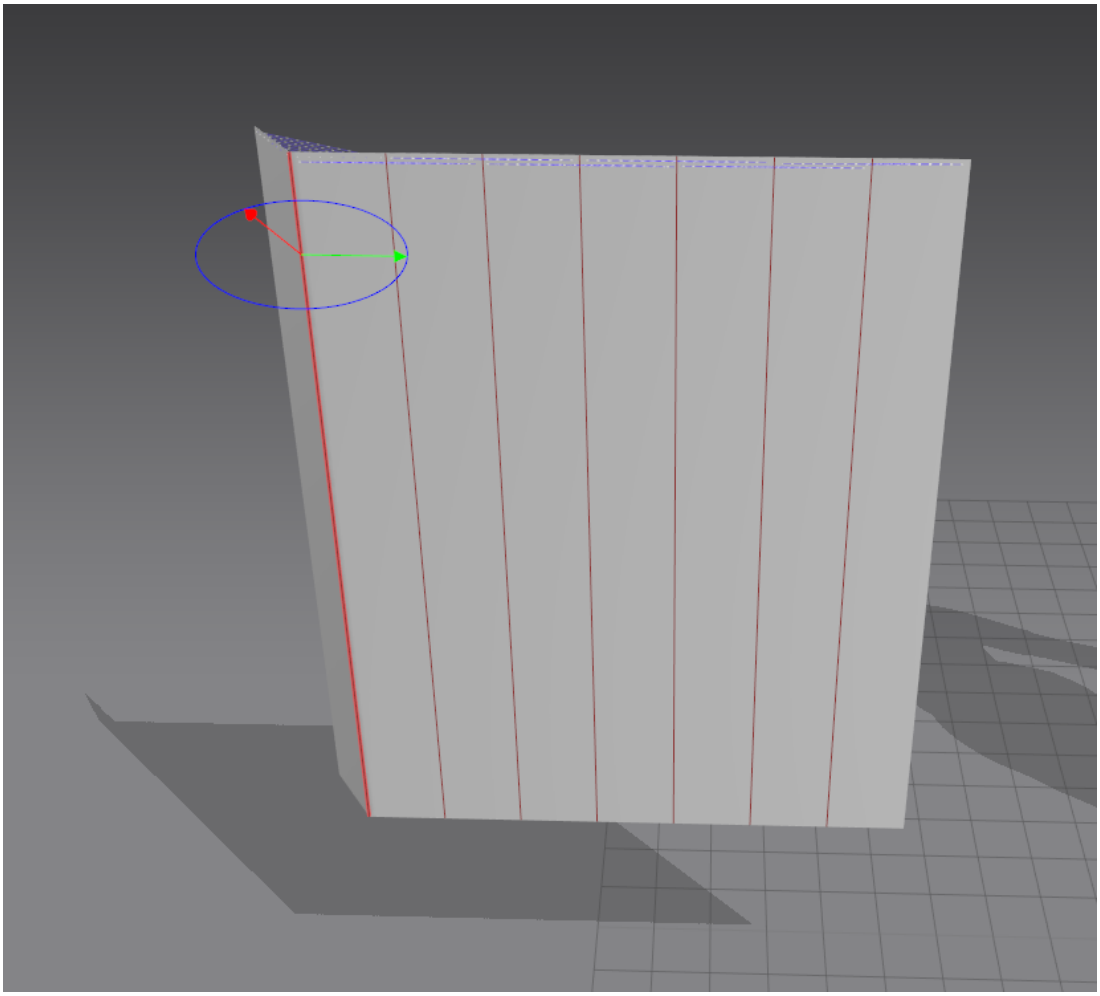

Figure 5.2.6.19: Using fold arrangement tool – 1

Then with the fold arrangement tool, we selected the internal lines of the second rectangular pattern and started folding using the red and green arrow as showed in figure 5.2.6.19. And finally we folded the pattern as showed in figure 5.2.6.20.

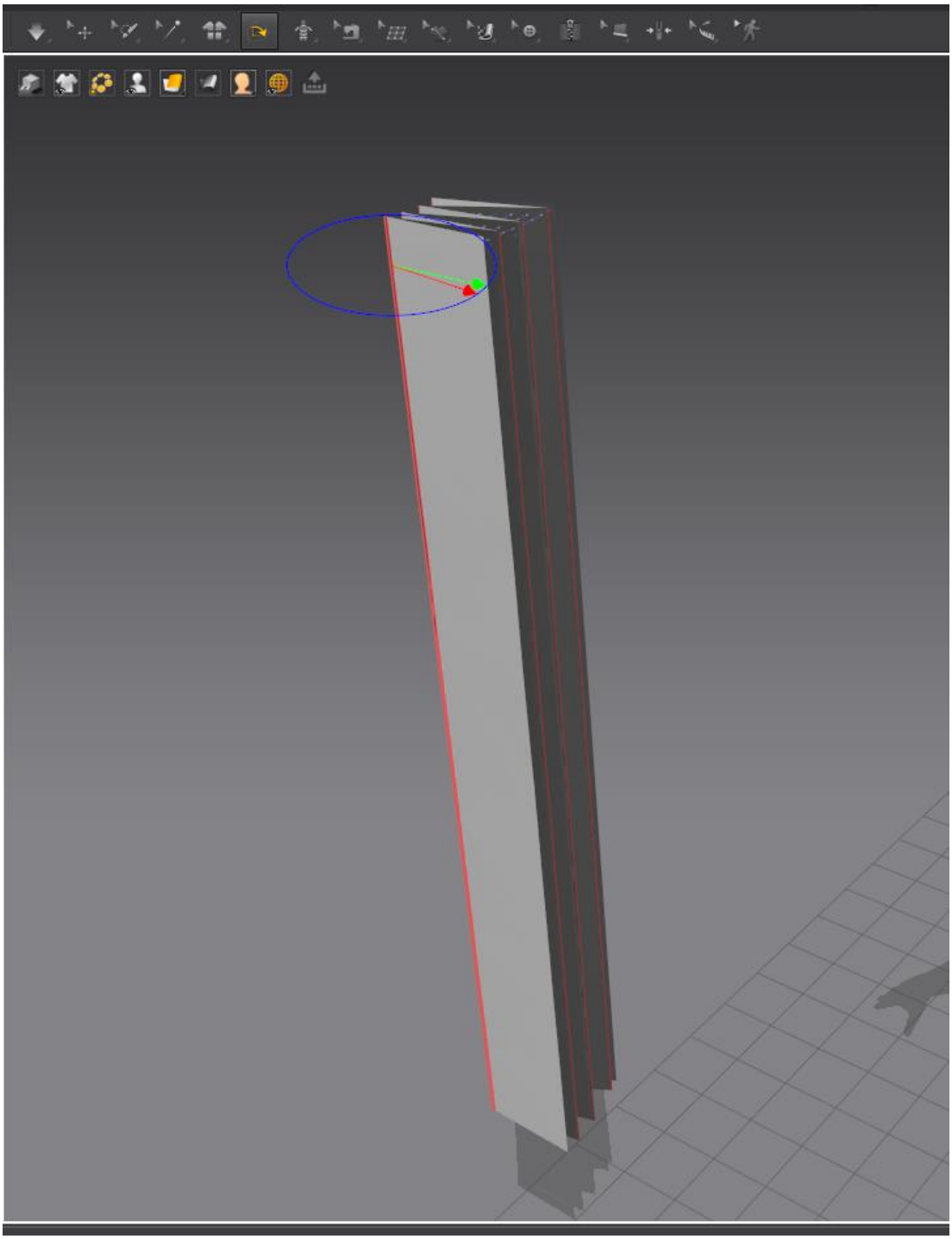

Figure 5.2.6.20: Using fold arrangement tool - 2

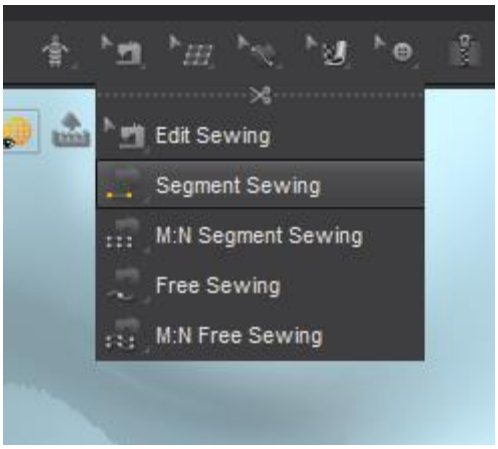

Figure 5.2.6.21: Selecting segment sewing tool

We selected the segment sewing tool from the toolbar and placed the second pattern in front of the character.

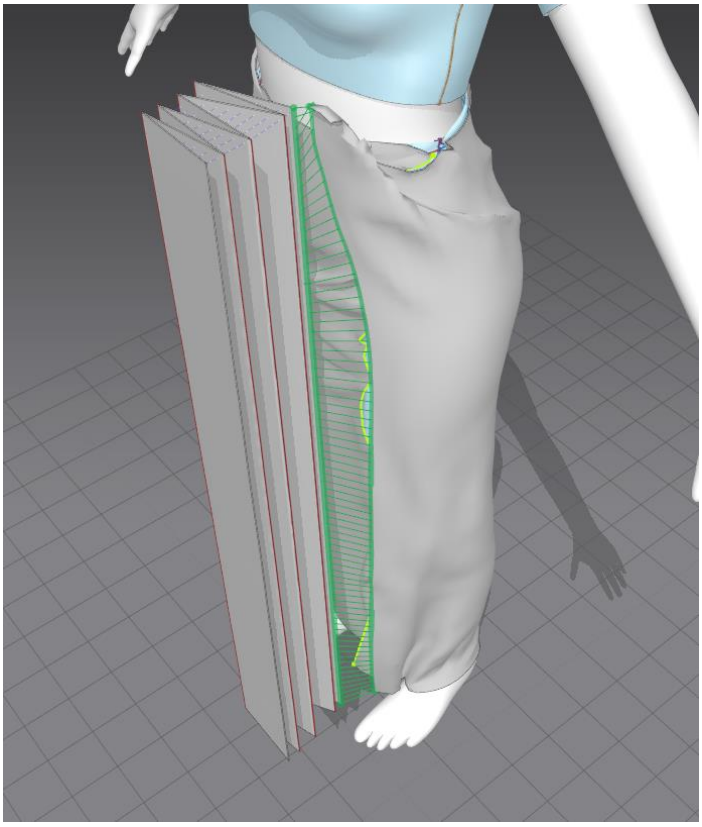

Figure 5.2.6.22: Sewing the first pattern with the second pattern

We sewed one vertical segment of the first pattern with one vertical segment of the second pattern as showed in figure 5.2.6.22. Then we hit the space bar and started the simulation. After the simulation was finished, we got the two patterns attached as showed in figure 5.2.6.23.

Figure 5.2.6.23: Simulating the first and second patterns

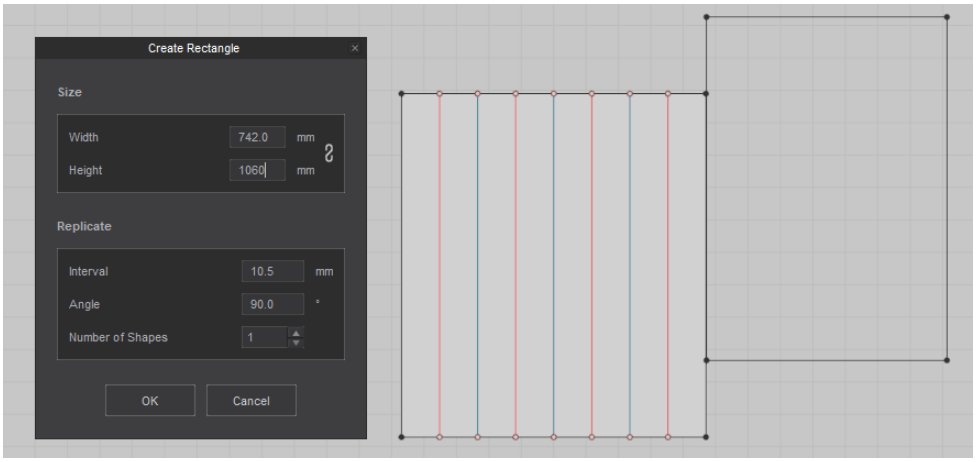

Figure 5.2.6.24: Creating third rectangular pattern for saree

Again inside the 2D window, we created another rectangle with the width of 742 mm and height of 1060 mm. That rectangular pattern was the third piece of the saree pattern. Inside the 3D window, we placed the third pattern next to the second pattern and sewed the open vertical segment of the second pattern with one vertical segment of the third pattern as showed in figure 5.2.6.25.

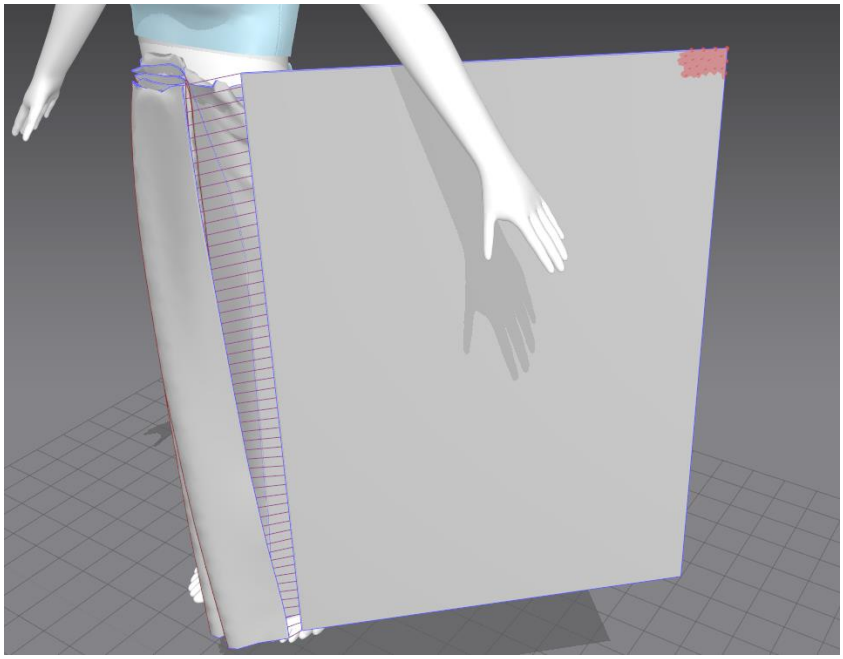

Figure 5.2.6.25: Sewing the second pattern with the third pattern

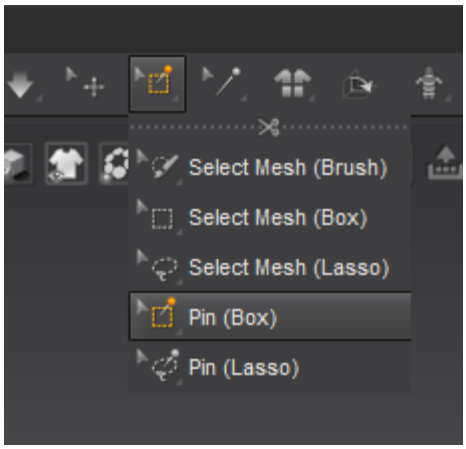

Figure 5.2.6.26: Selecting Pin (Box) tool

We selected the Pin (Box) tool from the toolbar. Then we pinned the top corner of the other side of the third rectangle as showed in figure 5.2.6.25. After that, we hit the space bar to start the simulation. The second and third paterns were stitched together during the simulation.

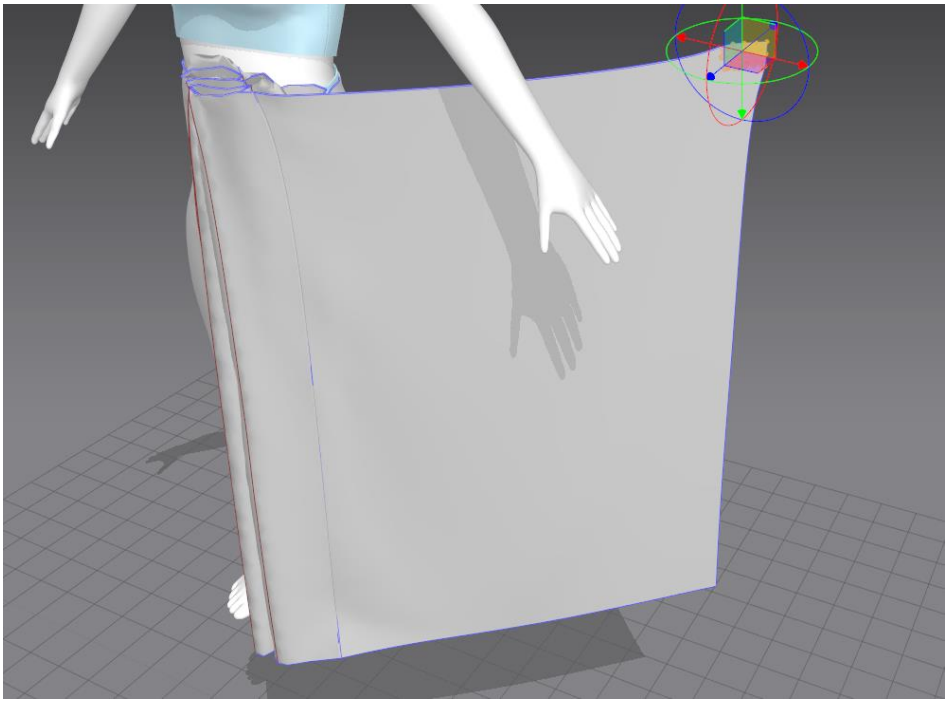

Figure 5.2.6.27: Simulation is processing

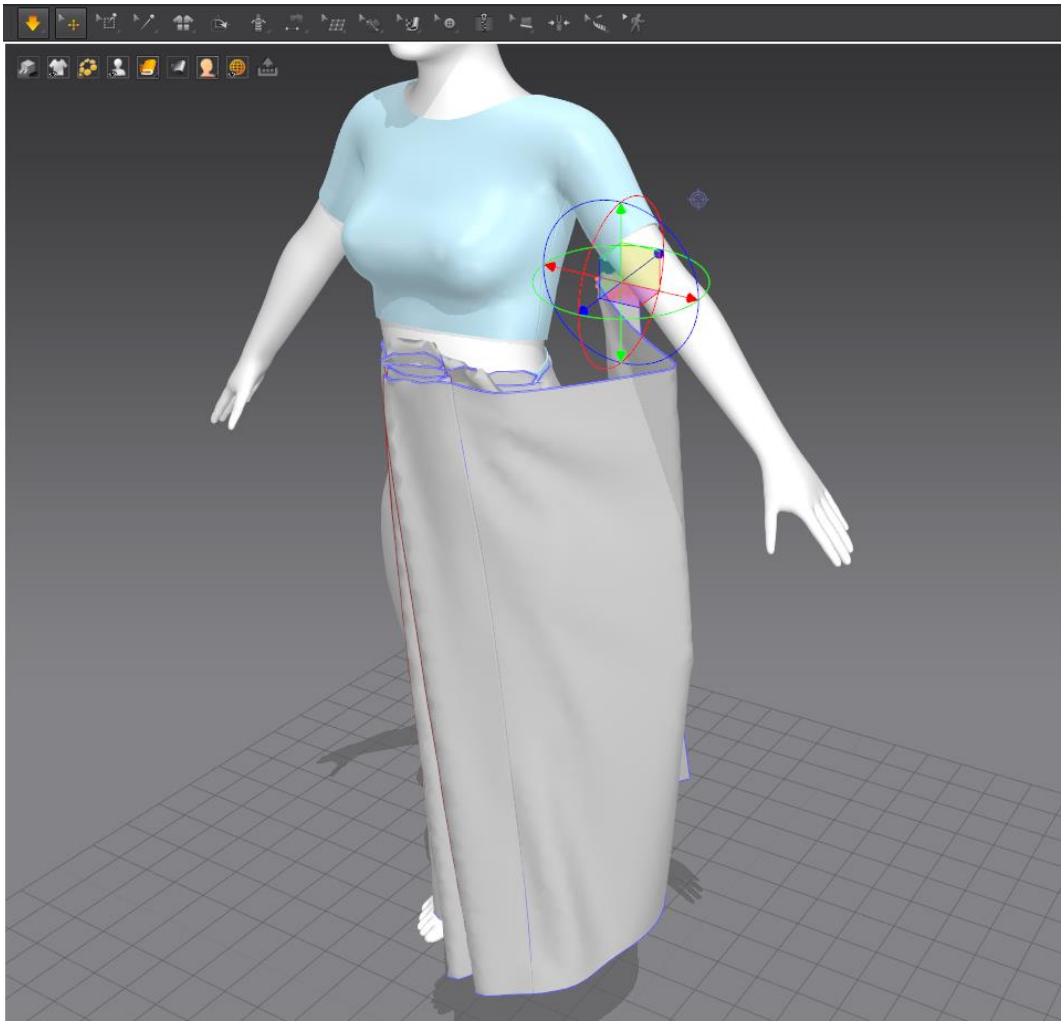

Figure 5.2.6.28: Positioning the third pattern around the character - 1

While the simulation was active, we moved the pinned area of the third rectangle around the character in real time simulation as showed in figure 5.2.6.28 and figure 5.2.6.29. We stopped this process after placing the pattern in our required position as showed in figure 5.2.6.30.

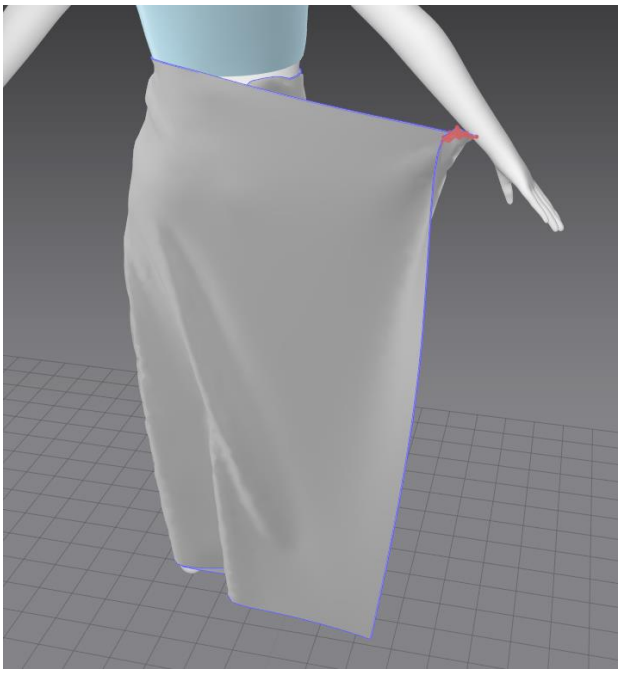

Figure 5.2.6.29: Positioning the third pattern around the character - 2

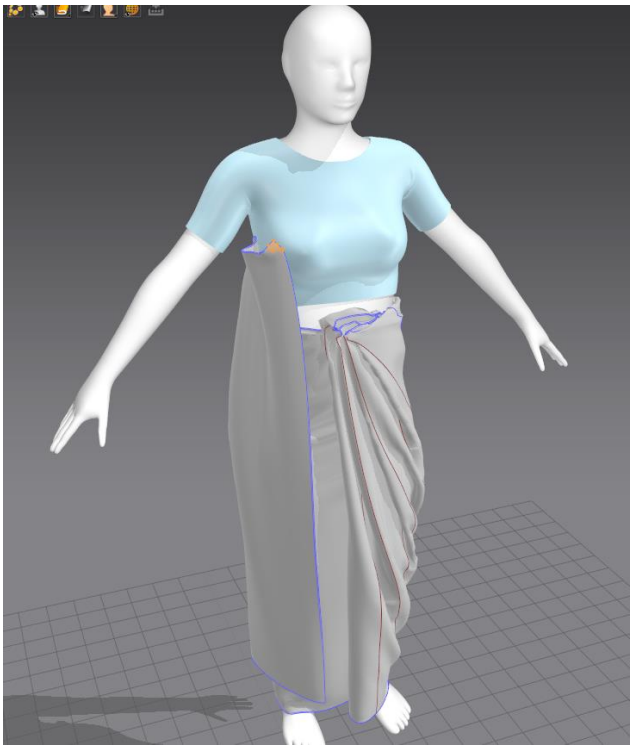

Figure 5.2.6.30: Positioning the third pattern around the character - 3

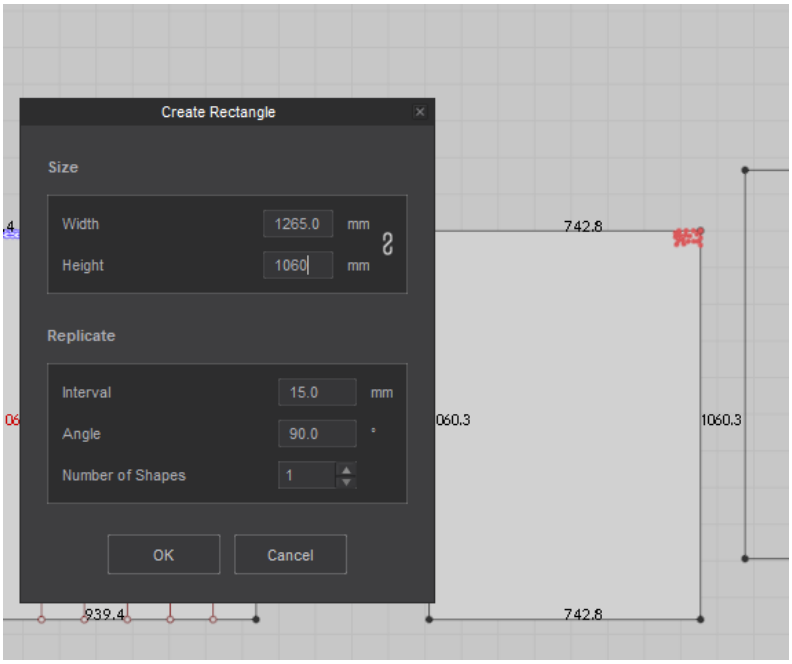

Figure 5.2.6.31: Creating fourth rectangular pattern for saree -1

Inside the 2D window, we created another rectangle with the width of 1265 mm and height of 1060 mm. That rectangular pattern was the fourth piece of the saree pattern.

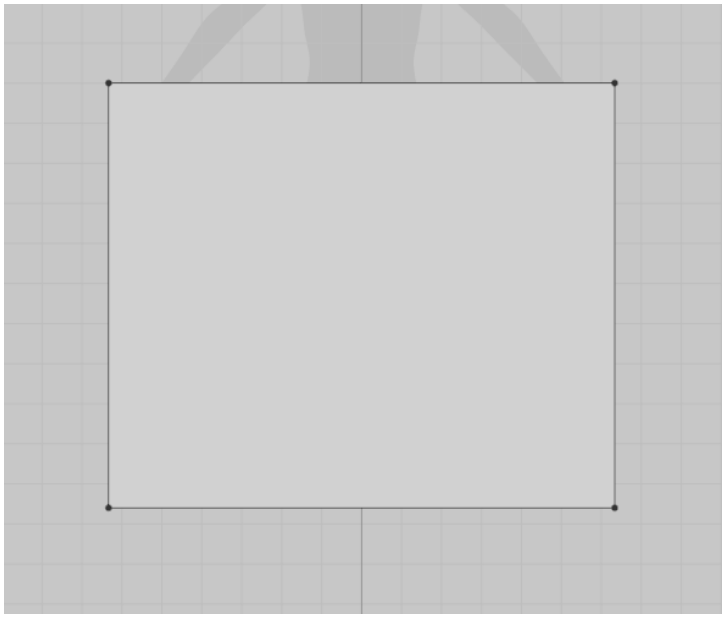

Figure 5.2.6.32: Creating fourth rectangular pattern for saree -2

Figure 5.2.6.33: Creating internal lines

we created seven internal lines inside the fourth pattern by using split tool and internal polygon/line tool like we did for the second rectangle. Then inside the 3D window, we placed the fourth pattern horizontally as showed in figure 5.2.6.34.

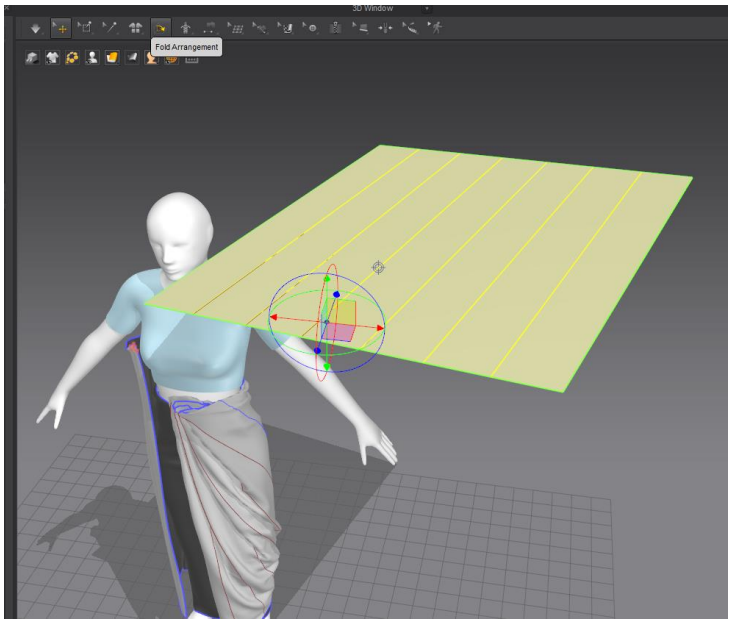

Figure 5.2.6.34: Positioning the fourth pattern in 3D window

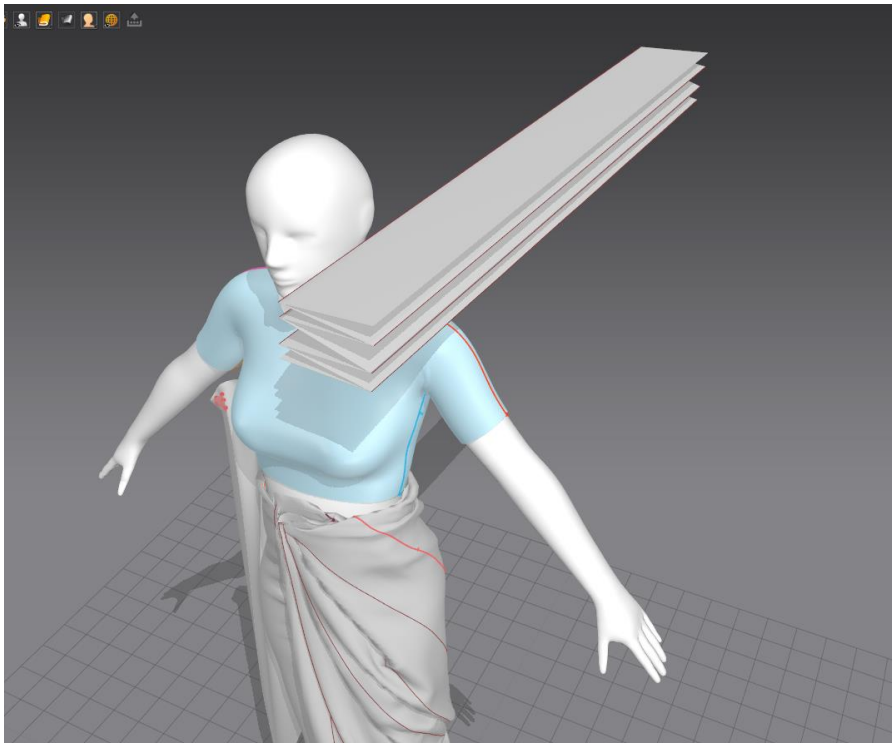

Figure 5.2.6.35: Folding the fourth pattern

Then we selected the fold arrangement tool and folded the fourth pattern as like we did for the second pattern as showed in figure 5.2.6.35. After that we selected the segment sewing tool from the toolbar.

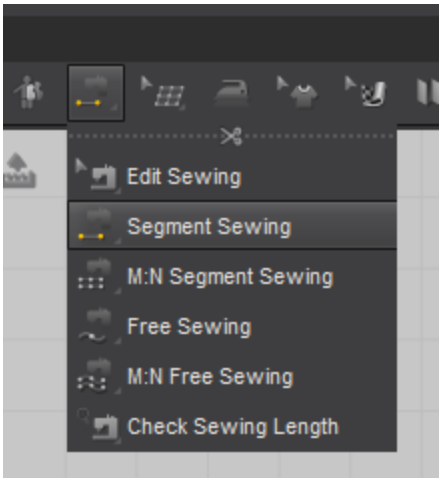

Figure 5.2.6.36: Selecting segment sewing tool

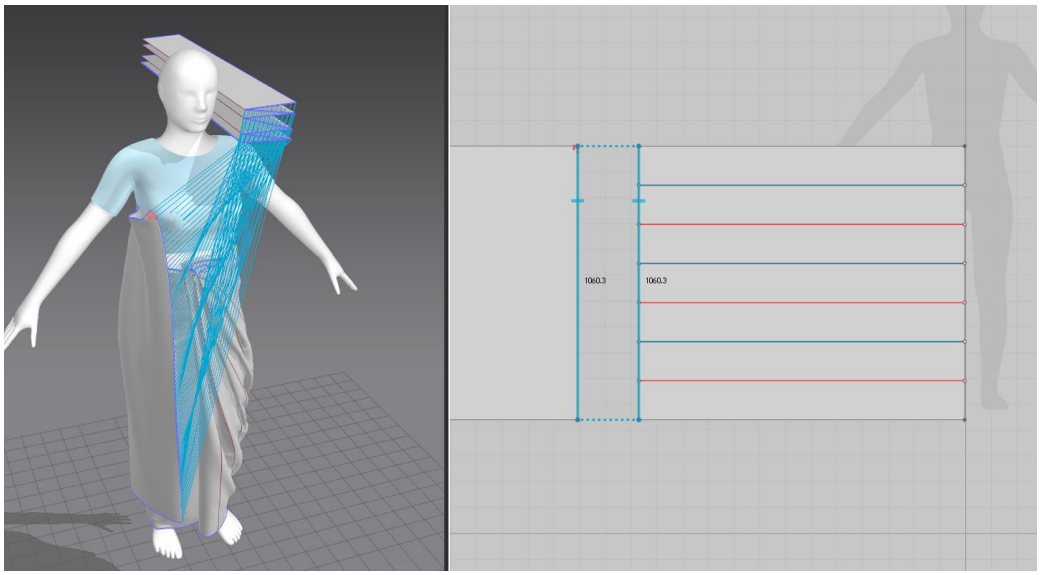

Figure 5.2.6.37: Sewing the third pattern with the fourth pattern

In the 2D window, we sewed the open vertical segment of the third rectangle with one of the vertical segment of the fourth rectangle as showed in figure 5.2.6.37. After that, inside 3d window, we selected the pin of the third rectangle and clicked right mouse button then selected delete all pins option as showed in figure 5.2.6.38 to delete all the pins in the scene.

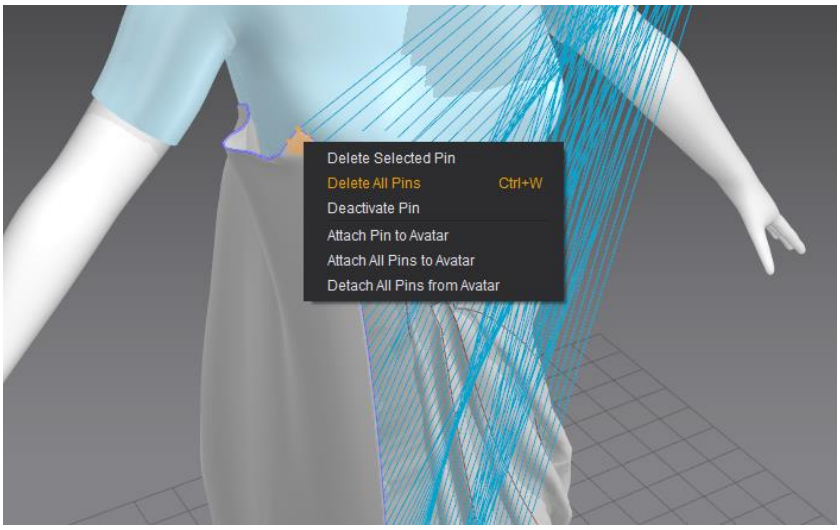

Figure 5.2.6.38: Deleting all pins

After checking everything clearly, we hit the space bar to start the simulation. When the simulation started, it took some time to complete all the calculation and finally we got our expected result as showed in figure 5.2.6.40 and 5.2.6.41.

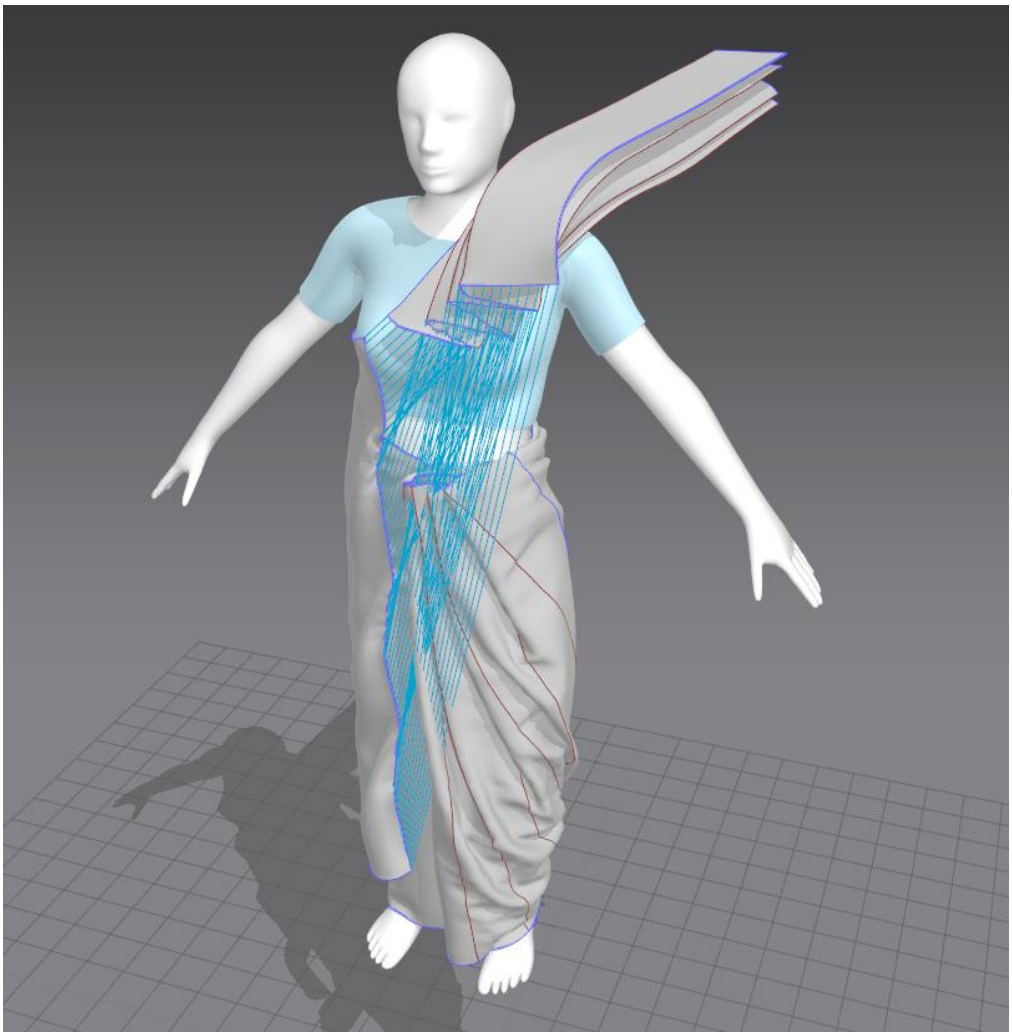

Figure 5.2.6.39: Saree simulation is processing

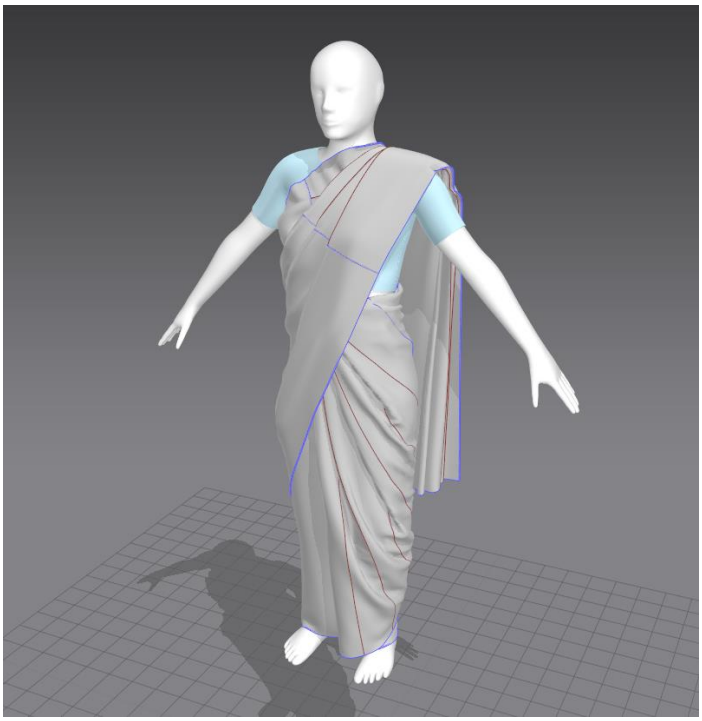

Figure 5.2.6.40: End result of saree simulation - 1

Figure 5.2.6.41: End result of saree simulation - 2

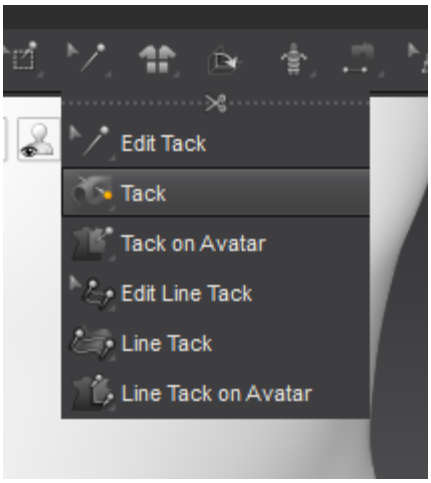

Figure 5.2.6.42: Selecting tack tool

Inside the 3D window, we selected the tack tool from the toolbar as showed in figure 5.2.6.42. Then we started to tack the shoulder part of the fourth pattern with the blouse as showed in figure 5.2.6.43. That was one of the most important steps before starting the animation of the character. Because the shoulder part of the saree would slide down to the ground when the character would start moving if the tacking was not done.

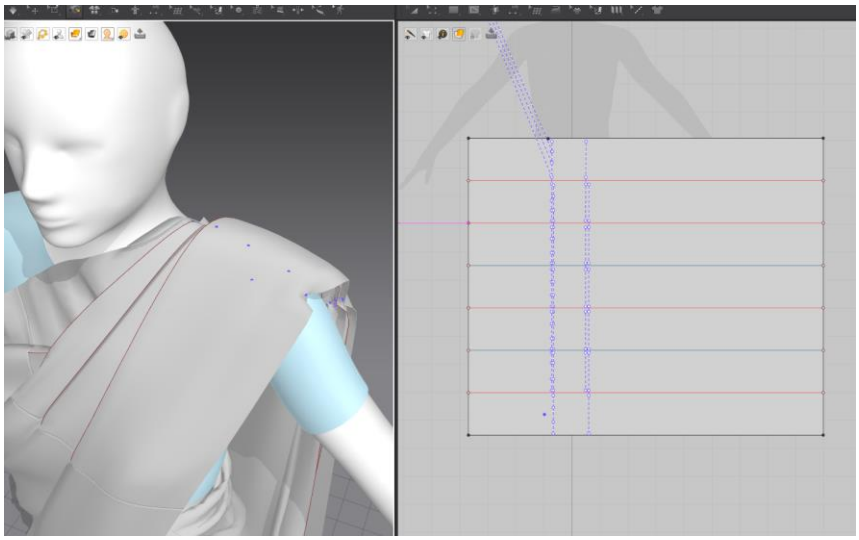

Figure 5.2.6.43: Using tack tool

5.2.7. Animation Mode

At the bottom of the viewport there is an arrow icon as showed in figure 5.2.7.1. We click the arrow icon to open the animation panel. This panel already had the animated clip of the character that we imported at the beginning.

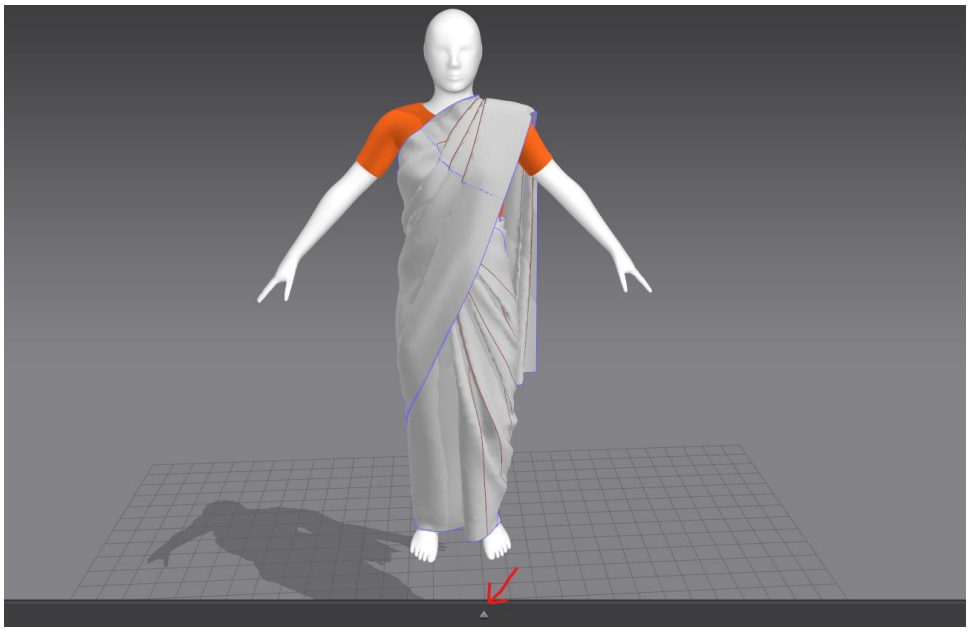

Figure 5.2.7.1: Opening animation panel - 1

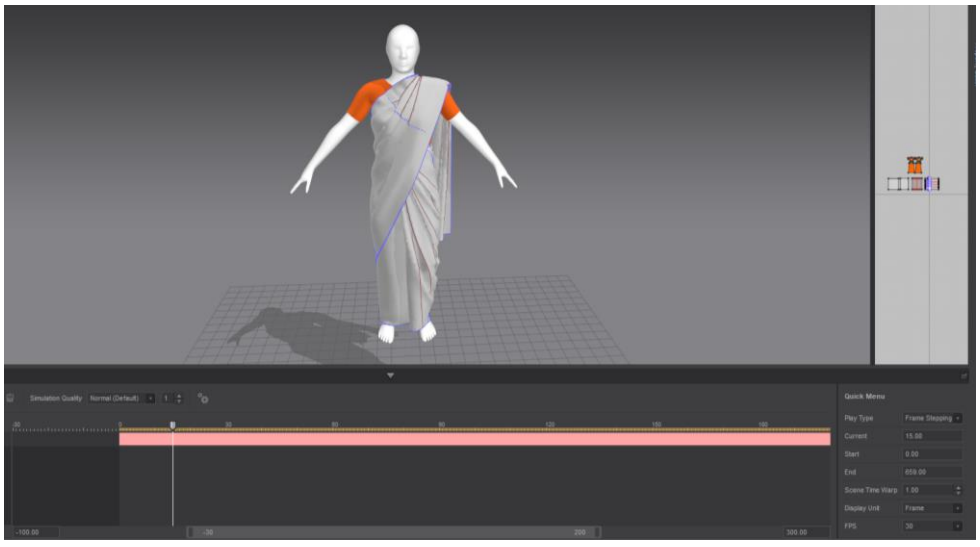

Figure 5.2.7.2: Opening animation panel - 2

Now it was time to start the main task that was to simulate the saree according to the character movement. For that, we set the simulation quality to "Animation (Stable)" inside the animation panel as showed in figure 5.2.7.3.

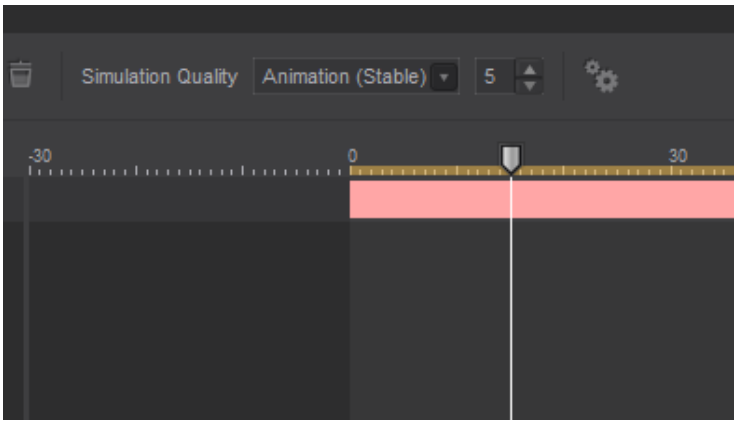

Figure 5.2.7.3: Setting the simulation quality

At the right side of the animation panel there is a quick menu tab. At there, we set the play type to "Real Time" and set the start and end frame to 0 and 360 respectively as showed in figure 5.2.7.4.

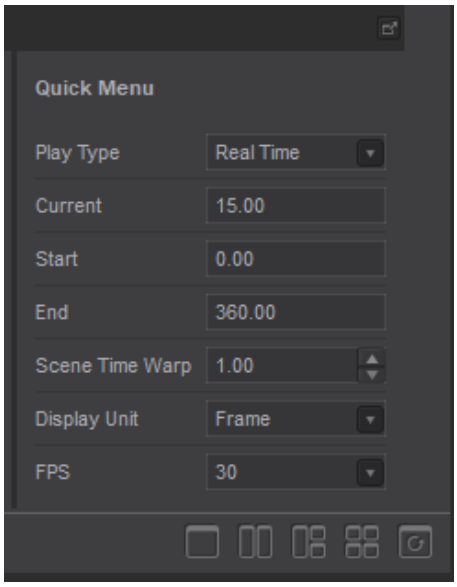

Figure 5.2.7.4: Setting the parameters inside the quick menu

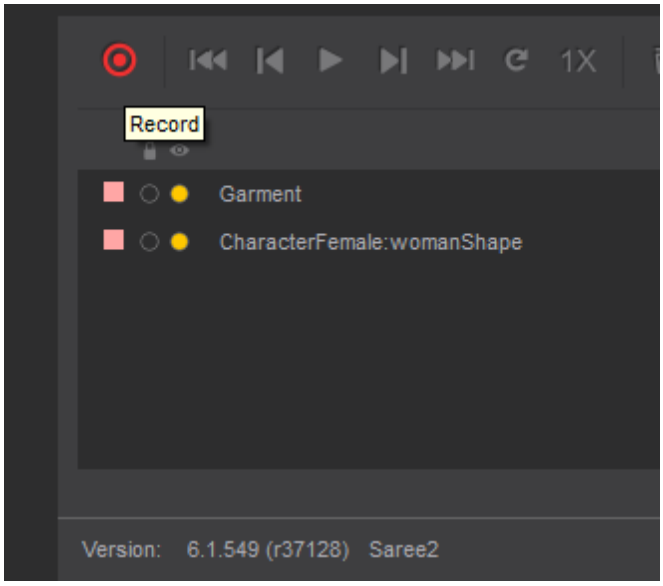

Figure 5.2.7.5: Recording the simulation

After all were set, we clicked the record button at the top left corner of the animation panel. The simulation was started and the software was simulating each and every frame from 0 to 360. We had to wait some time to get the simulation finished. The simulation time depends on the processing power of the computer hardware.

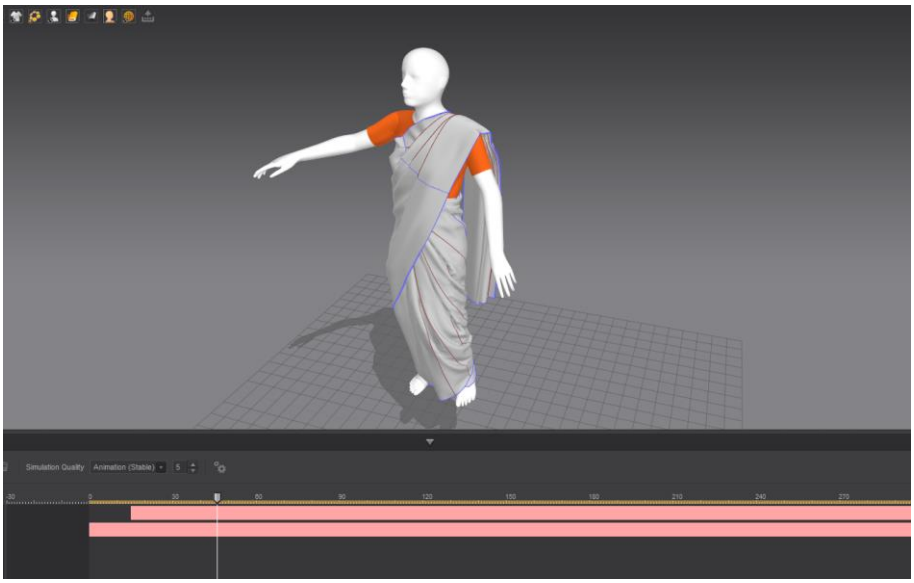

Figure 5.2.7.6: During the simulation period - 1

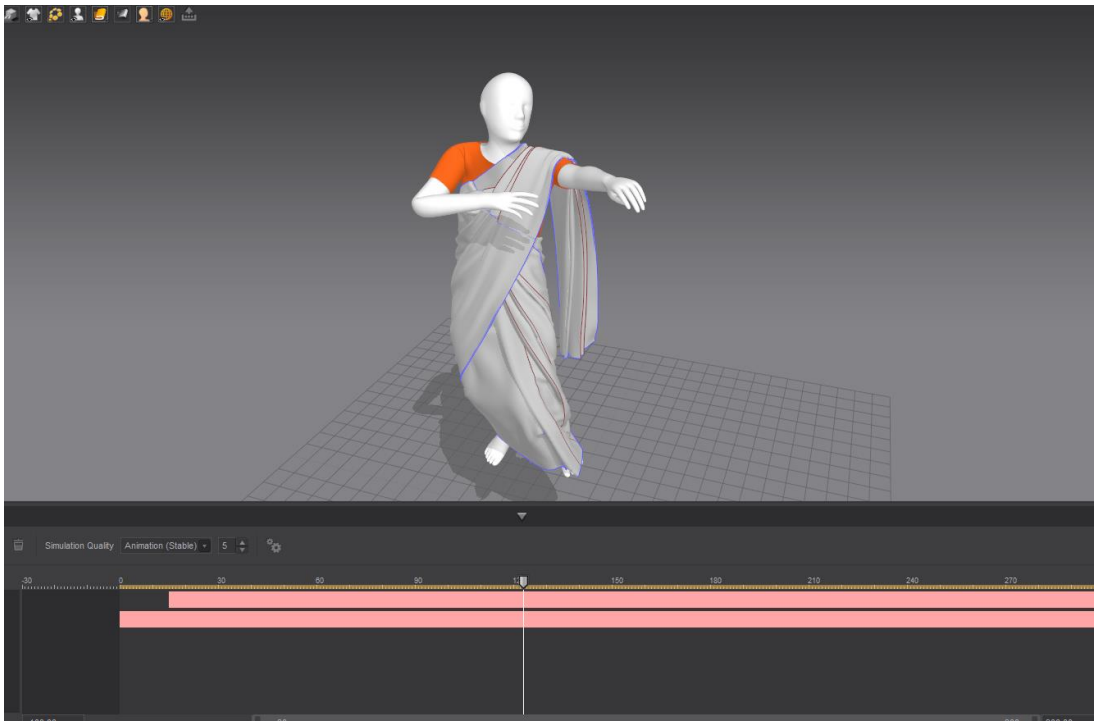

Figure 5.2.7.7: During the simulation period - 2

Figure 5.2.7.8: During the simulation period – 3

5.2.8. Final optimization

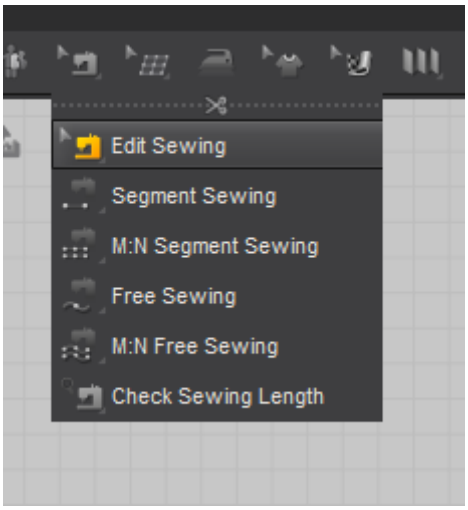

Figure 5.2.8.1: Selecting edit sewing tool

Inside the 2D window, we selected the edit sewing tool from the toolbar. Then we selected the sewing segment of the first and second pattern of the saree. After that we clicked right mouse button and chose merge option as showed in figure 5.2.8.2. By doing that, the first and second patterns of the saree were merged into one pattern. We repeated the same method to the third and fourth patterns as showed in figure 5.2.8.3 and figure 5.2.8.4. Finally we got one single optimized pattern of the saree as showed in figure 5.2.8.5.

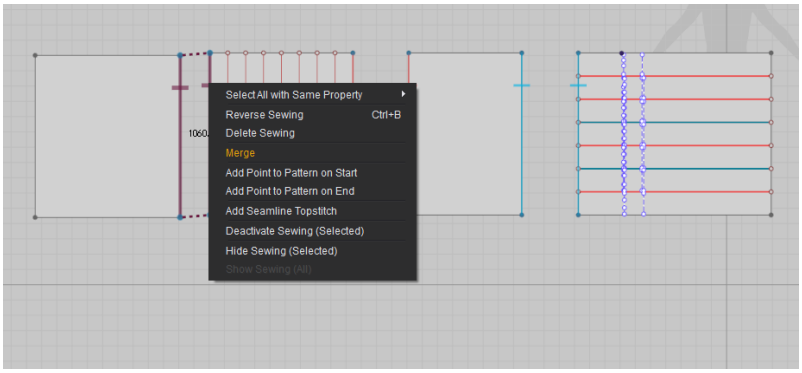

Figure 5.2.8.2: Merging first and second patterns

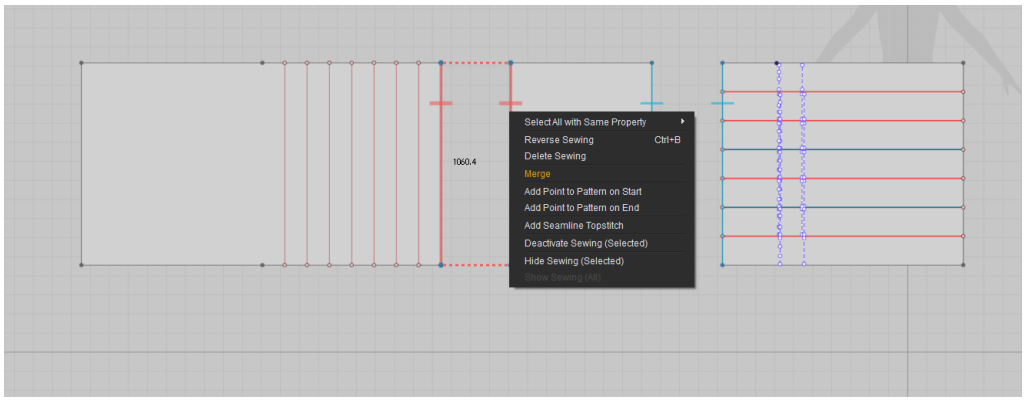

Figure 5.2.8.3: Merging second and third patterns

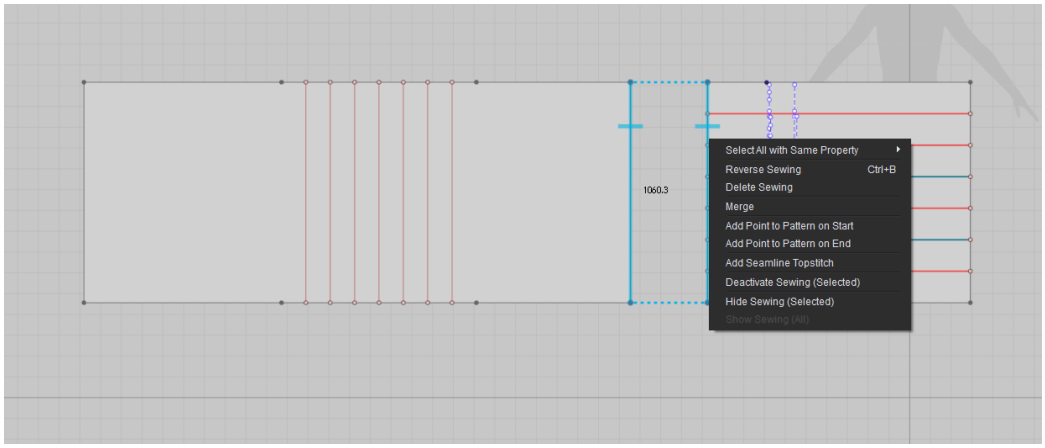

Figure 5.2.8.4: Merging third and fourth patterns

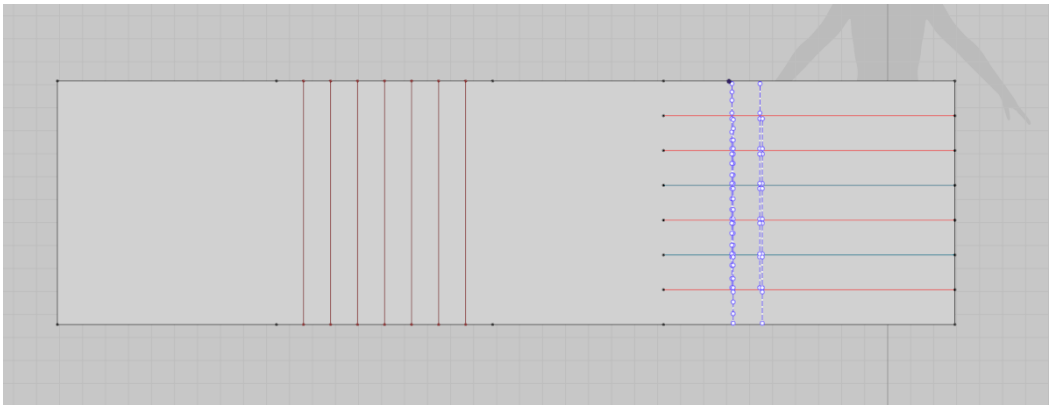

Figure 5.2.8.5: Optimized saree pattern

5.2.9. Exporting the simulation

After all the job was done in the marvelous designer, it was time to export the simulation file. For that, we went to the file menu from the menu bar, in the file menu we selected export and then selected Alembic (HDF5) option as showed in figure 5.2.9.1.

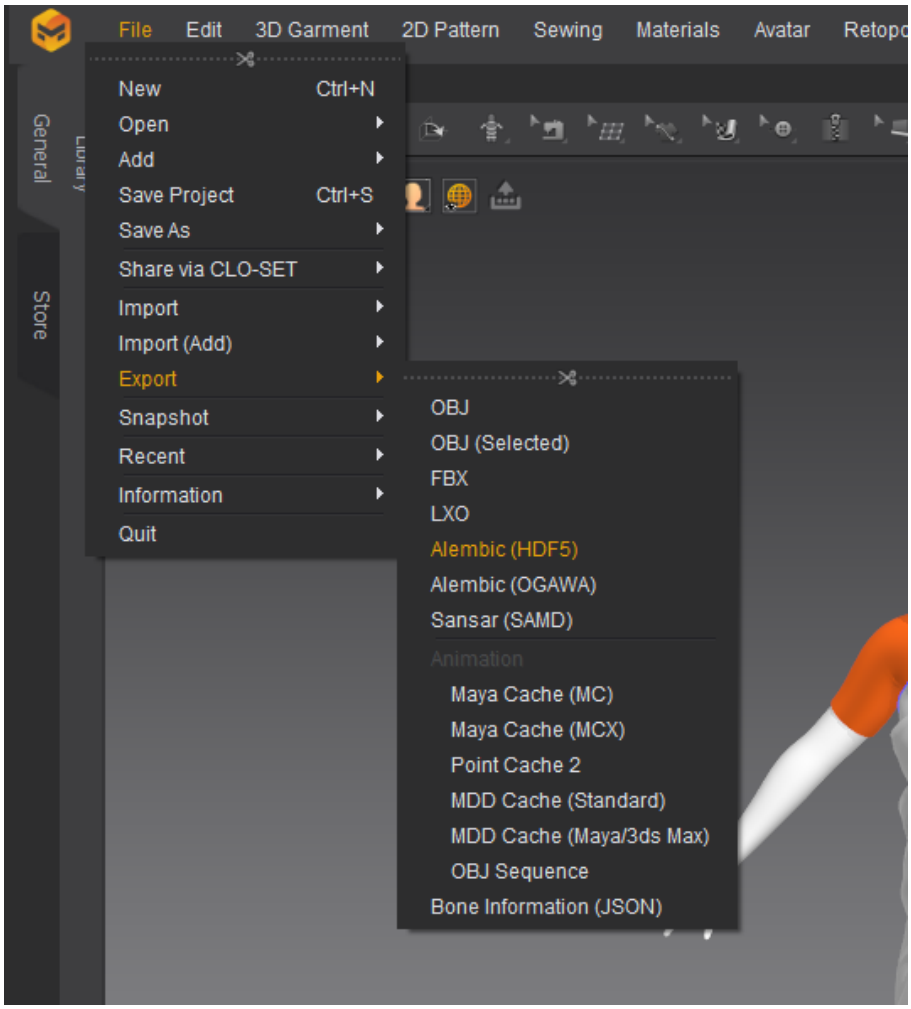

Figure 5.2.9.1: Choosing Alembic (HDF5) option

A new pop up window appeared to set the destination path where the alembic file will be saved. We set a path in the hard drive and clicked save button as showed in figure 5.2.9.2.

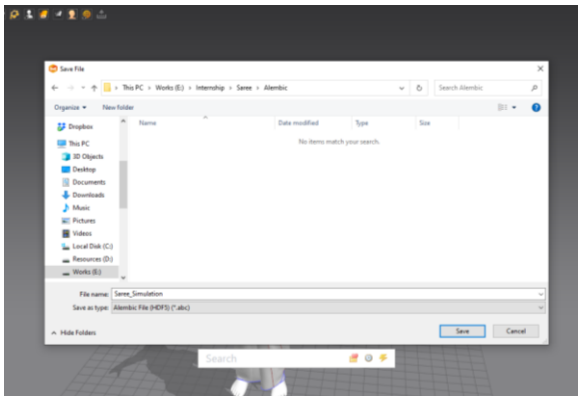

Figure 5.2.9.2: Setting the destination path

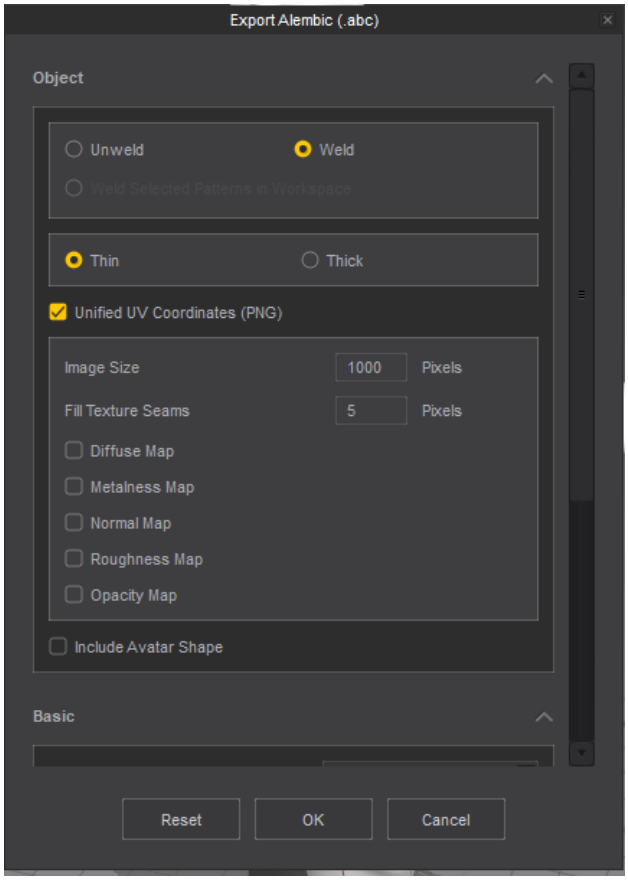

Figure 5.2.9.3: Exporting Alembic file - 1

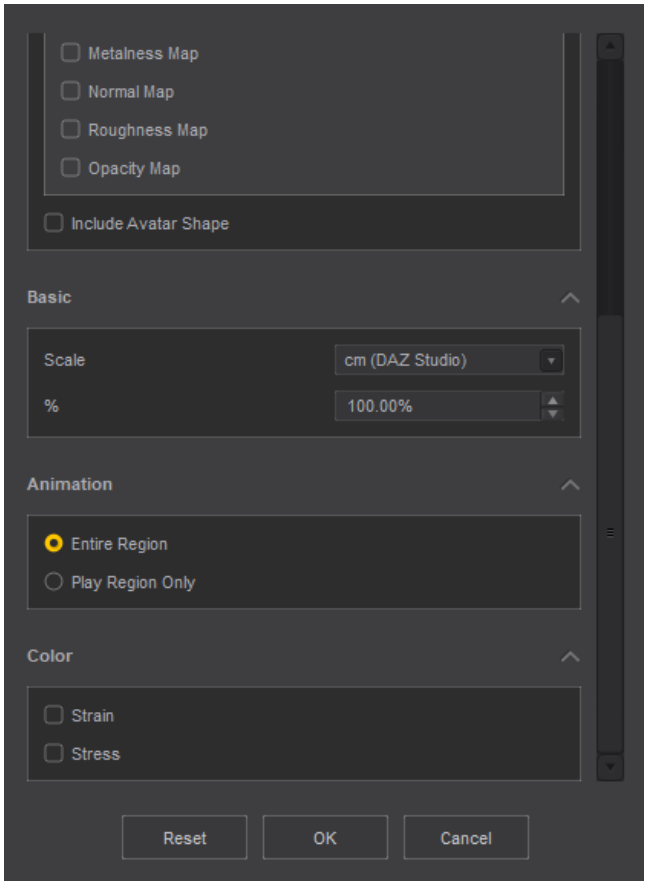

Figure 5.2.9.4: Exporting Alembic file - 2

Another window appeared called export alembic on the screen. We set the value of the parameters in that window same as showed in figure 5.2.9.3 and figure 5.2.9.4 and clicked OK button. With that our simulation file was exported successfully into our hard drive location that we set.

CHAPTER 6

LIMITATIONS AND CHALLENGES

6.1. Limitations

Every mistake is an opportunity to learn something new. Materializing an idea isn't as easy as planning. Giving form to my idea wasn't much easy. There I had to face several problems, confusion and error in my design. Some problems happen due to my mistake and ignorance in the workflow. Though every problem killed my time and energy I come suitable to break and avoid them coming time. In this chapter challenges, I had faced and the results will be discussed. A lot of impalpable limitations were faced while working on this design. These limitations affected the affair of our design in one way or another. Some of these are discussed below. The most impalpable limitation was the lack of experience. There were some gests in all the way in this process but the proper channel was no way followed. Also, the compass of skill perpetration was also limited. When it came to such a big design with a proper channel was to be followed, we fell suddenly on the experience which affected time operation and chancing results to problems faced. A 3D vitality is a form of art that combines a lot of other forms of art. For initiating a design like this a lot of effects from the cultural angle need to be considered. Similar to the color palette of the film, the aesthetics of the models, camera angle, camera movement, a sense of composition, etc.

6.2. Challenges:

As this is a group project it was important that all the members work together with close propinquity so that whenever any member faces a problem they can reach out to other members. This makes problem- solving much easier and carrying blessing faster. As of now, we've a big issue that's the Corona virus time so we did our work in the home as a home office. Living in different homes at first there were no fixed spots where we could work together. All the software used for 3D vitality and picture requires high configuration computers. In this case the higher the configuration the better the quality. But for our average quality computers, we faced a lot of challenges to work with.

Personally, me who has no graphics card so I cannot run the render work. Lots of times my PC got crash for the poly count. The software kept crashing or getting wedged. Occasionally they came slow and couldn't read the commands and execute them properly. These kinds of problems wasted a lot of time which would not have been an issue if there were better quality computers available. Computers with advanced configurations can drop render time exponentially. Render time is a big factor when it comes to producing any computer graphics. Keeping computer limitations in mind sufficient time places demanded to be allocated for the picture member. In order to produce the asked labors, a many new software and commands from known software were demanded to be learned in a veritably short time. As the knowledge of this software was limited so problem- solving came a big issue. When I was imported some object with mirror effect that doesn't show in Marvelous Designer. Light set and the camera movement are different from the other 3D softer like Autodesk max and Autodesk Maya etc. Also, they have a shortage of time so we need to minimize the quality of some work and give the output in the given time schedules. For the large work, we need a lot of patience and time management because the animation needs a lot of time to render a frame. Per frame needs 5-8 minutes some are more than needed which is very annoying for us.

CHAPTER 7

CONCLUSION

This task has given us the possibility to take a look at a few new software program programs, greater widely the software program programs we already know. Challenge Workflow, modeling techniques, Simulating in Marvelous designer and UV unwrapping texturing, Animating, Rigging, lighting are defined with inside the Challenge document. In this challenge, we found some brand-new method with Cloth Modeling Character, Rigging, and Animating, lighting and Rendering and editing technic which was new to me. As a financial factor, this picture helps to get the buyer`s interest via way of means of displaying the right characteristics of the product with inside the shortest possible time. An organization or producer can convey it to the marketplace with a much shorter length of spin-off visualization at a mile decrease cost. 3D Product visualization work offers producers sufficient room to innovate and gift to consumers in the space. Instead of searching out engagement via banner commercials and movies on mobile devices, from the marketing and marketing era, the organization has used 3D commercials to permit producers to have interacted with and interact with their audience. It may be tough to create good general product animations that draw colors, brainstorm, and draw the visitor's interest to the whole ad.

The is the most important general and precis shape up to now for developing consumers with miles better go back on investment. The concept of 3D product modeling for commercials is virtually modern in our country; however, developing superb 3D commercials isn't a smooth task. With 3D commercials, consumers can experience locating products more than still images. Our intention is to offer an entire 3D visualization of hard surface modeling such as product modeling, furniture modeling, and different architectural artwork on tough floors. As the client requires we did our work with a high quality within a short time. As they are satisfied we are glad to work with them and also with the Aava 3D Institute.

REFERENCES

1. UMBC (publish date not found), Definition of internship, Retrieved December 22, 2021, from https://careers.umbc.edu/employers/internships/what-is-an-internship/

2. Evan Kilgore (publish date not found), Definition of internship, Retrieved September 25, 2021, from The Importance of Internships in College – Colleges of Distinction

3. Vinay (September 15, 2021), Importance of internship, Retrieved December 25,2021, from The Importance of an Internship: 5 Reasons Why Internships Are Critical (capital-placement.com)

4. Vinay (September 15, 2021), Importance of internship, Retrieved December 26,2021, from The Importance of an Internship: 5 Reasons Why Internships Are Critical (capital-placement.com)

5. AAVA 3D (publish date not found), Introduction of my internship organization AAVA 3D, Retrieved December 26,2021, from https://aava3d.com/

6. AAVA 3D (publish date not found), Why I choose AAVA 3D, Retrieved December 26,2021, from https://aava3d.com/

7. Wikipedia(5 September, 2021) Definition of cloth simulation, Retrieved December 26,2021, from https://en.wikipedia.org/wiki/Cloth_modeling

8. fxguide(publish date not found) Importance of cloth simulation, Retrieved December 26,2021, from https://www.fxguide.com/fxfeatured/cloth-simulation-opening-the-kimono/

9. bestsimilar(publish date not found) Introduction of previous similar work, Retrieved December 27,2021, from https://bestsimilar.com/movies/67641-white-snake

10. bestsimilar(publish date not found) Introduction of previous similar work, Retrieved December 27,2021, from https://bestsimilar.com/movies/67641-white-snake

11. wikipedia(publish date not found)) Autodesk Maya, Retrieved December 27,2021, from https://en.wikipedia.org/wiki/Autodesk_Maya

12. wikipedia(publish date not found)) Autodesk 3ds Max, Retrieved December 28,2021, from https://en.wikipedia.org/wiki/Autodesk_3ds_Max

13. Bluegfx(publish date not found)) Marvelous Designer, Retrieved December 28,2021, from https://www.bluegfx.com/software/plugins/marvelous-designer

14. wikipedia(publish date not found)) Autodesk 3ds Max, Retrieved December 29,2021, from https://en.wikipedia.org/wiki/V-Ray

15. wikipedia(publish date not found)) Adobe Photoshop, Retrieved December 29,2021, from https://en.wikipedia.org/wiki/Adobe_Photoshop

16. wikipedia(publish date not found)) Adobe Illustrator, Retrieved December 29,2021, from https://en.wikipedia.org/wiki/Adobe_Illustrator

17. canto(publish date not found)) Adobe media-encoder, Retrieved December 29,2021, from https://www.canto.com/blog/media-encoder/