



FINAL YEAR PROJECT REPORT

“SACRIFICE”

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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

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APPROVAL

This Project titled “**Sacrifice**”, submitted by **Md.Ikbal Ali, Hosen Tarek, Asif Islam Abir** and **Hayat Mahmud** 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 **29 November 2018**.

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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Shaikh Muhammad Allayear, Associate Professor and Head, Department of MCT** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

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At long last, we should recognize with due regard the consistent help and patients of our parents.



ABSTRACT

Blood donation is a gift for those patients who need blood. That's why we made an awareness documentary which is related to blood donation and thalassemia. Without blood, we can't live. We did this because we saw many people suffer for blood, many thalassemia patients suffer for lack of blood. We have to take a proper step about this. Even many people don't know that blood donation is very helpful for our health. We tried to include much information about blood donation. So that, people can realize blood donation is an easy and noble work.

Now a day there has been an absence of 3D animation work about "Blood Donation and Thalassemia" in our country. The animation and real footage which is we have done, this sort of enlivened work will assume an imperative job to make a social awareness. Toward the start of this venture, we arranged a storyboard which was utilized to the pre-envision creation of the task. We have used software like as, Autodesk Maya, Autodesk 3ds Max, and Adobe Photoshop.

Lastly, the composition of our animation was done using Adobe After Effects and Adobe Premiere Pro. Music and voice over were adopted for the presentation of the project in a professional manner. In our 3D animation, we tried to focus on blood donation. In real footage, we tried to figure out that we have so many patients in our country and some of them are thalassemia patient, who need blood regularly. We are trying to solve this big problem and we are working on it.



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CHAPTER 1

Blood Donation & Awareness

Introduction

Blood is important to live. Blood circles through our body and passes on fundamental substances like oxygen and enhancements to the body's cells. It can't be made or created. Liberal blood donors are the primary wellspring of blood for patients requiring a blood transfusion. There is no ideal substitute for blood and consequently, blood transfusion still remains a fundamental piece of patient administration. Therefore, security and accessibility of blood and blood items is a vital issue of concern. According to WHO, 'Safe Blood' will be blood that does not hurt to the individual who gets it. 83% of the worldwide population living in creating nations approach just 40% of blood provided, and 60% of instances of this blood is gathered from paid or replacement blood donors instead of from willful non-remunerated generally safe donors. In our country, gathered blood is tried for the most part for HIV, HBsAg, Hemoglobin, Hepatitis, CBC, and RBC.

Thus, it is very important to empower voluntary blood donation, proper testing, and capacity of blood parts and making mindfulness about blood donation and security among human services suppliers and also overall population.

Ideal usage of blood helps in taking out the utilization of allergenic blood and often prevents unnecessary exposure of a patient to the risk of blood-borne endogenous infections. Proper and reasonable utilization of blood/blood segments is required to guarantee their accessibility to destitute patients also as to evade superfluous danger of transfusion mediated diseases. Balanced utilization of blood implies giving the blood item in the right amount, for the privilege patient.

Now a day, some of our country people are not aware of the awareness of blood donation & transfusion. Indeed, even healing facilities junior specialists are the individuals who specifically interacted with blood donation and beneficiaries with their families. Some of them as educators are additionally in charge of giving the correct message to their understudies. Subsequently, it is vital to assess their own mindfulness, information, convictions, and disposition towards blood security, gift and transfusion.

1.1 Aims and Objectives

To evaluate awareness about blood donation and transfusion among country people who are not aware of this. And inspire them to willingly donate blood. Willingly blood donation is a great thing.

1.2 What is blood & blood donation?

Blood is a body liquid in human and other animals that convey fundamental substances for example supplements and oxygen to the cells and transports metabolic waste items from those equivalent cells.

There are four fundamental parts that include human blood: plasma, red blood cells, white blood cells, and platelets.

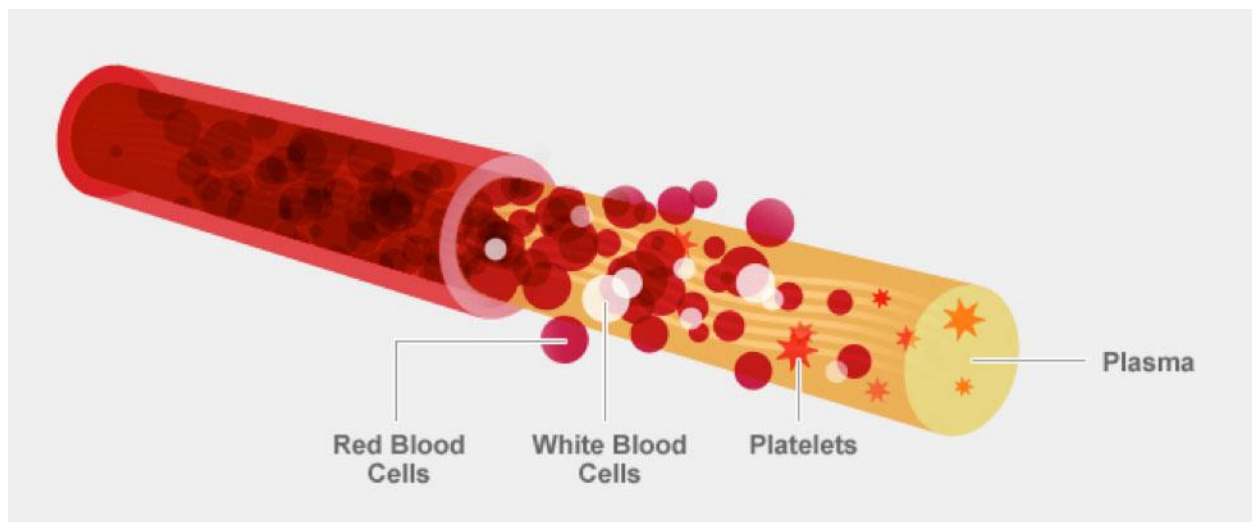


Figure 1: Blood Elements

In vertebrates, it is made out of blood cells suspended in blood plasma. Plasma, which establishes 55% of blood liquid, is generally water (92% by volume) and contains proteins, glucose, mineral particles, hormones, carbon dioxide (plasma being the primary mechanism for excretory item transportation), and blood cell themselves. Albumin is the principle protein in plasma, and its capacities to control the colloidal osmotic pressure of blood.

The blood cells are essentially red platelets (additionally called RBCs or erythrocytes), white platelets (likewise called WBCs or leukocytes) and platelets (additionally called thrombocytes).



The most bottomless cells in vertebrate blood are red platelets. These contain hemoglobin, an iron-containing protein, which empowers oxygen transport by reversibly legitimate to this respiratory gas and altogether growing its dissolvability in blood. Curiously, carbon dioxide is generally transported extracellularly as bicarbonate molecule transported in plasma. Vertebrate blood is brilliant red when its hemoglobin is oxygenated and dull red when it is deoxygenated. A few creatures, for example, shellfish and mollusks, utilize hemocyanin to convey oxygen, rather generally transported extracellularly as bicarbonate molecule transported in plasma. Vertebrate blood is brilliant red when its hemoglobin is oxygenated and dull red when it is deoxygenated. A few creatures, for example, shellfish and mollusks, utilize hemocyanin to convey oxygen, rather than hemoglobin. Bugs and a few mollusks utilize a liquid called hemolymph rather than blood, the distinction being that hemolymph isn't contained in a shut circulatory framework. In many creepy crawlies, this "blood" does not contain oxygen-conveying atoms, for example, hemoglobin in light of the fact that their bodies are little enough for their tracheal framework to get the job done for providing oxygen.

Blood is circulated around the body through veins by the siphoning activity of the heart. In creatures with lungs, blood vessel blood conveys oxygen from breathing in the air to the tissues of the body, and venous blood conveys carbon dioxide, a waste result of digestion delivered by cells, from the tissues to the lungs to be breathed out.

Restorative terms identified with blood frequently start with hemo-or hemato-(likewise spelled haemo-and haemato-) from the Greek word αἷμα (haima) for "blood". As far as living systems and histology, blood is viewed as a particular type of connective tissue, given its inception during the bones and the nearness of potential sub-atomic strands as fibrinogen.

1.3 One micro liter of blood contains

- 4.7 To 6.1 million (male), 4.2 to 5.4 million (female) erythrocytes: Red blood cells contain the blood's hemoglobin and disperse oxygen. Develop red blood cells do not have a core and organelles in well-evolved creatures. The red blood cells (together with endothelial vessel cells and different cells) are likewise set apart by glycol proteins that characterize the diverse blood classifications.

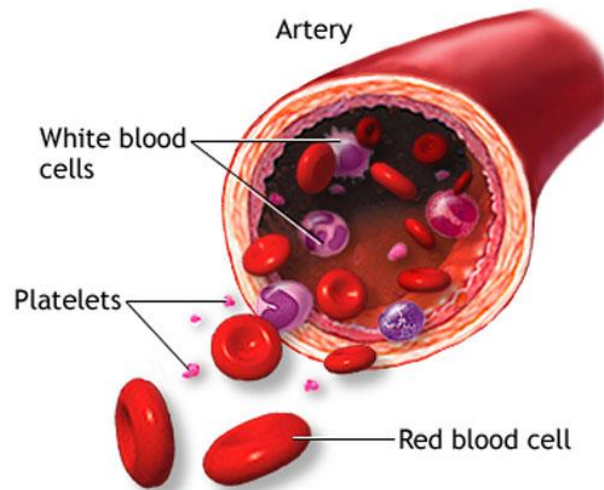


Figure 2: Blood Elements2

The extent of blood possessed by red platelets is alluded to as the hematocrit, and is regularly about 45%. The joined surface territory of all red platelets of the human body would be around multiple times as extraordinary as the body's outside surface.

- 4,000– 11,000 leukocytes: White blood cells are a piece of the body's safe framework; they decimate and evacuate old or variant cells and cell flotsam and jetsam, and additionally assault irresistible specialists (pathogens) and outside substances. The malignant growth of leukocytes is called leukemia.
- 200,000– 500,000 thrombocytes: Also called platelets, they participate in blood thickening (coagulation). Fibrin from the coagulation course makes a work over the platelet plug.
- About 55% of blood will be blood plasma, a liquid that is simply the blood's fluid medium, which is straw-yellow in shading. The blood plasma volume aggregates of 2.7– 3.0 liters (2.8– 3.2 quarts) in a normal human. It is basically a fluid arrangement containing 92% water, 8% blood plasma proteins, and follow measures of different materials. Plasma flows disintegrated supplements, for example, glucose, amino acids, and unsaturated fats (broke up in the blood or bound to plasma proteins), and expels squander items, for example, carbon dioxide, urea, and lactic acid.



1.4 Blood donation

A blood donation happens when a man willfully has blood drawn and utilized for transfusions and additionally made into biopharmaceutical meds by a procedure called fractionation (detachment of entire blood parts). Donation might be of entire blood, or of particular segments straightforwardly (the last called apheresis). Blood donation centers frequently partake in the gathering procedure and additionally the methodology that tails it.

Today in the developed world, most blood contributors are unpaid volunteers who give blood for a network supply. In a few nations, built up provisions are constrained and contributors by and large give blood when family or companions require a transfusion (coordinated gift). Numerous contributors give us a demonstration of philanthropy, however in nations that permit paid gift a few givers are paid, and at times there are motivating forces other than cash, for example, paid time off from work. Contributors can likewise have blood drawn for their very own future utilize (autologous gift). Giving is moderately protected, yet a few givers have wounding where the needle is embedded or may feel swoon. Blood donation in Bangladesh is a movement led by a few distinct associations. Starting at 2011, about 25% of the country's blood supply originated from a willful donation, 20– 25% from paid donors, and 50– 55% from one-time donation for a particular patient.

Blood transfusion service became accessible in Bangladesh at the Dhaka Medical College Hospital in 1950. Professional blood contributors were the pillar of blood donation in Bangladesh, with 47% of given blood originating from expert donors as late as the year 2000. The potential for sully in the supply and the requirement for volunteer donors was well recognized. An estimate from 2011 is that of the 500, 000 units of blood required every year, just 25% originate from only 25% come from a voluntary donation, 20–25% from paid donors, and 50–55% from one-time donation for a particular patient.



Figure 3: Blood Bags

Blood for transfusion is gained from human benefactors by blood blessing and set away in a blood gift focus. There are an extensive variety of blood orders in individuals, the ABO blood store up a structure, and the Rhesus blood accumulates system being the most basic. Transfusion of the blood of an incongruent blood social occasion may cause extraordinary, frequently destructive, disarrays, so cross matching is done to ensure that a decent blood thing is transfused.

Other blood things oversaw intravenously are platelets, blood plasma, cryoprecipitate, and specific coagulation factor concentrates.

1.5 Who can give blood?

Most people can give blood. You can give blood on the off chance that you:

- are fit and healthy.
- weight between 7 stone 12 lbs and 25 stone, or 50kg and 160kg.
- are aged between 17 and 66 (or 70 if you have given blood before).
- are more than 70 and have given blood over the most recent two years

Men can give blood every 12 weeks and women can give blood every 16 weeks.



The common reasons donors should check if they can give blood are:

- if you are receiving medical or hospital treatment
- if you are taking medication
- after having a tattoo or piercing
- during and after pregnancy
- if you feel ill
- if you have cancer
- after receiving blood, blood products or organs.

1.6 Why should donate blood?

Safe blood saves lives and improves health. Blood transfusion is required for:

- women with complications of pregnancy, such as ectopic pregnancies and hemorrhage before, amid or after labor;
- children with severe anemia often resulting from malaria or lack of healthy sustenance;
- people with severe trauma following man-made and natural disasters;
- many complex medical and surgical procedures and cancer patients.

It is likewise required for customary transfusions for individuals with conditions, for example, thalassemia and sickle cell sickness and is utilized to make items, for example, clotting factors for people with hemophilia.

There is a consistent requirement for normal blood supply since blood can be put away for just a constrained time before utilize. Regular blood donations by an adequate number of healthy people are needed to ensure that safe blood will be available whenever and wherever it is required.

Blood is the most valuable blessing that anybody can provide for someone else — the gift of life. A choice to donate your blood can spare a real existence, or even several if your blood is separated into its components — red cells, platelets, and plasma — which can be used exclusively for patients with specific conditions.

1.7 Why Blood Is Needed

The reason to donate is simple...it helps save lives. In fact, every two seconds of every day, somebody needs blood. Since blood can't be manufactured outside the body and has a restricted timeframe of realistic usability, the supply should always be renewed by liberal blood donors.



CHAPTER 2

Thalassemia

Introduction

Thalassemia is an inherited blood-related disorder due to the absent or reduced production of hemoglobin, a protein present in red blood cells responsible for carrying oxygen through the body. Every red platelet may contain somewhere in the range of 240 and 300 million atoms of hemoglobin. A hemoglobin molecule has two sub-units, for the most part, implied as alpha and beta. Both sub-units are vital to tie oxygen and pass on them to cells and tissues in the body. The quality locus controlling the generation of alpha chains is known as the alpha globin quality bunch, and also, the beta-globin quality group produces beta chains. An absence of a specific subunit decides the kind of the subsequent thalassemia (alpha or beta). Thalassemia is gotten from the Greek word "Thalassa" implying "the sea" in light of the way that the condition was first depicted in masses living near the Mediterranean Sea. In any case, it is as of now to a great degree without a doubt comprehended that alpha and beta thalassemia are the most notable procured single-quality issue on the planet with the most vital inescapability in zones where intestinal affliction was or still is endemic (Mediterranean Basin, Australasia, the Americas, and Africa). In numerous parts of the world, thalassemia still speaks to a noteworthy general wellbeing concern. In alpha-thalassemia, changes in alpha-globin characteristics can offer climb to an extent of clinical presentations.

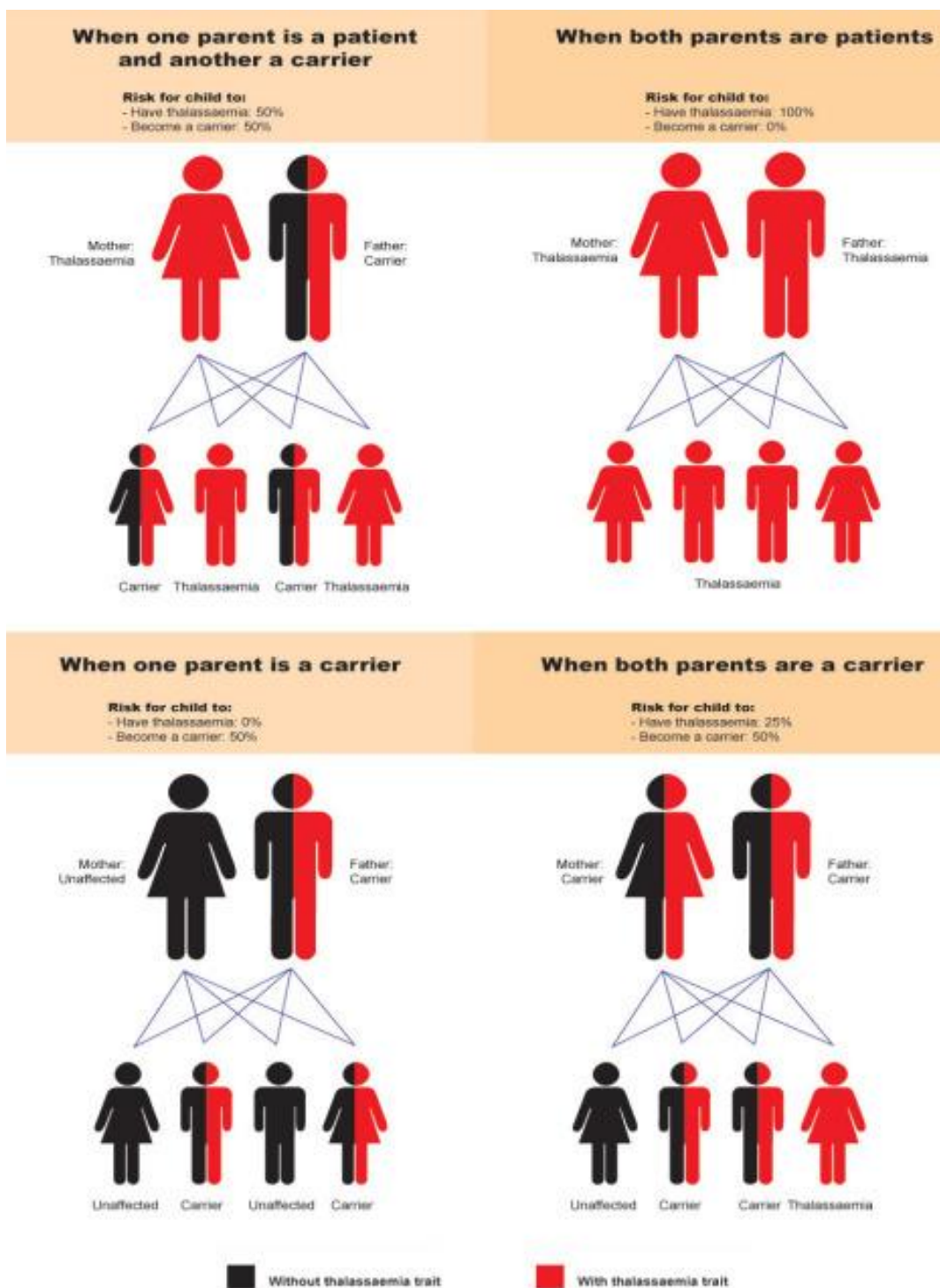


Figure 4: Thalassaemia patient's details chart

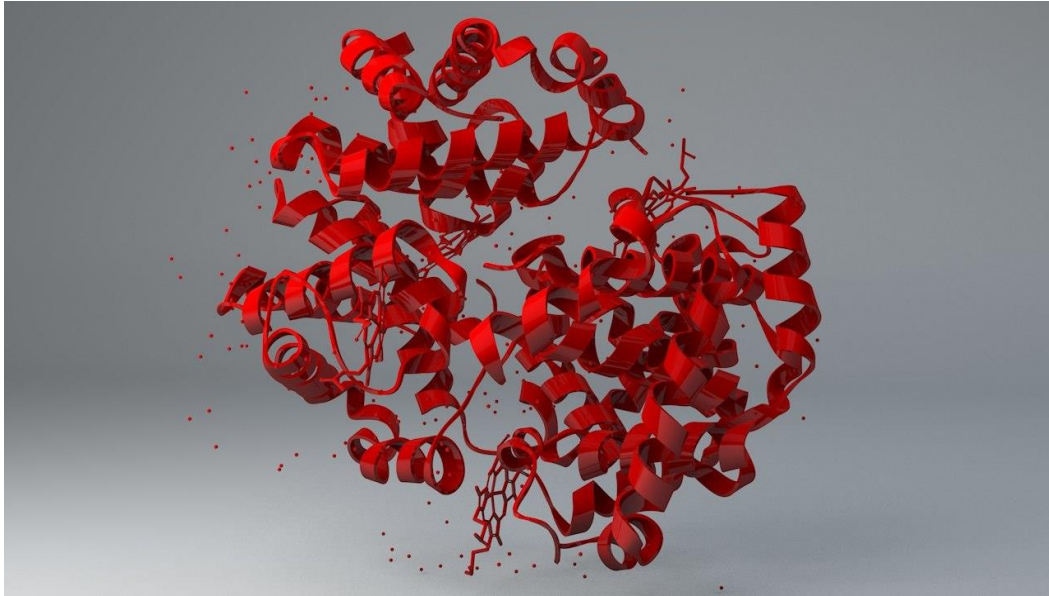


Figure 5: 3D model of scientific hemoglobin structure

2.1 Electrophoresis

Electrophoresis is one of the extensively used methodologies for separating hemoglobin varieties reliant on the advancement of different Hb or unmistakable globin chains, containing various charges, in the electric field. At a soluble pH, Hb is adversely charged and will advance toward the anode (emphatically charged) terminal. Electrophoresis of aggregate Hb is not the same as electrophoresis of isolated globin chains. Electrophoresis of hemolysis on cellulose acetic acid derivation layer is primarily utilized in basic pH electrophoresis, is a straightforward, dependable technique for recognizing unusual hemoglobin, and fit for isolating regular hemoglobin variations, for example, S, f, an, and C.



Figure 6: Electrophoresis machine

Typical working voltage is about 250mV and the estimated run time is around 90 min. From that point onward, the layer should be recolored, kept and air dried before the partition of globin chains can be watched. In this way, it is typically used to screen for a few kinds of Hb variations. The corroborative test should be possible utilizing electrophoresis in acidic media. At a lower pH of about 6.0, a superior partition of various hemoglobin is acquired.



CHAPTER 3

WORK PROCESS

Introduction

As a medical animation, in this project, we create some medical instrument and hospital in 3d. Measurement of the actual 3d model those are used on our scene was obtained from multiple websites and self-taken in the real object. We have also captured multiple pictures of a human walk style and also recorded videos of those from different angles so that we can get a clear reference while creating the walk cycles, animation, storyboard, model development, and texturing and camera animation.

In this chapter, we have presented 3D models of the four monuments including their views from different angles. Screenshots of the software are also given in this chapter.

3.1 Story Board

Storyboard is a graphical organizer in the form of illustrations or images displayed in sequence for the purpose of pre-visualizing a motion picture, animation, motion graphic or interactive media sequence.

Importance of story Board

- Define the parameters of a story within available resources and time.
- Organize and focus a story.
- Figure out what medium to use for each part of the story

Storyboarding of our project

We have pre-visualized our final project and drawn the following storyboard so that the storyboard can act as a reference during actual animation and post-production.

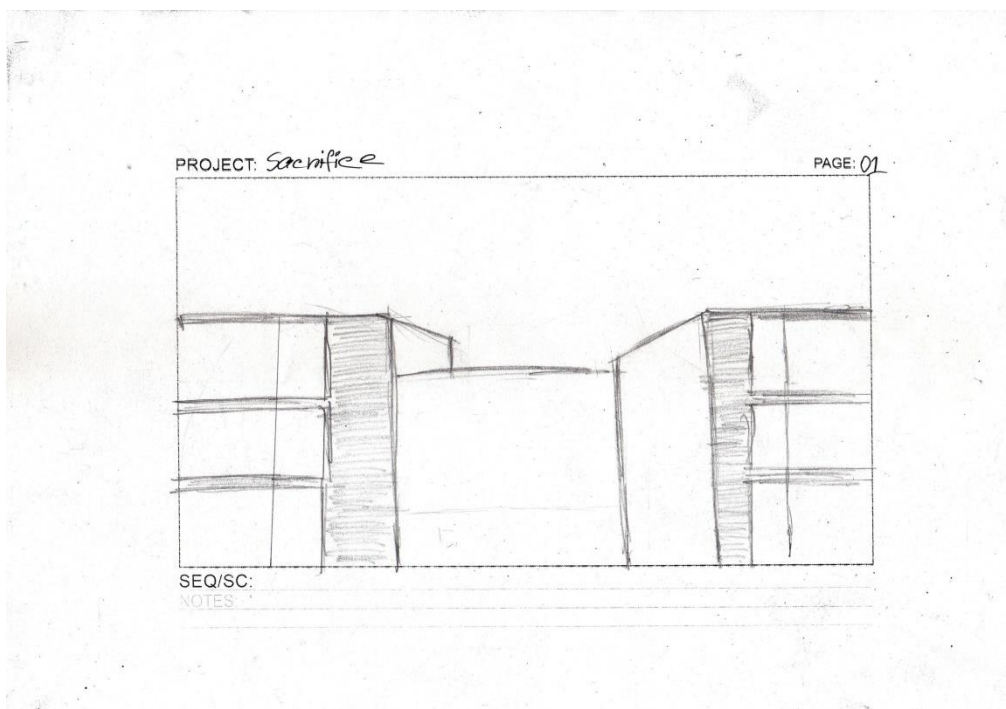


Figure 7: Storyboard of the documentary (page 1)

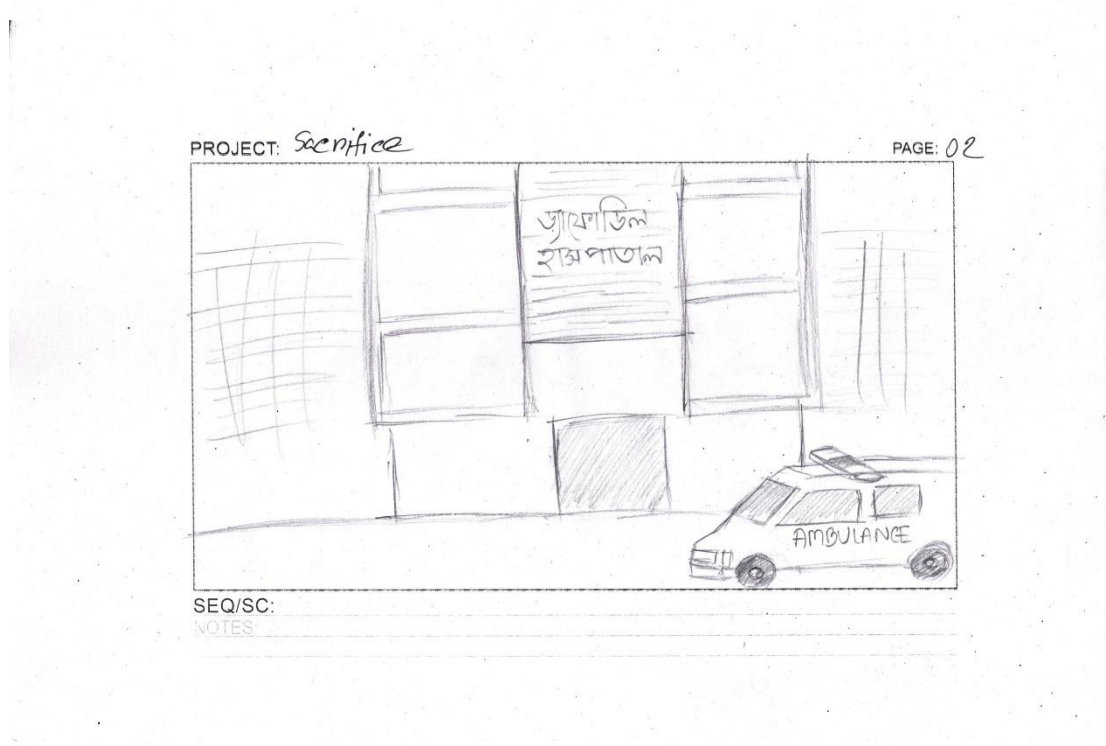


Figure 8: Storyboard of the documentary (page 2)

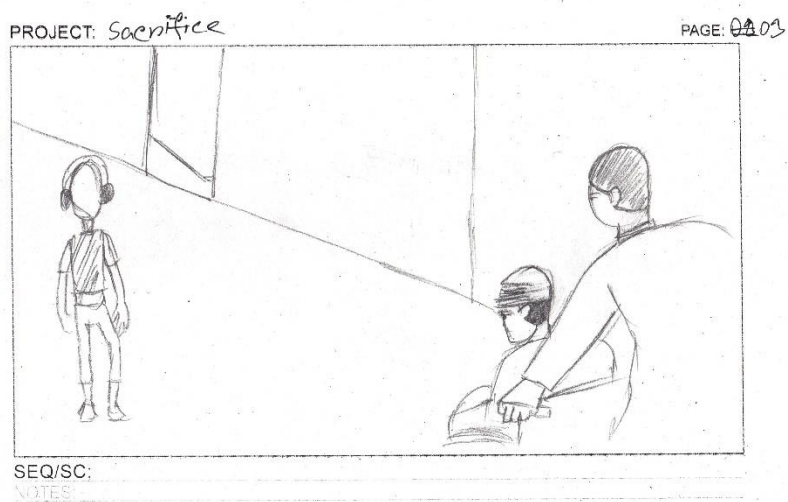


Figure 9: Storyboard of the documentary (page 3)

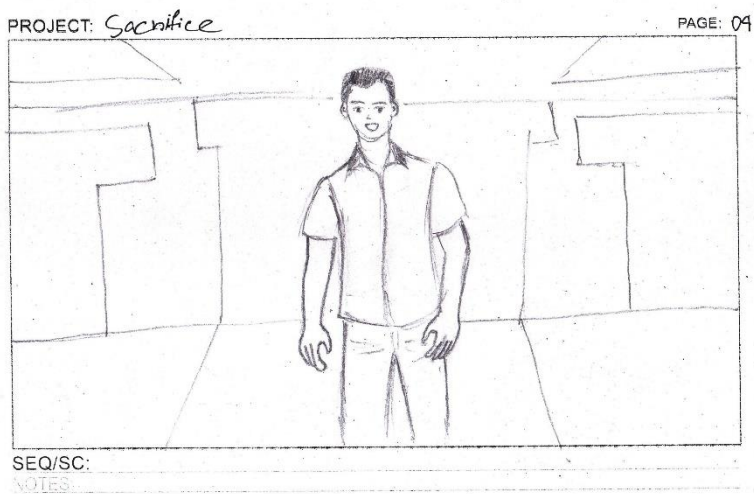


Figure 10: Storyboard of the documentary (page 4)

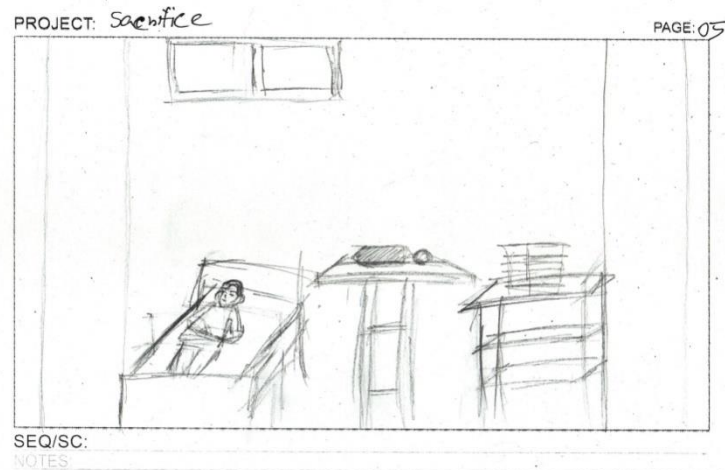


Figure 11: Storyboard of the documentary (page 5)

3.2 Software

Following software were used to create the final output:

- Autodesk Maya
- Autodesk 3ds Max
- Adobe Photoshop CC
- Adobe Illustrator CC
- Adobe Premiere Pro
- Adobe After Effects
- Wondershare Filmora



Autodesk Maya:

Autodesk Maya generally abbreviated to Maya, is a 3D PC illustrations programming that keeps running on Windows, MacOS and Linux, initially created by Alias Systems Corporation and as of now claimed and created via Autodesk. It is utilized to make intelligent 3D applications, including computer games, enlivened film, TV arrangement, or enhanced visualizations.

Maya was at first a bleeding edge movement thing reliant on code from The Advanced Visualizer by Wavefront Technologies, PowerAnimator by Alias Research, Inc., and Alias Sketch. The code was ported to IRIX and enthusiasm features were incorporated; the porting adventure codename was Maya. Walt Disney Feature Animation collaborated personally with Maya's enhancement in the midst of its age of Dinosaur. Disney requested that the User interface of the application be versatile with the objective that a modified work process could be made. This was an explicit effect in the open structure of Maya, and most of the way responsible for it winding up so unmistakable in the exuberance business. We have used Autodesk Maya to make 3D models, surfaces, lighting, liveliness, and condition for this task. A couple of features of Maya like some basic 3D objects made the earth.

Autodesk 3ds Max:

In the past known as "3D Studio," 3ds Max is a 3D demonstrating, liveliness and rendering program from the Media and Entertainment division of Autodesk, Inc., San Rafael, CA (www.discreet.com). Generally utilized in the zones of intelligent diversions, special visualizations for motion pictures and modern structure models, the product gives you a chance to make 2D shapes that turn into the cross areas of the 3D models. The application incorporates an activity module that utilizes backwards kinematics, which joins parts with the goal that they move together, adding to the impact of breathing life into a character. 3ds Max conveyed Autodesk's careful image name until 2005. We utilized this product for making 3D models and gear.

Adobe Photoshop CC:

Adobe Photoshop is a raster illustrations editorial manager created and distributed by Adobe Systems for macOS and Windows. Photoshop was made in 1988 by Thomas and John Knoll. From that point forward, it has turned into the true business standard in designs altering, with the



end goal that "photoshop" has turned into an action word as in "to Photoshop a picture," "photoshopping" and "photoshop challenge", however Adobe demoralizes such use. It can alter and create raster pictures in different layers and backings covers, alpha compositing and a few shading.

RGB, CMYK, CIELAB, spot shading and duotone and so on. Notwithstanding raster illustrations, it has constrained capacities to alter or render content, vector designs (particularly through cut-out way), 3D illustrations and video. Photoshop's list of capabilities can be extended by Photoshop modules, programs created and conveyed freely of Photoshop that can keep running inside it and offer new or upgraded highlights.

Photoshop is Adobe's photograph altering, picture creation and visual communication programming. The product gives many picture altering highlights to raster (pixel-based) pictures and additionally vector illustrations. It utilizes a layer-based altering framework that empowers picture creation and modifying with different overlays that help straightforwardness. Layers can likewise go about as covers or channels, modifying basic hues. Shadows and different impacts can be added to the layers. Photoshop activities incorporate computerization highlights to decrease the requirement for dull undertakings. A choice known as Photoshop CC (Creative Cloud) enables clients to deal with substance from any PC.

The reason for Adobe Photoshop for this venture was principally to make surface for the models.

Adobe Illustrator CC:

Adobe Illustrator is a vector designs editorial manager created and advertised by Adobe Systems. The most recent rendition, Illustrator CC, is the 22nd age in the product offering. Adobe Illustrator for the Apple Macintosh started in 1985 (sending in January 1987) as a commercialization of Adobe's in-house text style improvement programming and PostScript record design. Adobe Illustrator is the friend result of Adobe Photoshop. Photoshop is basically intended for computerized photograph control and photorealistic styles of PC delineation, while Illustrator gives results in the typesetting and logo realistic regions of plan. Early magazine notices (highlighted in visual communication exchange magazines, for example, Communication Arts) alluded to the item as "the Adobe Illustrator". Artist 88, the item name for rendition 1.7, was discharged in 1988 and presented numerous new apparatuses and highlights.



BYTE in 1989 recorded Illustrator 88 as among the "Refinement" champs of the BYTE Awards, expressing that with-it Adobe had "pulled ahead" of Aldus Freehand.

Early forms of the product did not bolster working in review mode and clients needed two windows open on their work area so as to have a live see of their work.

One window to demonstrate the work in advancement, the other window to demonstrate a see of the work in advancement. We for the most part utilized Illustrator to plan our vector components for the movement designs part on our undertaking.

Adobe Premiere Pro:

Adobe Premiere Pro is a course of events based video altering application created by Adobe Systems and distributed as a major aspect of the Adobe Creative Cloud permitting program. Adobe Premiere Elements is a video altering programming distributed by Adobe Systems. It is a downsized variant of Adobe Premiere Pro and is custom fitted to fledgling editors and buyers. The section screen offers cut association, altering and auto-motion picture age alternatives. Debut Pro undertaking documents are not good with Premiere Elements ventures records.

Debut Pro is the updated successor to Adobe Premiere, and was propelled in 2003. Debut Pro alludes to renditions discharged in 2003 and later, while Premiere alludes to the prior discharges. Debut was one of the main PC based NLEs (non-direct altering framework), with its first discharge on Mac in 1991. Adobe quickly deserted the Mac stage after rendition 6 of Premiere. Up until the point that adaptation Premiere Pro 2.0 (CS2), the product bundling included a dashing pony, in a gesture to Eadweard Muybridge's work, "Sallie Gardner at a Gallop".

Adobe Premiere Pro was utilized for after generation. It's made video record from render pictures, shading revision and furthermore sound altering.

Adobe After Effects:

is a computerized special visualizations, movement designs, and compositing application created by Adobe Systems and utilized in the after generation procedure of film making and TV creation. In addition to other things, After Effects can be utilized for keying, following, compositing and movement. It additionally works as an exceptionally essential non-direct editorial manager,



sound proofreader and media transcoder. Delayed consequences was initially made by the Company of Science and Art in Providence, Rhode Island, where the initial two adaptations of the product, 1.0 (January 1993) and 1.1, were discharged by the organization. CoSA alongside After Effects was then obtained by Alduscorporation in July 1993, which was thusly gained by Adobe in 1994, and with it PageMaker. Adobe's first new arrival of After Effects was rendition 3.0. Eventual outcomes has broad module bolster; an expansive scope of outsider modules are accessible. An assortment of module styles exist, for example, molecule frameworks for reasonable impacts for rain, snow, fire, and so on. With or without outsider modules, After Effects can render 3D impacts. A portion of these 3D modules utilize essential 2D layers from After Effects.

Notwithstanding 3D impacts, there are modules for making video look like film or kid's shows; reproducing shoot, smoke, or water; molecule frameworks; moderate movement; making energized outlines, charts, and other information perception; figuring the 3D development of a camera in a 2D video shot; disposing of glint, commotion, or gear lines; deciphering courses of events from FCP or Avid; including top of the line shading amendment; and other work process enhancements and special visualizations.

Wondershare Filmora:

Filmora is a standout amongst the most prevalent freemium video altering programming for the two Windows and Mac to alter high caliber 1080p or even 4k video film. It is perfect with all video goals from 240 to 4K in whatever regular arrangement. It offers an abundant measure of expert video apparatuses, changes and impacts which can be effectively found on its easy to understand interface. After altering, you can choose how you might want your altered video to be spared. It tends to be in an explicit yield arrange dependent on the most loved or kind of gadget you wish to playback on. Then again, transfer it specifically onto Facebook or YouTube for moment sharing.



3.3 Hardware Requirement

We have used three different windows desktop computers with following configuration to create this project:

PC 1:

- Processor Intel Core i5
- RAM: 32 GB DDR4
- GPU: NVidia GTX 750 TI

PC 2:

- Processor Intel Core i5
- RAM: 32 GB DDR4
- GPU: NVidia GTX 750 TI

PC 3:

- Processor Intel Core i5
- RAM: 32 GB DDR4
- GPU: NVidia GTX 750 TI

PC 4:

- Processor Intel core i5
- RAM: 16 GB DDR4
- GPU: NVidia GTX 750

PC 5:

- Processor Intel core i5
- RAM: 8 GB DDR3.
- GPU: NVidia GT 740

3.4 Model

Exterior scene

At first, we create exterior scene for our project. For the exterior modeling with opening Maya 2016, we have taken a cube from the polygon option. By extruding the cube we have created multiple steps that resemble the shape of the base hospital building.

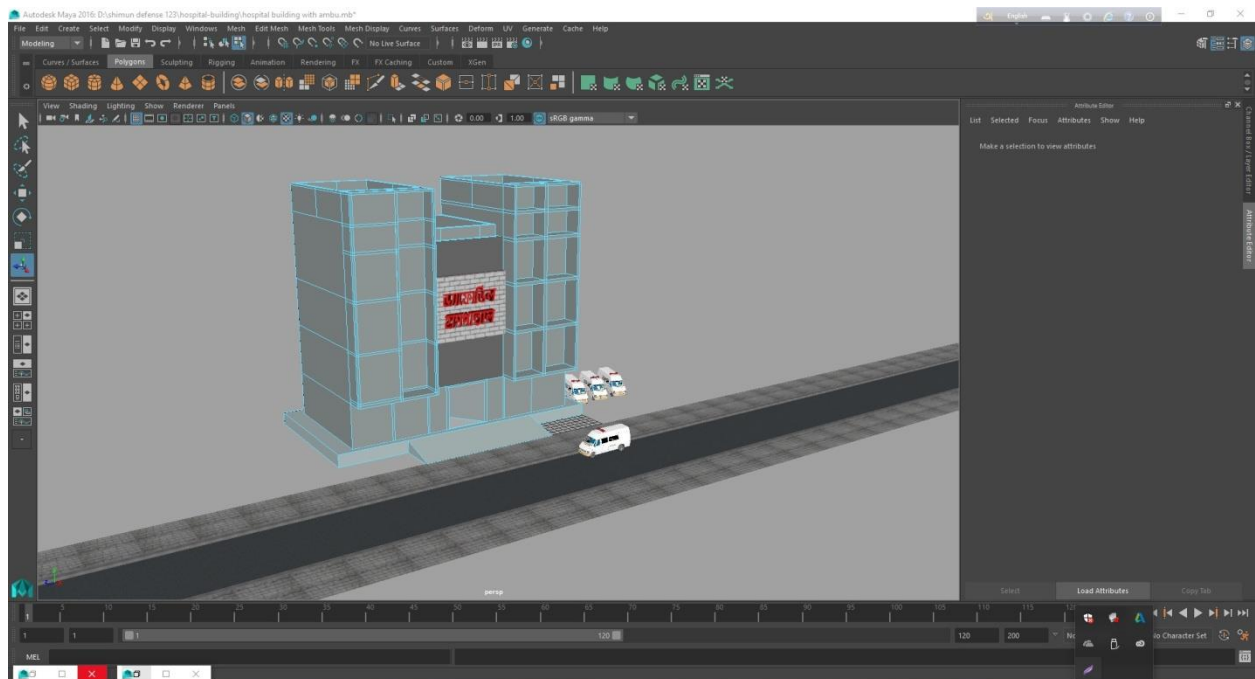


Figure 12: Screenshot of starting our hospital Structure

We have created the hospital building and road as it's an exterior scene using multiple cubes & plane. The name of the hospital was created by modifying UV texture with Adobe Photoshop under Maya 2016.

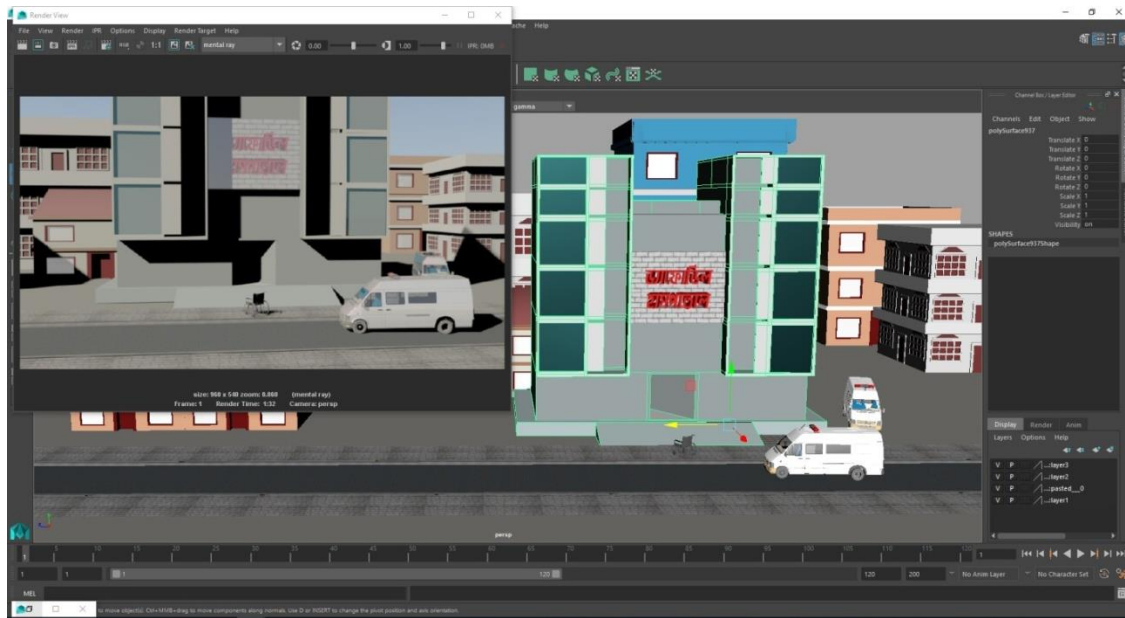


Figure 13: Screenshot of exterior scene with test render

As we created the exterior hospital scene, we need to organize our scene by various 3ds models like ambulance and other building & low poly tree etc. Some of our 3d models are from online references & maximum model we created by 3d software Autodesk Maya 2016.



Figure 14: Screenshot of hospital scene

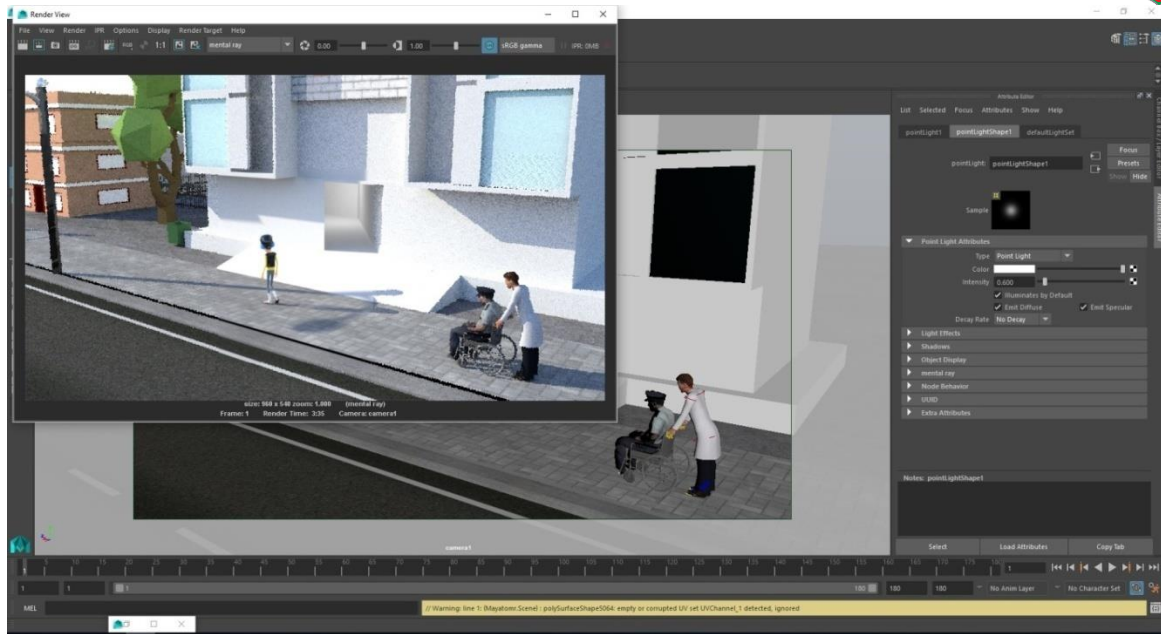


Figure 15: Screenshot of completed model and texture our exterior.



Figure 16: Final render image of exterior.

Interior scene

We have created the interior hospital corridor scene and room as it's an interior scene using multiple cubes in Maya 2016.

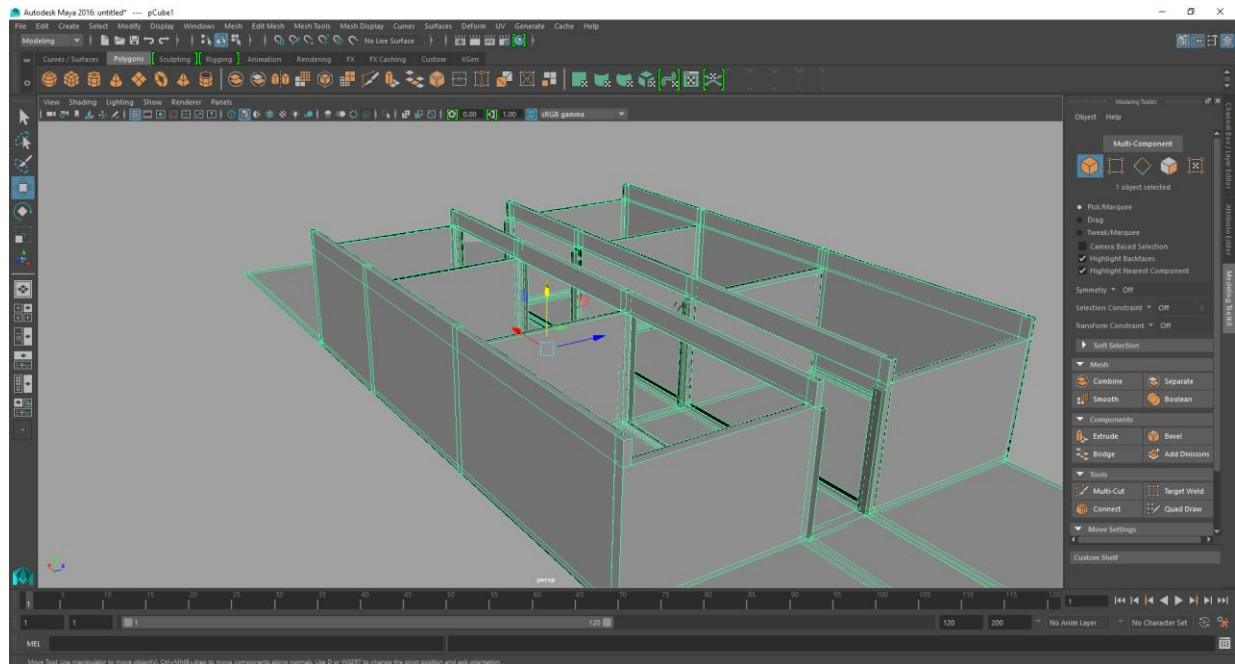


Figure 17: Screenshot of Starting our Room Structure

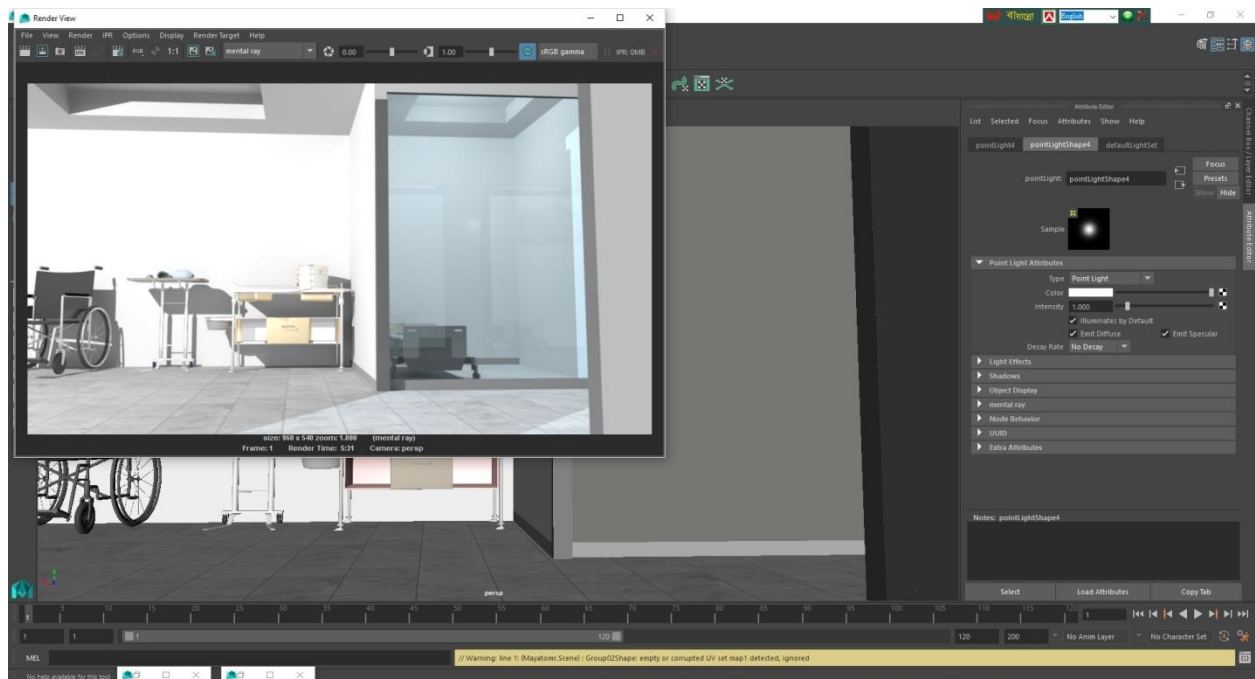


Figure 18: Hospital Corridor

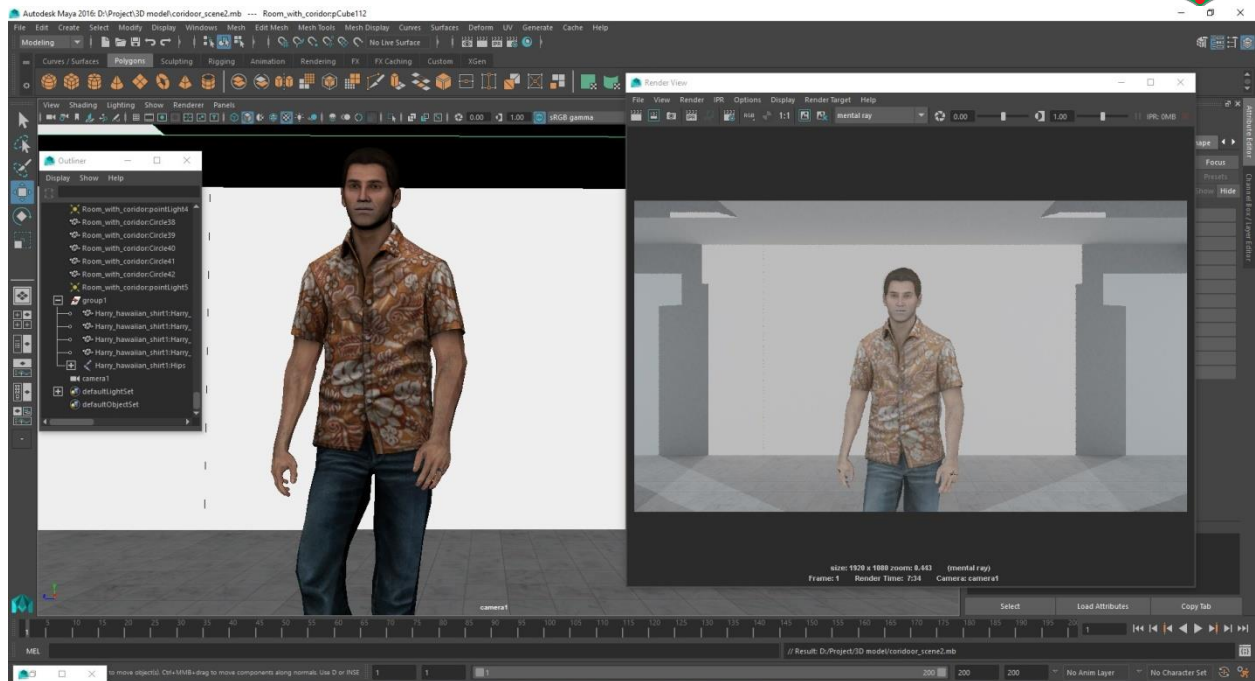


Figure 19: Hospital Corridor with Character



Figure 20: Hospital Interior Room



Figure 21: Hospital Interior Final Render

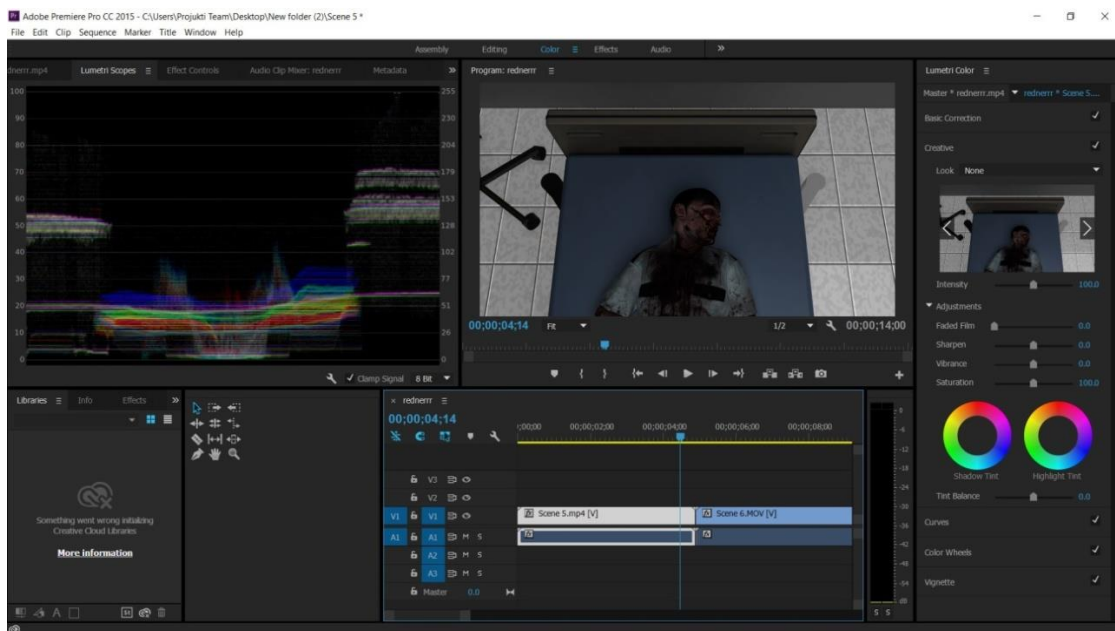


Figure 22: Screenshot of color correction

We edited the raw animation file in Adobe Premiere Pro. By using this software we did color correction, clip edition, transitions, effects etc. Basically, this software is very much cool and helpful for color correction.

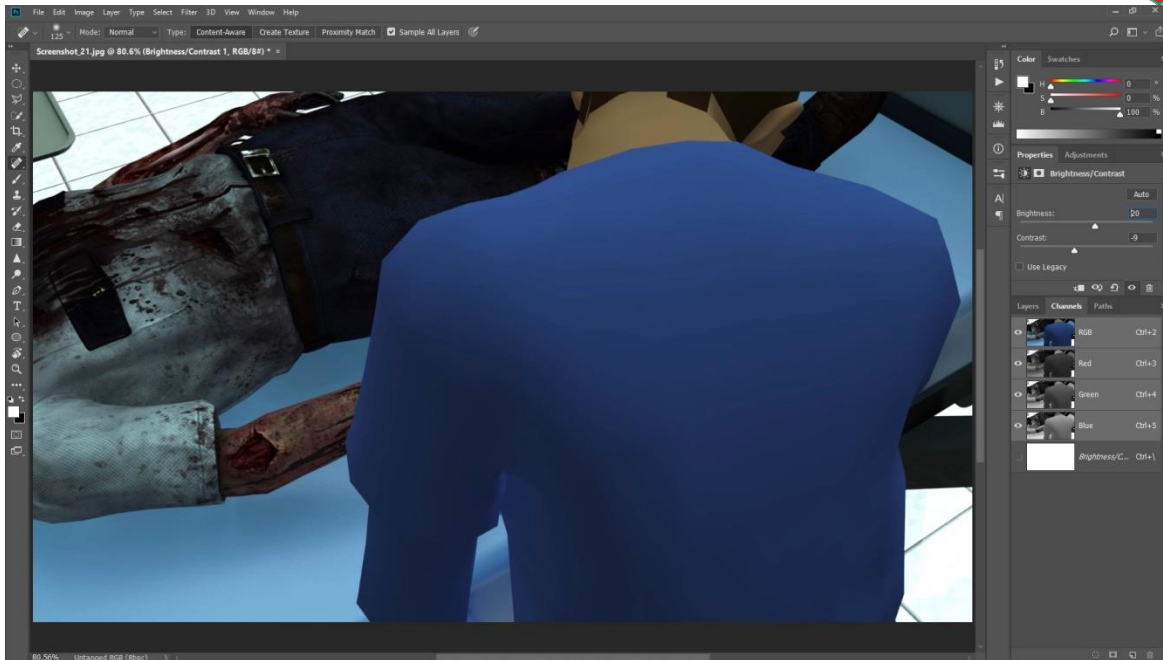


Figure 23: Screenshot of over the shoulder shot

We used Adobe Photoshop for editing texture, color, and text. This software is a masterpiece for making textures for 3D objects such as floor tiles, wall, car etc.

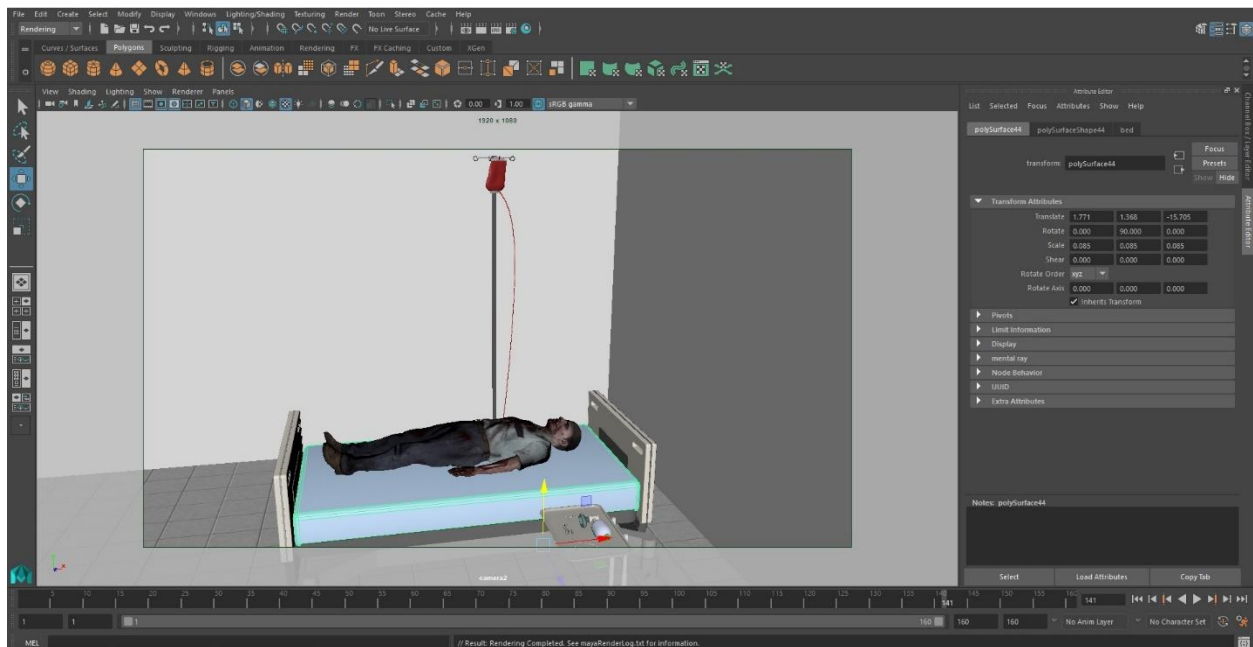


Figure24: Screenshot of transfusion room

We created a blood transfusion scene. A patient was receiving blood in the bed.

We used Adobe After Effects for bringing more smoothness in our 3D animation. We edited our Targa file in After Effects. We created our intro by using Adobe After Effects.

For making a 3D wheelchair, first of all we had to see wheelchair images as a reference.

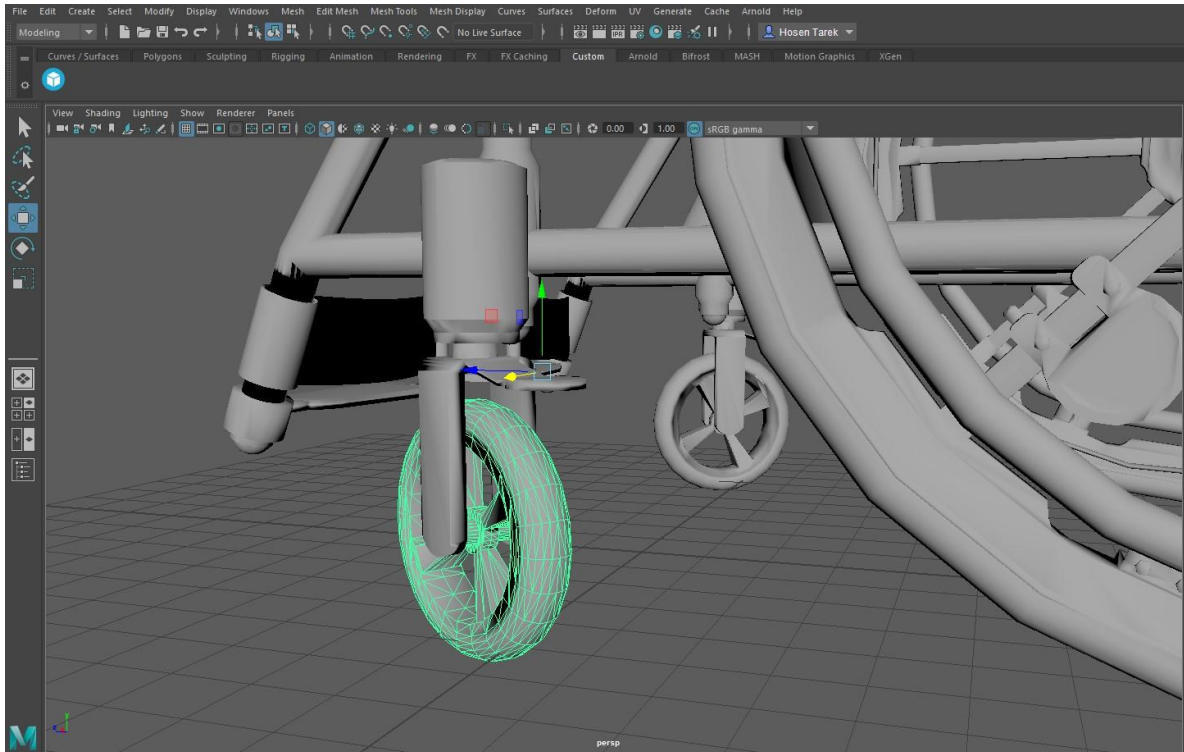


Figure 25: Screenshot of while 3D model was creating

After that we created the wheelchair in Autodesk Maya.

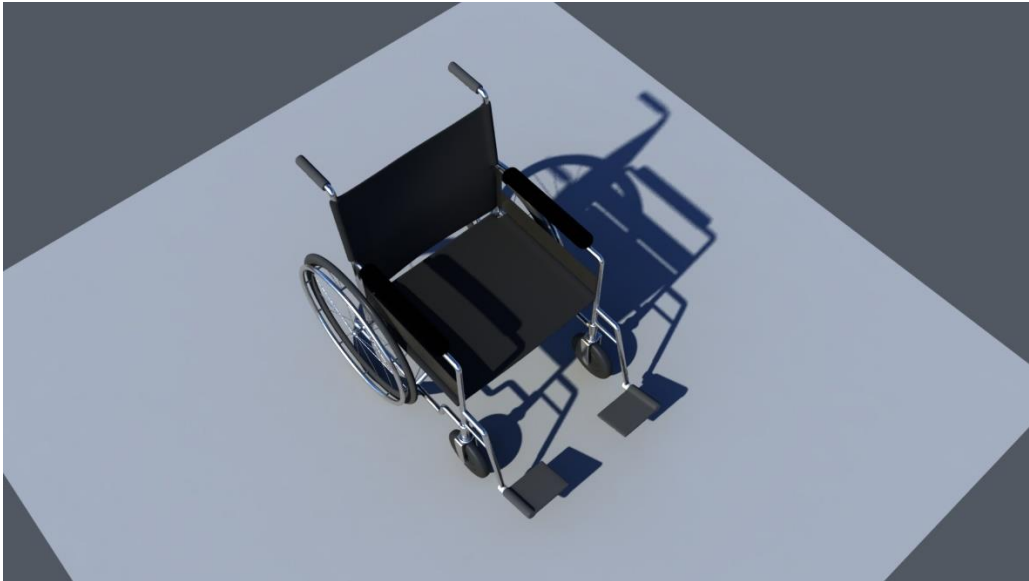


Figure 26: Texture Applied

We used mia material for looking realistic.

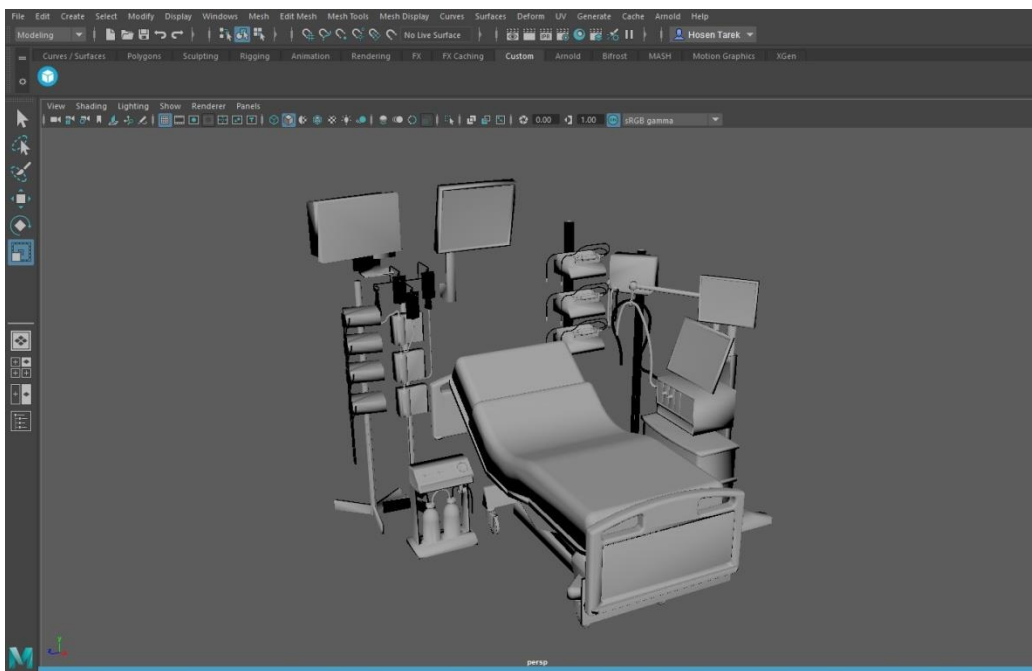


Figure 27: 3D model of medical equipment

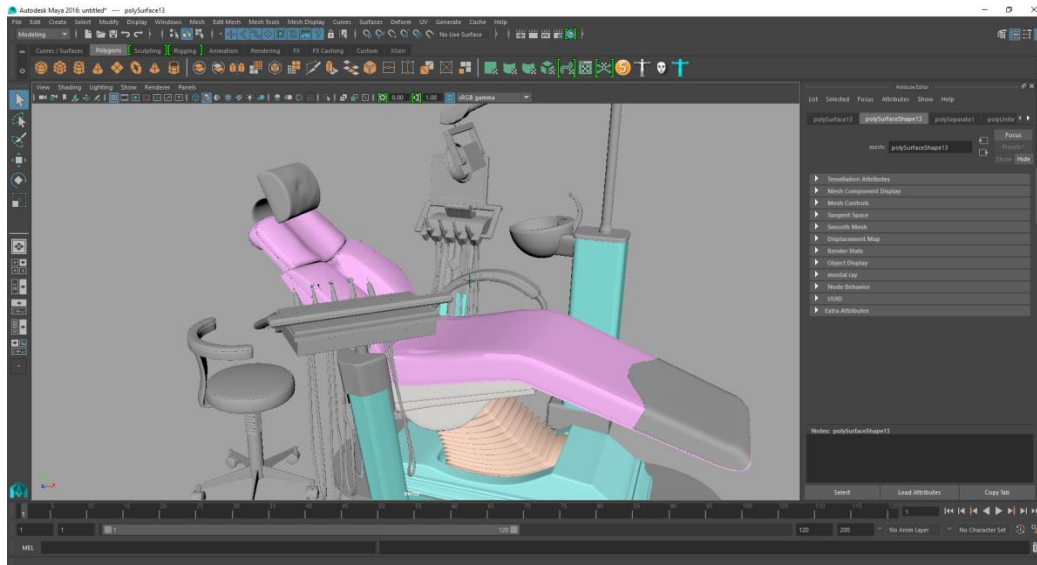


Figure 28: Medical equipment

Following the same process, we created other 3D objects. Such as medical equipment, TV, bed, ambulance car, street lamp etc.



Figure 29: Render Image of Ambulance

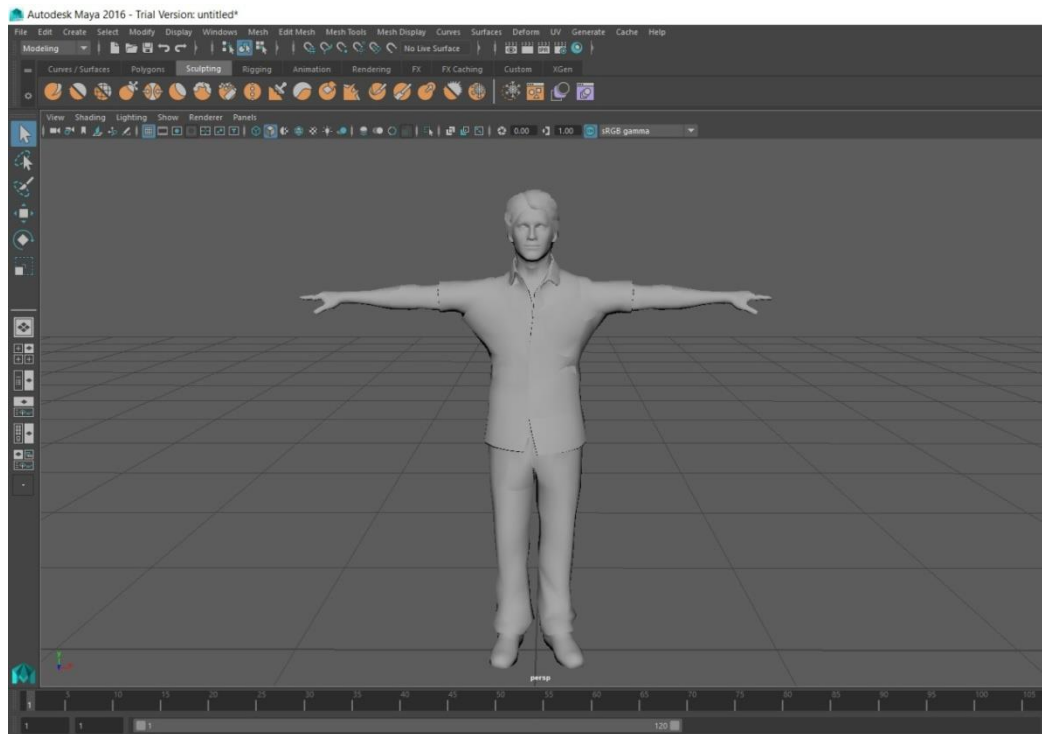


Figure 30: Model of donor

First of all, we created the characters and then we applied texture.

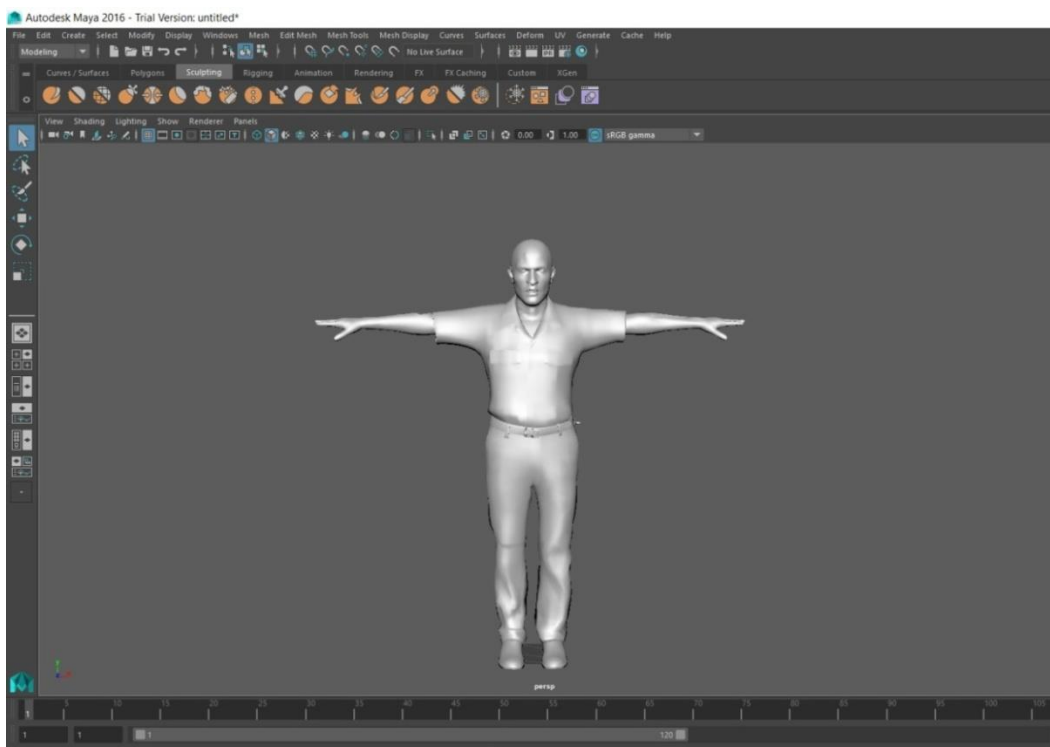


Figure 31: Model of patient

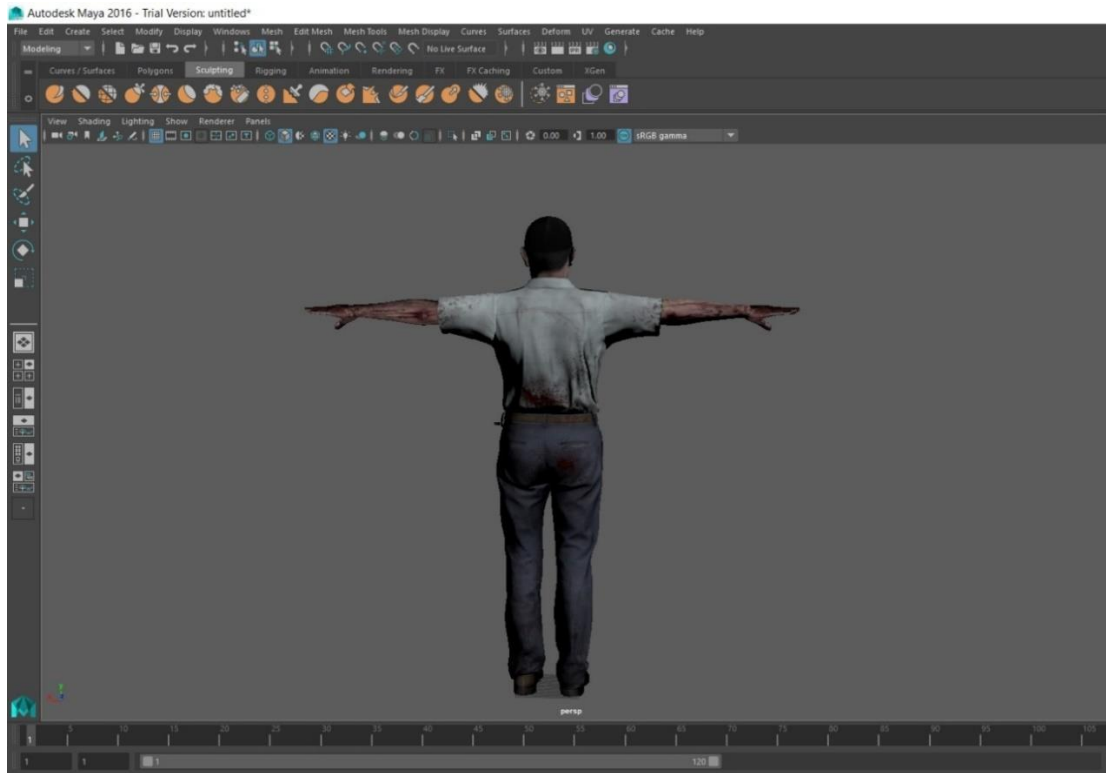


Figure 32: Model of patient with texture

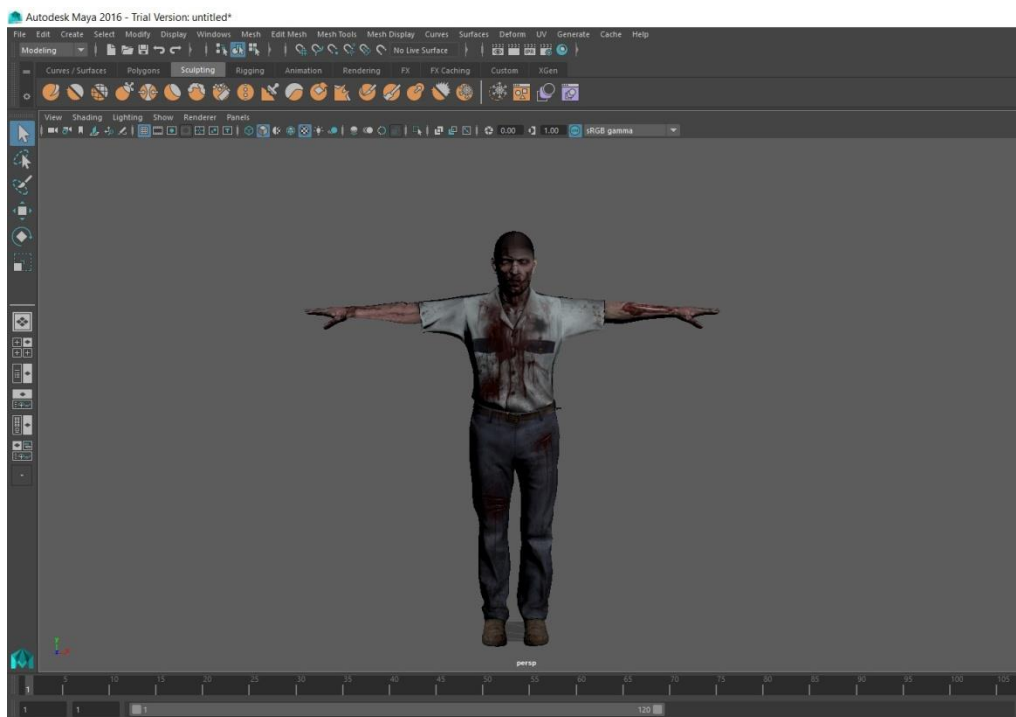


Figure 33: Model of patient with texture



Figure 34: Image of our real footage

We went to some of the popular hospitals of Dhaka city. Such as Bangabandhu Sheikh Mujib Medical University & Hospital, BIRDEM General Hospital, Shaheed Suhrawardy Medical College & Hospital, Bangladesh Thalassemia Samity Hospital. Because we tried to figure out that how many patients went to the hospital in a single day. So many patients and some of them need blood. So, it's very important to donate blood. Many patients died because of blood. We have so many populations but not that much blood donors.



Figure 35: Image of our real footage



Figure 36: Image of our real footage

In our country, we have so many populations but not that much blood donors. As a result, many patients suffer for blood, even some of them died. We can't tolerate this. That's why we try our level best for managing blood donors. Many people don't know that donating blood is very good

for health. We convince healthy people for donating blood regularly. Daily almost 15 & yearly 5500 blood donors we managed for patients. Sometimes we forgot to take our food because of managing blood donors. It's really so much tough to manage a single blood donor. But when we can we feel so much peace. We have so many plans for helpless people.



Figure 37: Image of our real footage at Thalassemia hospital



Figure 38: Image of our real footage at Thalassemia hospital



Figure 39: Image of our real footage at Thalassemia hospital



Figure 40: Image of our real footage at Thalassemia hospital

We captured the tragic story of thalassemia patients. They are excessively vulnerable. They require blood frequently. Without blood, they can't live. We need that individuals can think about this and make move to keep the risky infection and healthy people agree for donating blood.

3.5 Tools & Procedures

We made of the models with Sphere, Cube, Plane, Cylinder etc. To create the models with Autodesk Maya 2016 I used some very basic and obvious tools into the Software. Some of those are the following-

Move Tool: This is specified to move object or mesh from one place to another.

Scale Tool: This is used for resize the mesh as we require among three axis.

Rotate Tool: With this tool we can rotate the object.



Extrude Tool: We can extrude polygon faces, edges, or vertices using the feature.

Marge: The former is useful for combining components that are very close or overlapping. While the latter is useful for filling holes or creating points. When we merge vertices, the corresponding UVs are also merged.

Combine: This tool combines two different meshes into a single object. The meshes are combined as separate polygon shells into a new polygon mesh node. The new object is named after the first selected object and increments by 1.

Smooth Mesh: We need to Press the 3 key to display the selected polygonal mesh in this mode. Only the smoothed preview version of the mesh is displayed in this mode. we select and edit components on the smoothed preview when working in this mode.

Mirror Geometry: Specifies the plane of symmetry on which to mirror the selected polygon object. Default is World. Mirror relative to one side of an invisible cube encompassing the selected object.

Bridge: We can construct faces between pairs of border edges using the Bridge command. The resulting bridged faces are merged into the original mesh.

Sculpt Geometry Tool: The Sculpt Geometry Tool lets us manually sculpt NURBS quickly with the stroke of a brush. We simply paint the surface mesh using the Sculpt Geometry Tool to push or pull CVs to achieve the shape we want.

Moreover, for cleanup work and to keep the models able to rig I used some other tools such as **Delete by History**, **Freeze Transformation**, and **Central Pivot** etc.



3.6 Texturing

Texture mapping is a method for defining high-frequency detail, surface texture, or color information on a computer-generated graphic or 3D model.

Texture mapping is a strategy for characterizing high recurrence detail, surface, or shading data on a PC created the realistic or 3D show.

Surface mapping initially alluded to a strategy (now more precisely called diffuse mapping) that basically wrapped and mapped pixels from a surface to a 3D surface. In ongoing decades the coming of multi-pass rendering and complex mapping, for example, stature mapping, knock mapping, ordinary mapping, removal mapping, reflection mapping, specular mapping, mipmaps, impediment mapping, and numerous different minor departure from the method (controlled by a materials framework) have made it conceivable to reenact close photorealism continuously by inconceivably lessening the quantity of polygons and lighting figurings expected to develop a practical and useful 3D scene.

UV Mapping

UV Mapping is the process of unwrapping a finished model and preparing it for textures. This involves flattening out the triangles and converting them into a single square. The terms *UV Mapping* and *UV Unwrapping* can be used interchangeably. The letters “U” and “V” refer to the individual axes of the 2D texture, while “X” “Y” and “Z” refer to the location of the 3D model. This is the actually 3D modeling process of projecting a 2D image to a 3D model's surface for texture mapping. It's a crucial task, too, as a bad set of UVs and their resulting output can make a great model look awful. Whether you love or hate UVs, there's no escaping them – they are essential to understand.

Here are some UV maps of our models

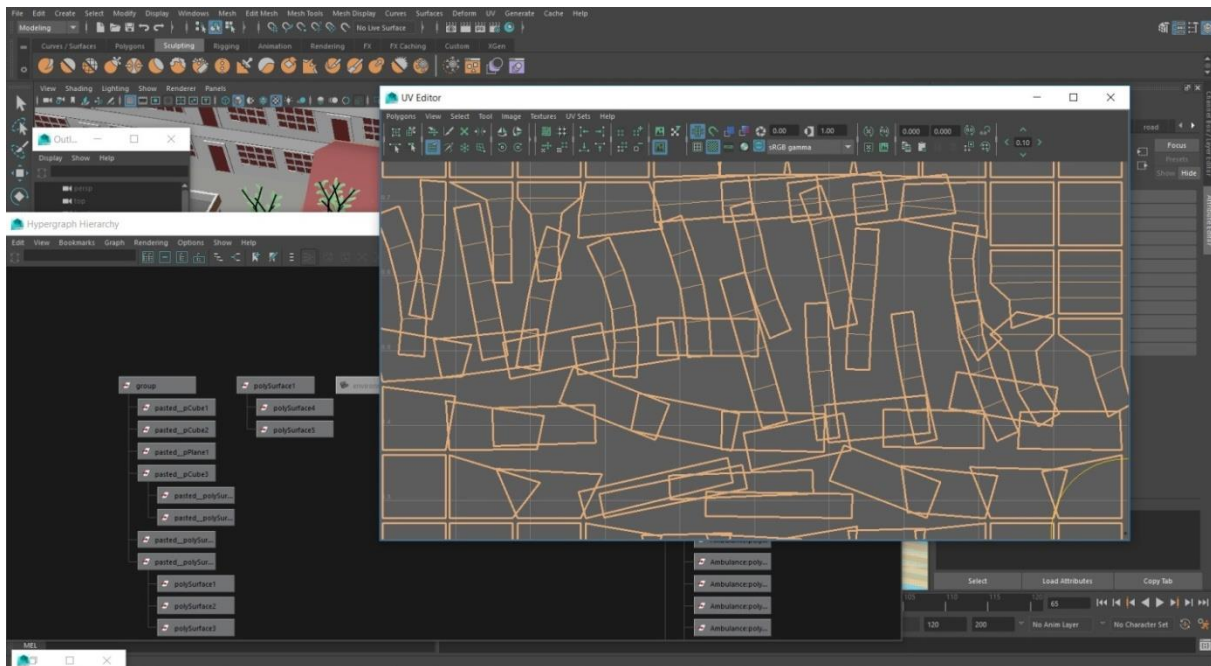


Figure 41: Screenshot of UV map

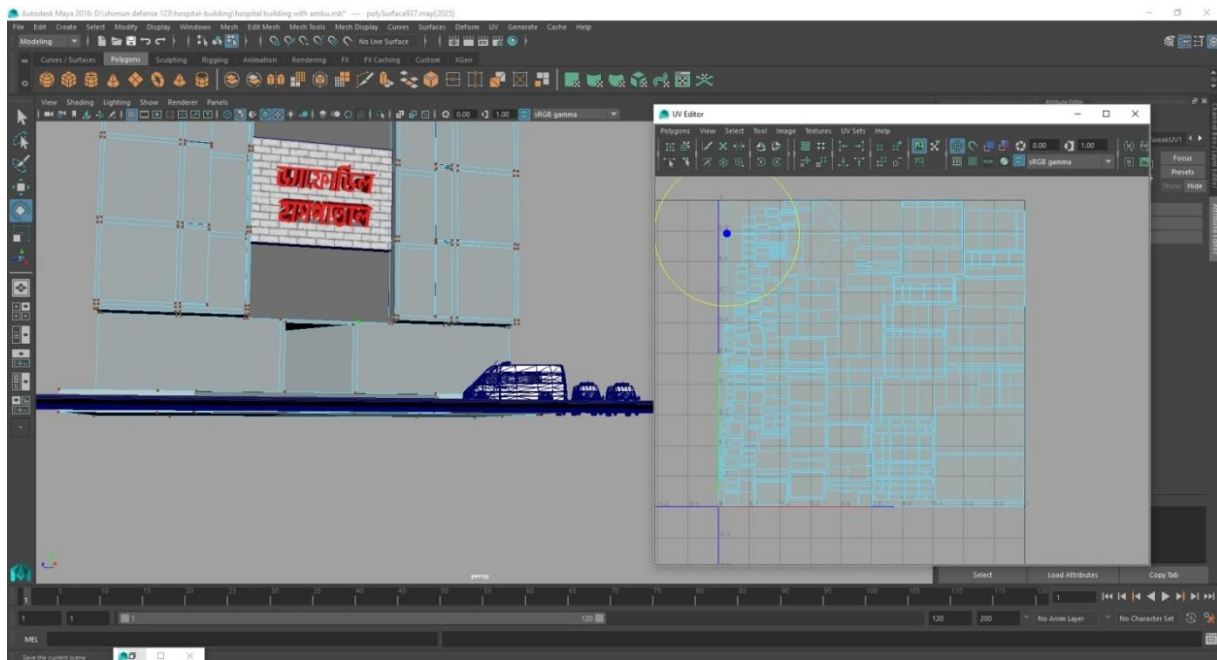


Figure 42: Screenshot of UV map

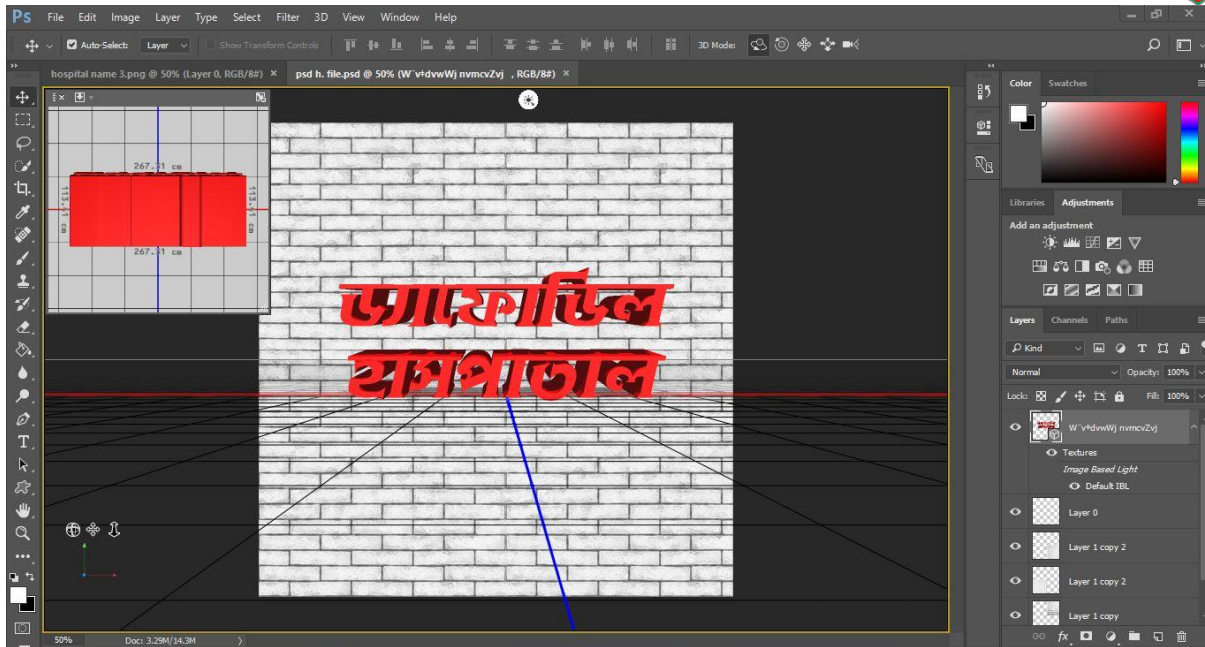


Figure 43: UV Texture of Hospital Name

Textures & Materials

Texturing is the most important part after completing the modeling. We can make our model more attractive and realistic by applying the proper texture and material on our model. On the other hand our whole effort can go in vain if we cannot apply perfect Texture on the model. Texture seems to always to be an afterthought when it comes 3D works and we're here to change that. Texture is the thing that makes our work perfect. It's what brings a perfectly fine design up to enviable levels.

These are the following materials I used to texture my models and environment.

- Lambert
- Blinn
- Phong
- Surface Shader
- Ramp Shader

- mia Material x

To make our materials more realistic and nice we used some extra nodes in the materials.

That are-

- Bump Map
- Transparency map
- gammaCorrect

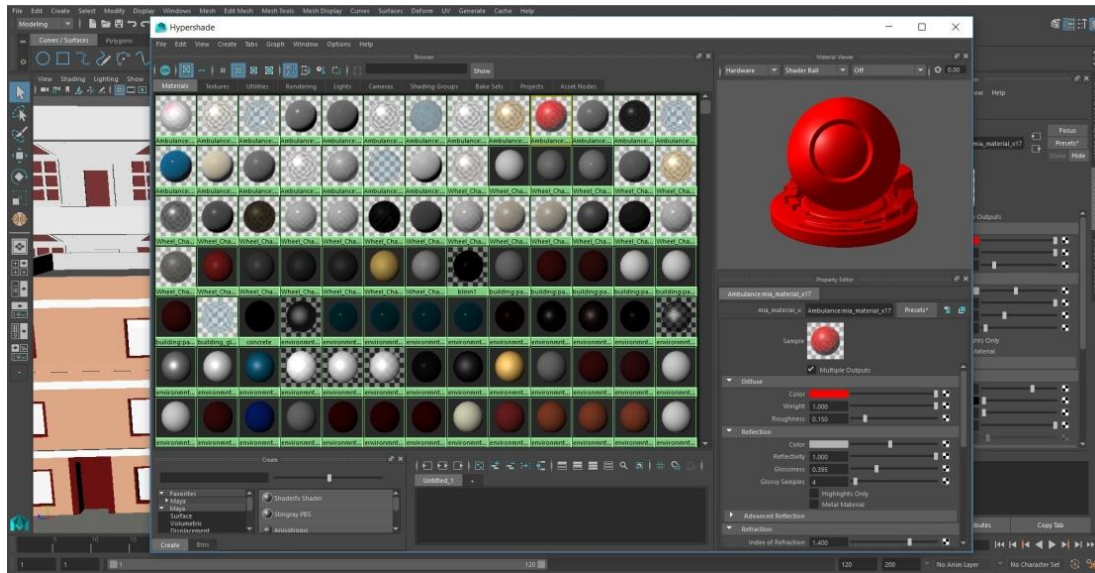


Figure 44: Screen Shot of Hypershade (in Exterior scene).

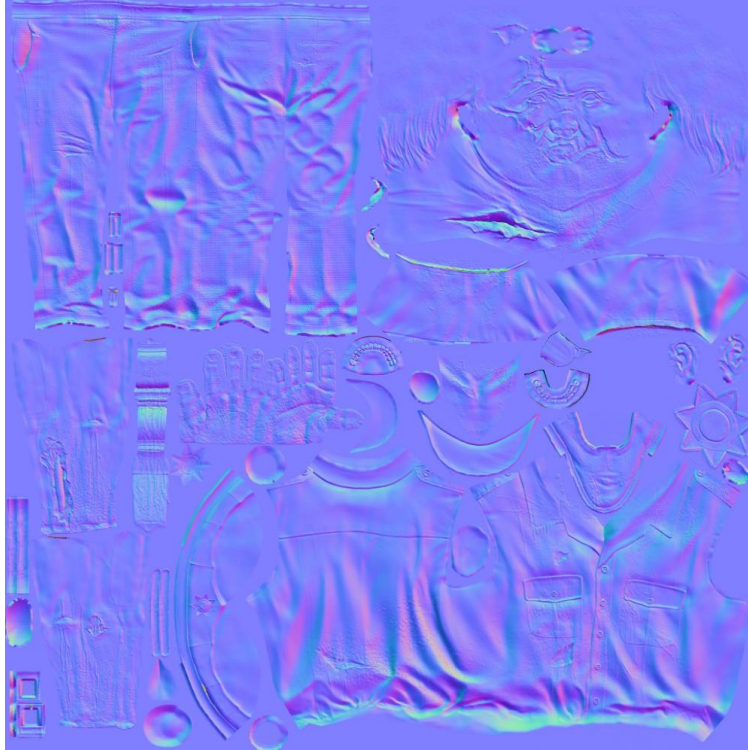


Figure 47: Specular materials.



CHAPTER 4

4.1 Animation

Introduction

Animation is the illusion of movement created by showing a series of still pictures in rapid succession. In the realm of PCs, designs programming used to make this impact. A straightforward liveliness might be as fundamental as an enlivened gif record like the picture appeared on this page. A more perplexing liveliness could be of a human or outsider face in a PC programming amusement or activity of a space fight in a motion picture.

Animation has the ability to: engage, misrepresent, streamline, conceptual, uncover complex procedures, clear up hard to-comprehend ideas, imagine information, be a vehicle for entertaining composition, offer item, be a fine art, make droll sight chokes, be a vehicle for clever social remark, depict the human condition, and handle troublesome and uneasy subject way.

There are two sorts of movements we utilized in our Project.

These are the following

- Character Rigging
- Key Frame Animation

4.2Character Rigging

A character fix is basically a computerized skeleton bound to the 3D work. Like a genuine skeleton, an apparatus is comprised of joints and bones, every one of which goes about as a "handle" that artists can use to twist the character into the coveted posture. A character apparatus can extend from basic and exquisite to awesomely unpredictable. We pursued the accompanying steps to fix our Character

Clean up Work

Before start rigging it is very important to do some cleanup work of the character as well as the file. After making my character we did delete by History, Freeze Transformation and set the Pivot center. After Doing those we check the Outliner whether everything okay or not. When it's necessary we made some reorganize there.

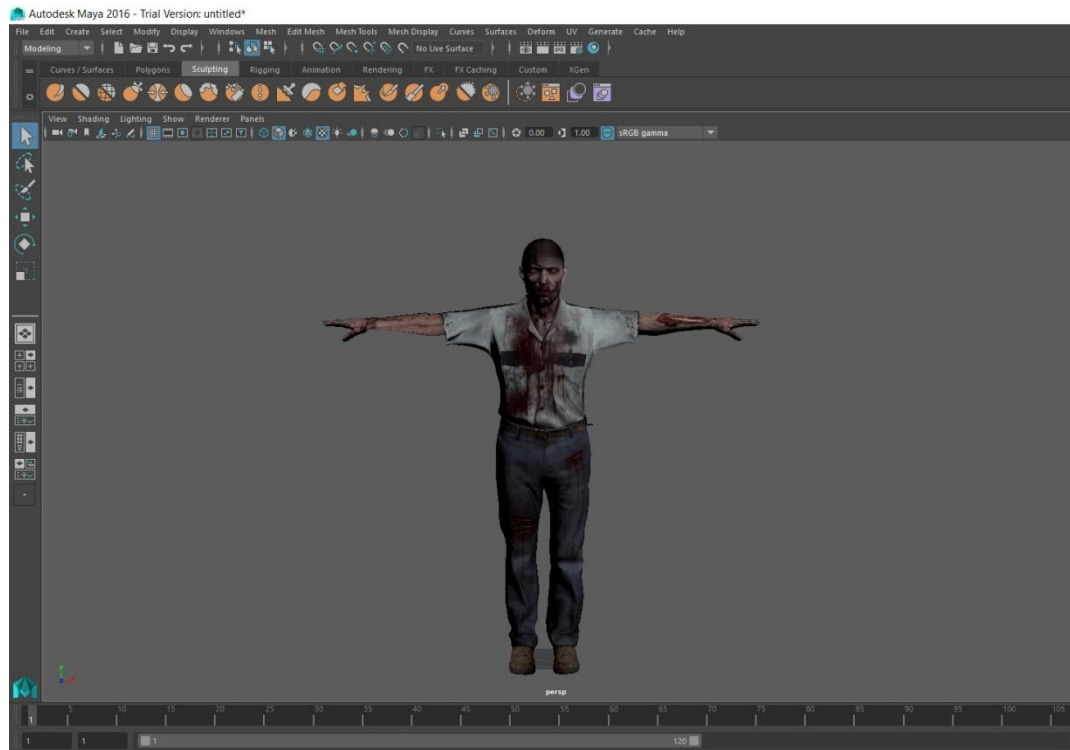


Figure 48: Screen shot of the project file where cleanup works have been done and ready for rigging.

Building skeletons

Building a skeleton is the process of placing and orienting joints to create a system with which you can pose a deformable object. Depending on the type of character you want to create, you need to place the joints where they approximate real joint positions. For example, if we want to create a skeleton for a human biped, we would place joints at all the major points of articulation in its model.

Here are some pictures of Characters after Building Skeletons

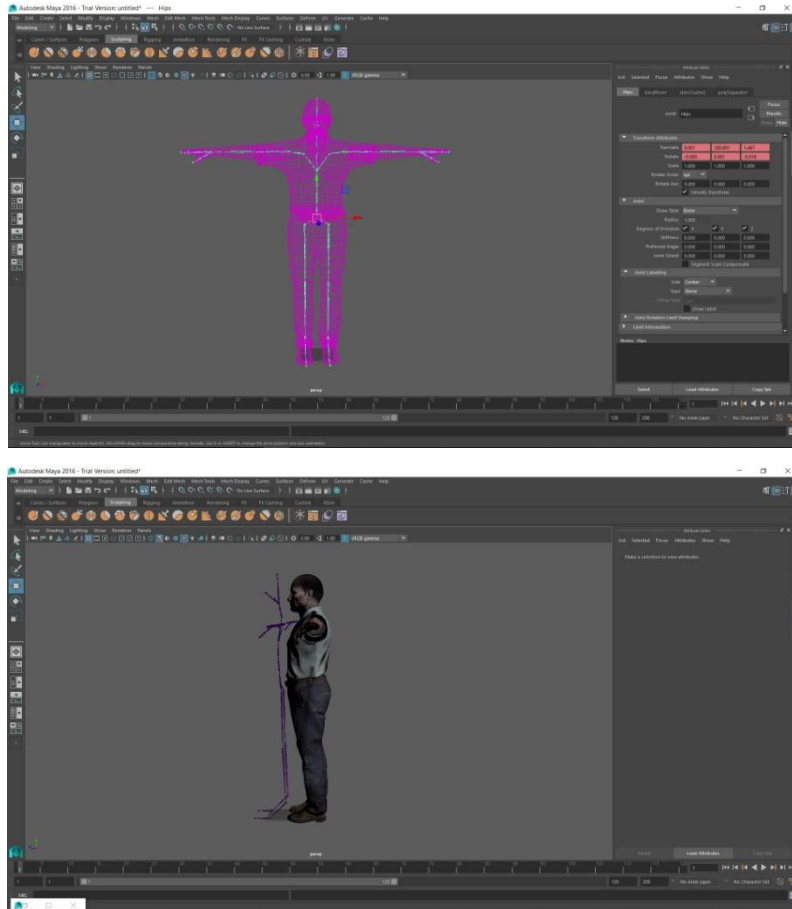


Figure 49: Screenshot of rigging character skeleton.

Keyframe Animation

Keyframe Animation makes animating objects in Maya easy and intuitive. Keyframe animation lets us transform objects or skeletons over time by setting keyframes. For example, we can keyframe the joints and IK handles of a character's arm to create an animation of its arm waving. You can set keyframes by selecting an object and selecting Key > Set Key from the Key menu in the Animation menu set or pressing S on the keyboard.

Character Walk in our project: In this part we rigging and walk our character in our project.

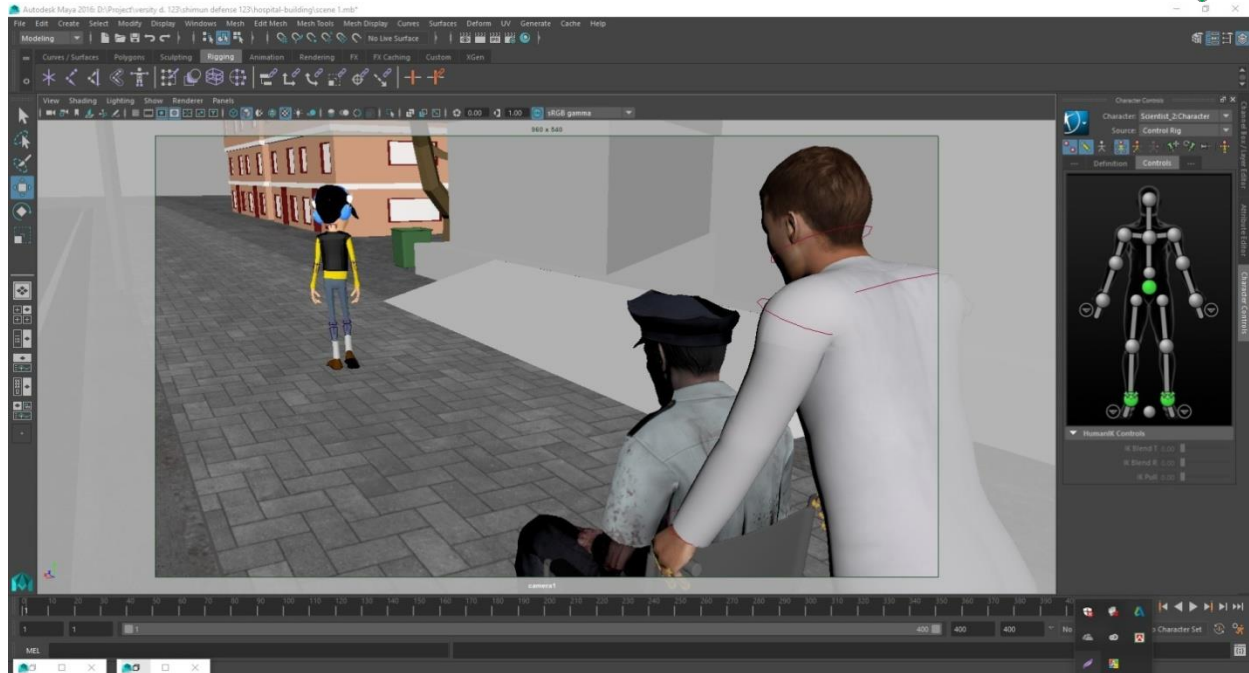


Figure 50: Screenshot of key frame animation

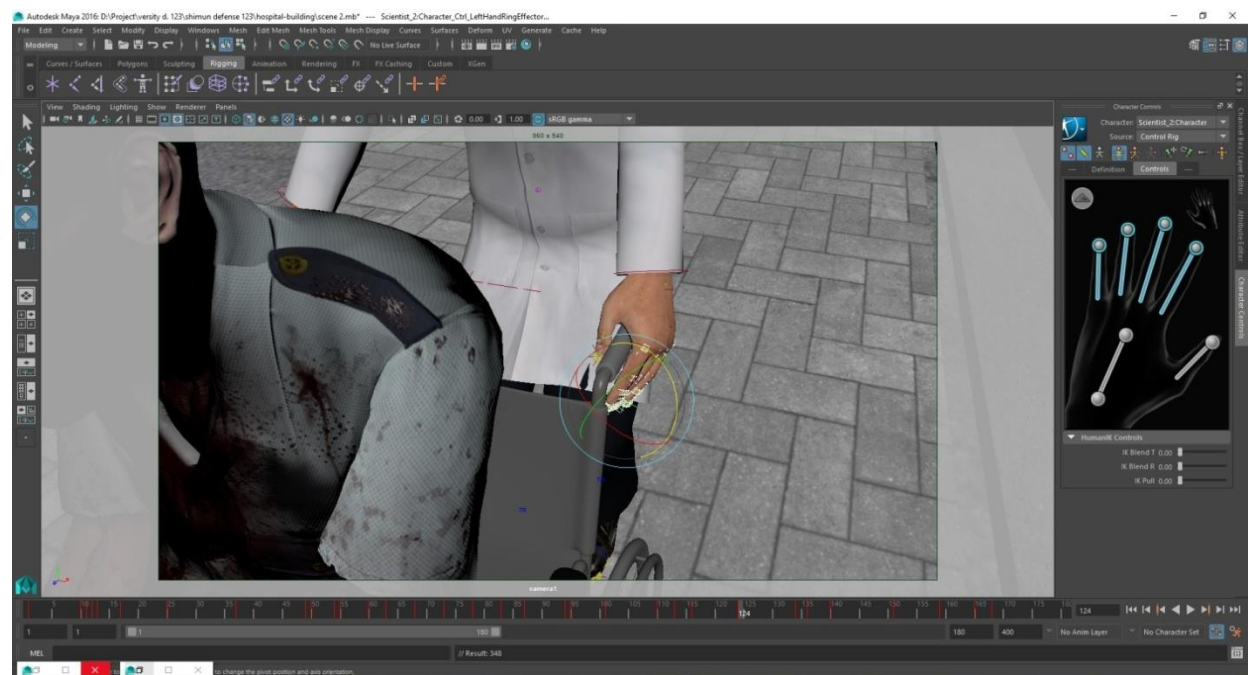


Figure 51: Screenshot of key frame animation

4.2 Walk Cycle

In animation, a walk cycle is a progression of casings or representations attracted grouping that circle to make a liveliness of a walking character. The walk cycle is circled again and again, consequently abstaining from animating each progression once more.

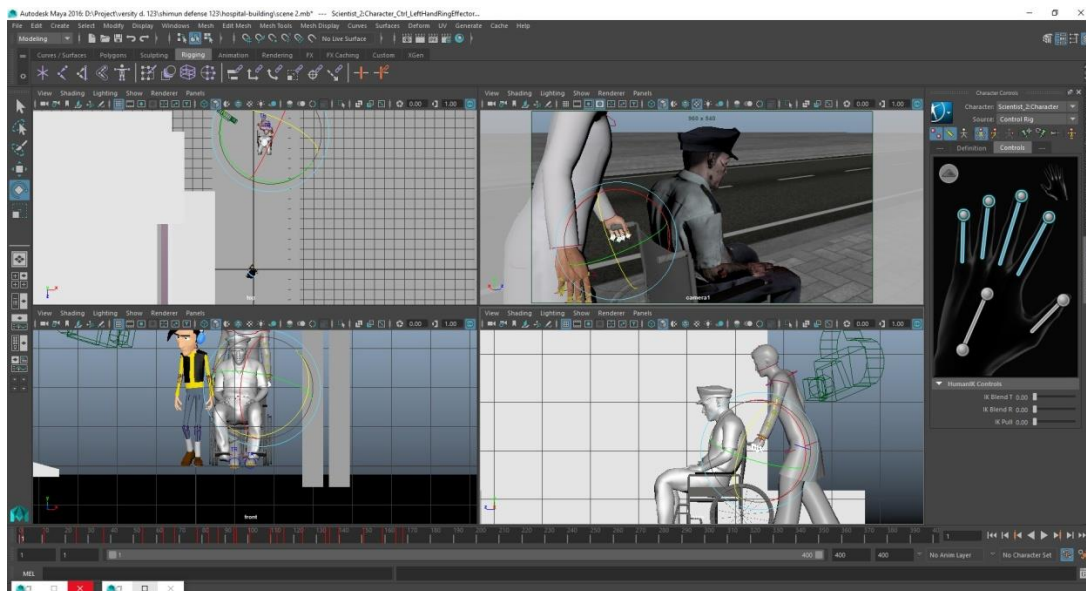


Figure 52: Screenshot of putting different values to make different positions of walk cycle.

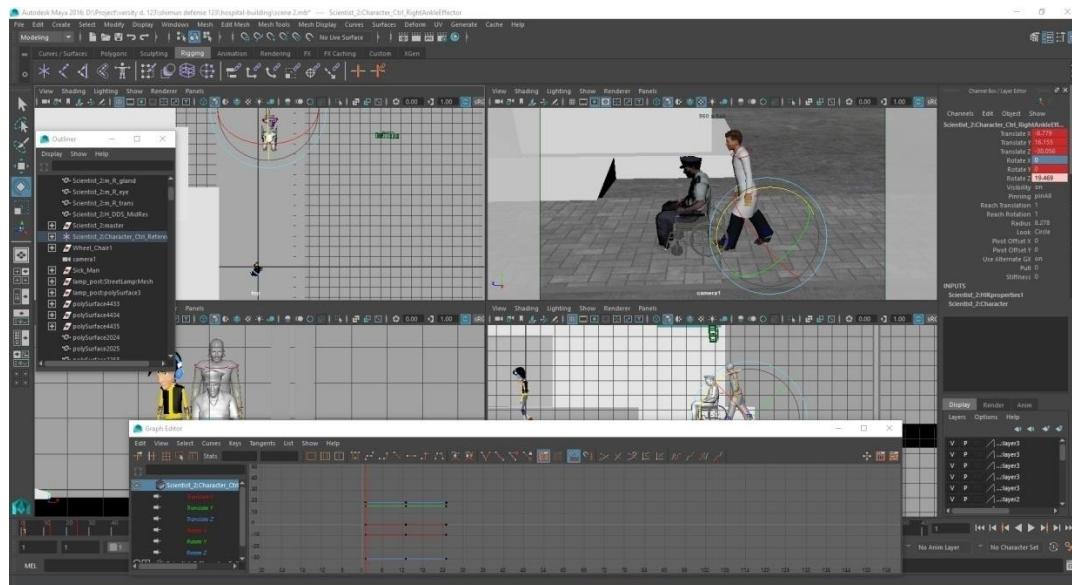


Figure 53: Screenshot of Graph editor from where we made flexible animations of different portions.

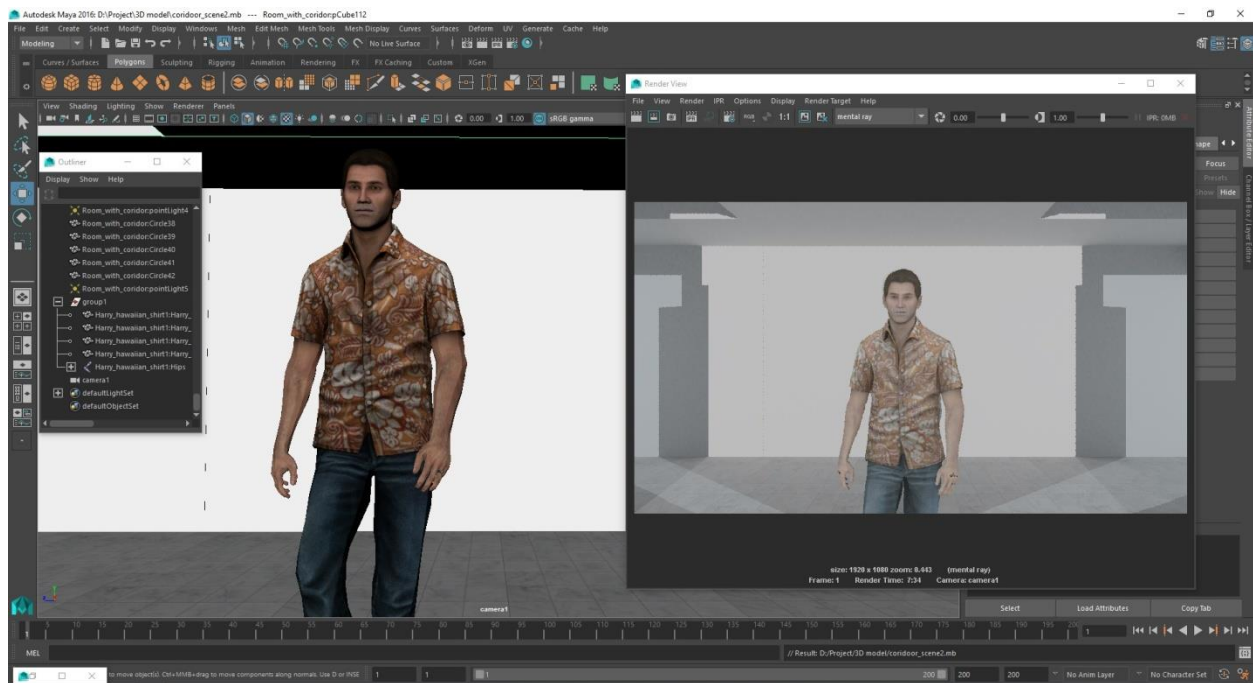


Figure 54: Screenshot of character walk in our project.

4.3 Lighting

Lighting is an important aspect of an environment. It enhances the aesthetic appeal and creates the mood and ambiance of a place. Without proper lighting a scene cannot be experienced to the fullest. Good lighting assures a warm, inviting and functional atmosphere in our scenes.

Here are the lights we used in my project in different scenes.

Directional Light

A directional light shines evenly in one direction only. Its light rays are parallel to each other, as if emitted perpendicular from an infinitely large plane. Use a directional light to simulate a very distant point light source.



Figure 55: Output of directional sun light in our project

Area Light

In Maya, area lights are two-dimensional rectangular light sources. We utilize territory lights to mimic the rectangular impressions of windows on surfaces. A region light is at first two units in length and one unit wide. We utilize the change instruments to resize and put territory lights in the scene.

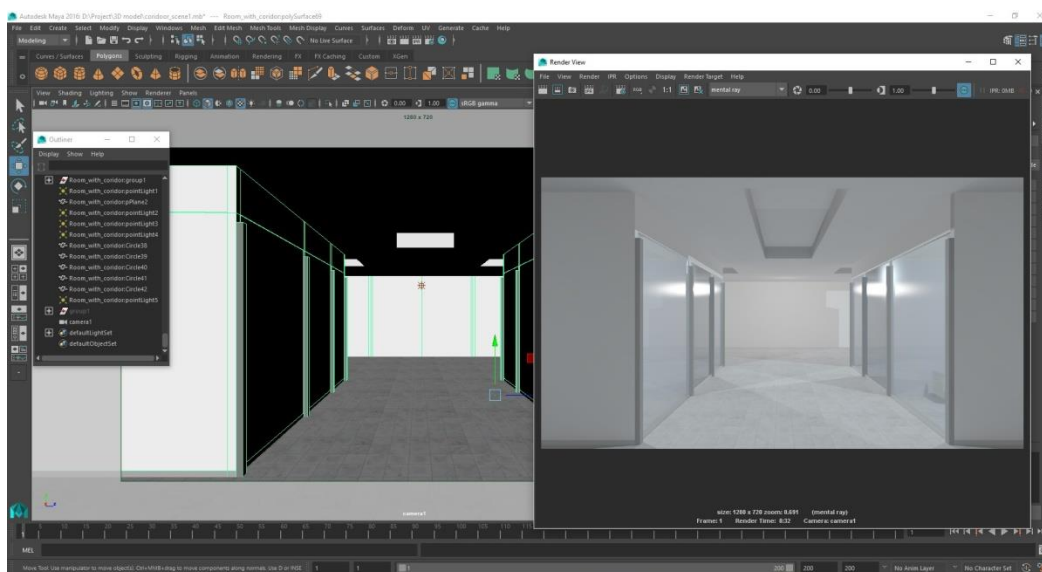


Figure 56: Screenshot of setting Area Light in a corridor scene.

Point Light

A point light shines evenly in all directions from an infinitely small point in space. Use a point light to simulate a room light bulb or a star.

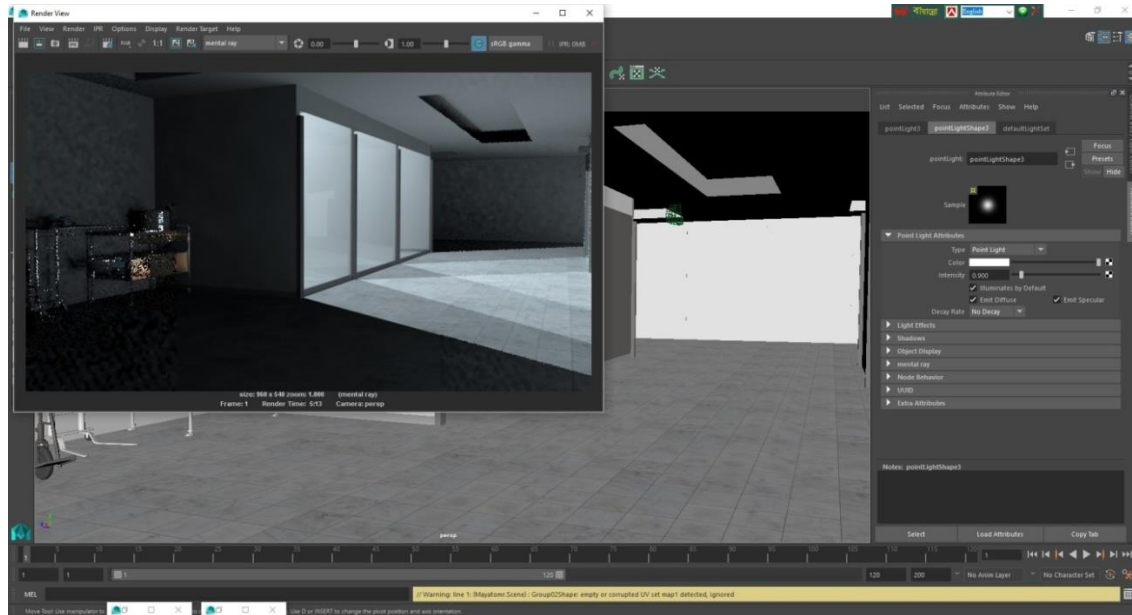


Figure 57: Screenshot of rendering point light output.

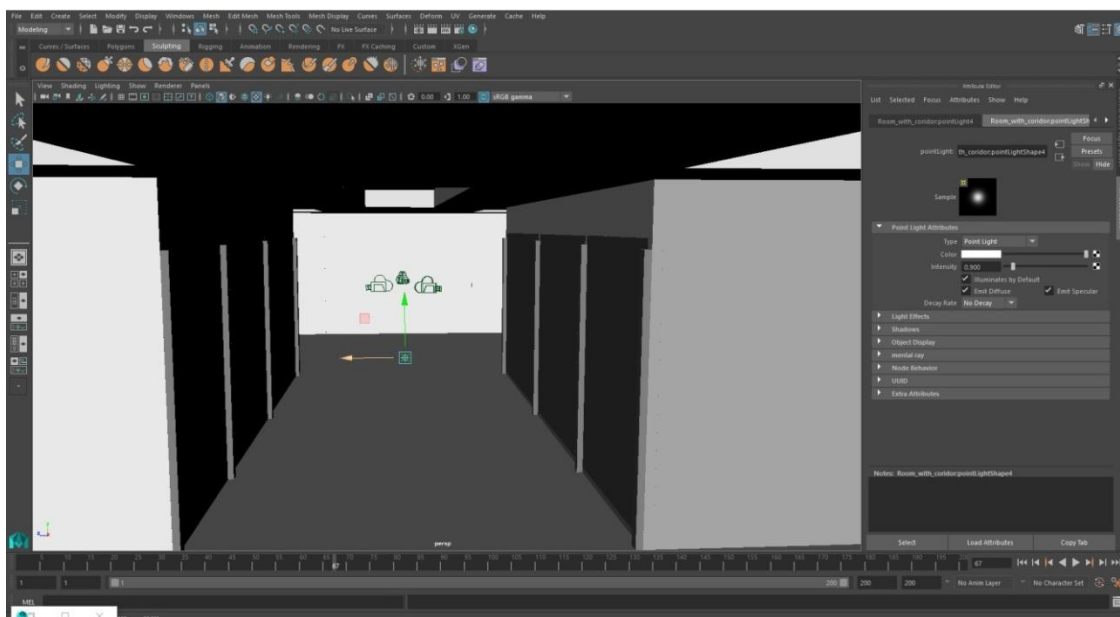


Figure 58: Screenshot of setting Point light to simulate an incandescent light bulb.

4.4 Camera Setting

Camera

To create a new camera

Select Create > Cameras > *camera type* > (where *camera type* is the type of camera you want).

The create camera options for that camera type appear.

Note: If you've previously set the options for this type of camera, you can just select the camera type without opening the options; you don't have to set its options each time.

Camera is very plays most important role in any kind of production. Because this is the equipment by which we record our shots. Maya has four cameras that let us view our scene in a panel: the perspective camera and the three orthographic cameras. We used perspective camera to take my shots.

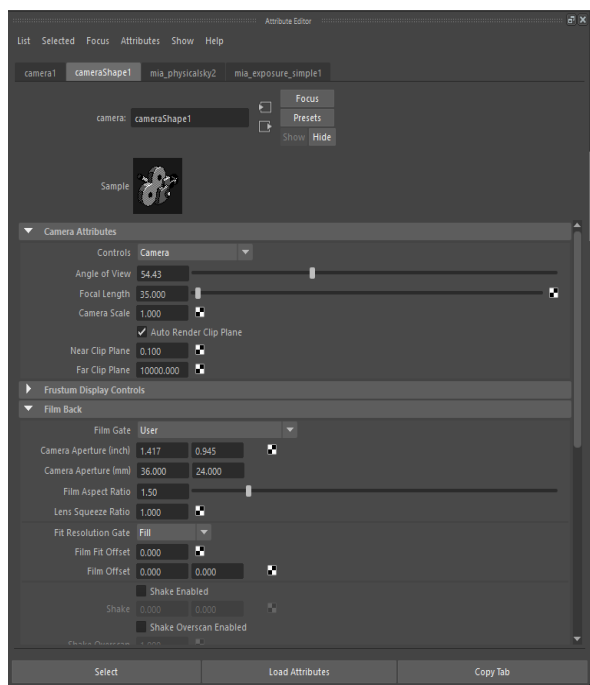


Figure 59: Screenshot of camera setting from attribute editor (part-1).

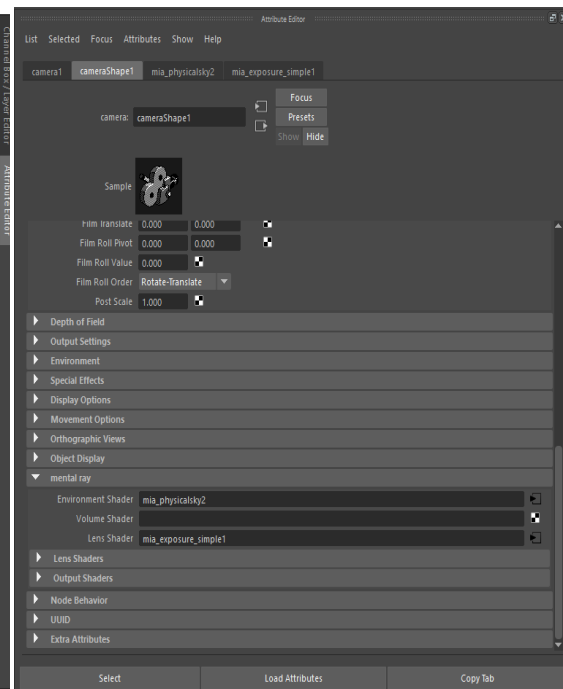


Figure 60: Screenshot of camera setting Attribute editor (part-2).

These are the following list of Shot names we used in our documentary-

- a) **Extreme Long Shot:** An extreme long shot makes our subject appear small against their location.

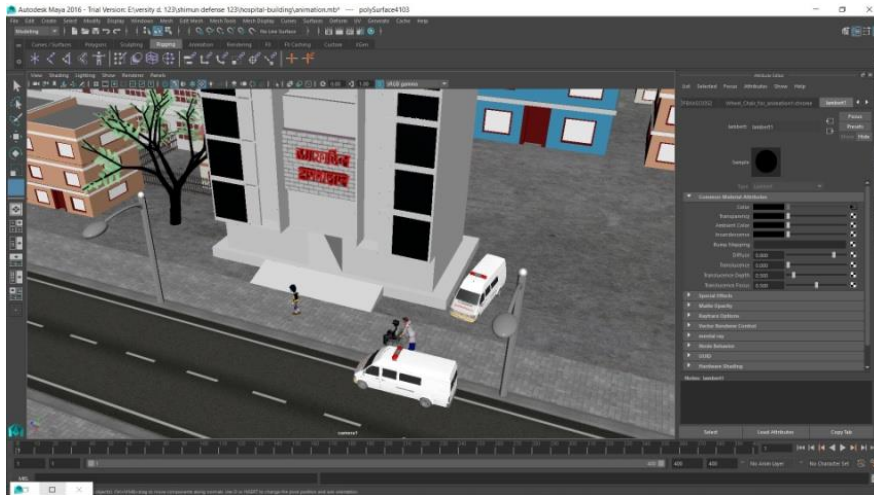


Figure 61: Screenshot of Extreme Long Shot in a scene.

- b) **Long Shot:** The long shot is the same idea, but a bit closer. If our subject is a person then his or her whole body will be in view - but not filling the shot.



Figure 62: Screenshot of Long Shot in a scene.

- c) **Mid Shot:** A mid long shot edges our subject from generally the knees up. It compromises between a full shot and a medium shot.



Figure 63: Screen shot of Extreme Mid Shot in a scene.

d) **Close Shot:** when we need to uncover a subject's feelings and responses. The nearby is the place we fill our edge with a piece of your subject. On the off chance that our subject is a man, usually their face.

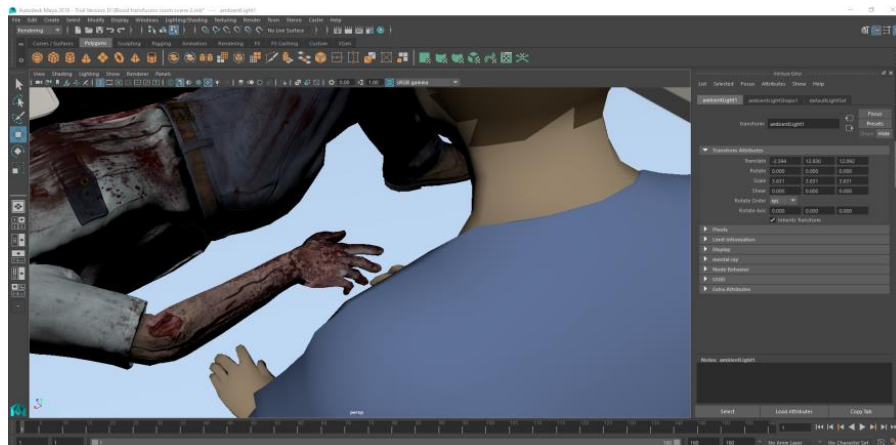


Figure 64: Screen shot of close shot in a scene.

- e) **Pan Shot:** Pans move the camera side to side on a flat hub. This can uncover something to your watcher or enable them to pursue an activity.
- f) **Tilting:** Tilting is a cinematographic strategy in which the camera remains in a repaired position however pivots/down in a vertical plane. Tilting the camera results in a

movement like somebody raising or bringing down their go to turn upward or down.

- g) **Zoom in:** Shot in this shot the filmed object will increase in apparent size, and fewer objects become visible on film. Or it is performed towards shorter focal lengths.
- h) **Zoom out:** in this type of shot the filmed object will shrink in apparent size, and more objects come into view.
- i) **Static Shot:** When there's no movement of camera it's called a static shot.

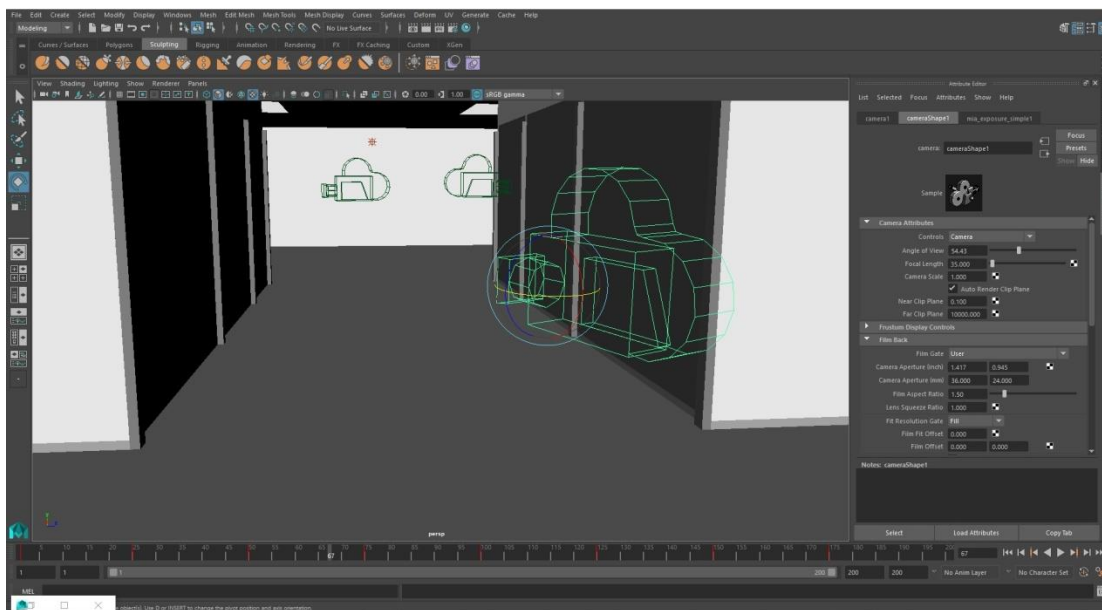


Figure 65: Screen shot of different camera angle shot in a scene with keyframe animation.

3.4 Rendering

After completing modeling, texturing, rigging, lighting, camera setting; Rendering is the final stage in the 3D computer graphics production process.

Rendering involves a large number of complex calculations which keeps our computer busy for a long time. Rendering pulls data together from every sub-system within Maya and interprets its own data relevant to tessellation, texture mapping, shading, clipping, and lighting.

We rendered out all our image frames with “Mental Ray” render Engine. This is a production



quality render engine. We worked with this in some of our previous projects. Additionally it seems user friendly to us that's why, we choose Mental Ray.

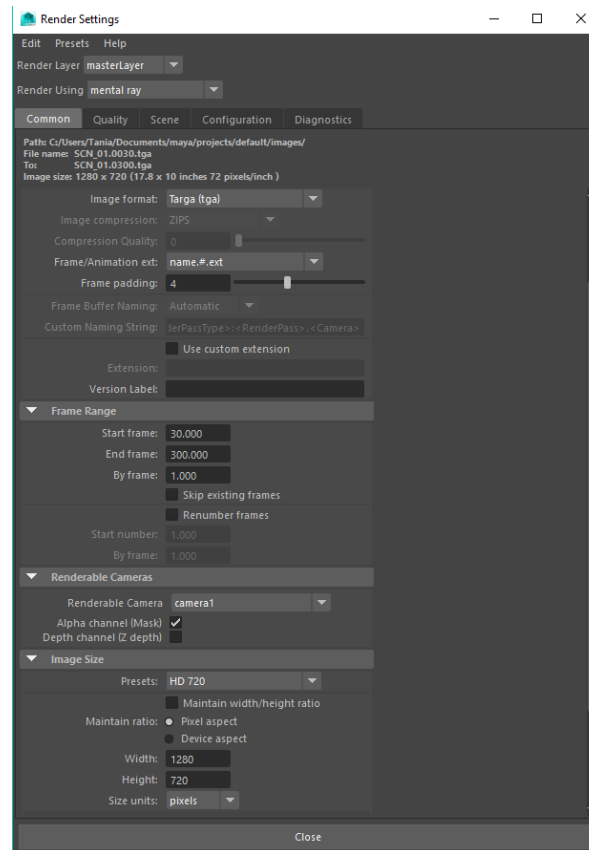


Figure 66: Screenshot of Render settings with Mental Ray (Part-1).

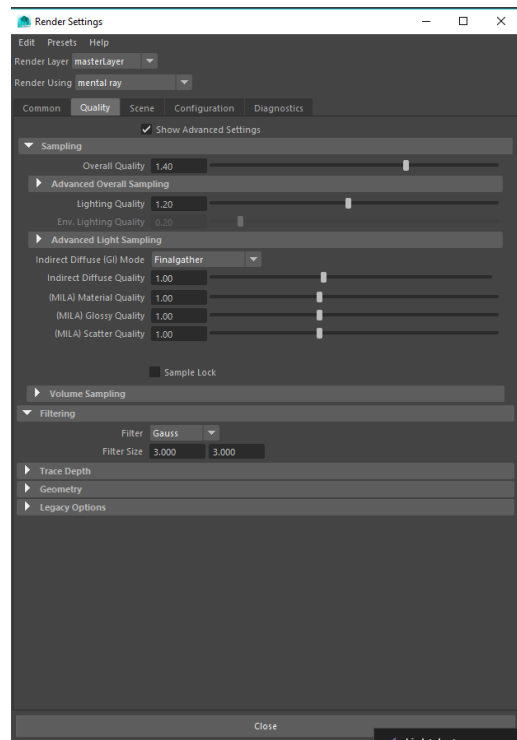


Figure 67: Screenshot of Render settings with Mental Ray (Part-2).

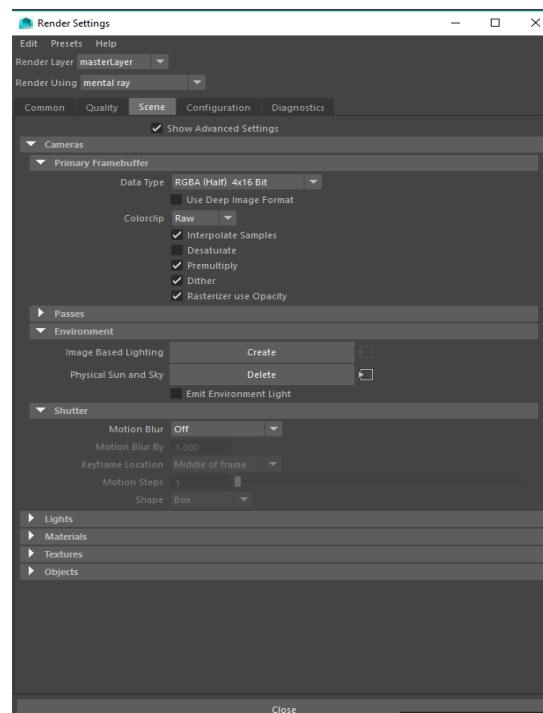


Figure 68: Screenshot of Render settings with Mental Ray (Part-3).

CHAPTER 5

POST PRODUCTION

Video Compositing

Video compositing is process that comes after taking or recording shots. In this process we organize all our recorded shots with specific software. We can make color correction on our footages as well as add spatial effects in our videos. We used three different software's to do this task- **Adobe After Effects CC, Adobe Premiere Pro CC, Adobe Illustrator CC, Adobe Photoshop CC.**

5.1 Compositing

In this stage we rendered out all the image frames from Maya. After rendering all the scenes as video we made some color corrections on those scenes. We also added some effects on some of the scenes such as Gaussian Blur, Turbulent Displace, and Tint, lumetri color opacity etc.

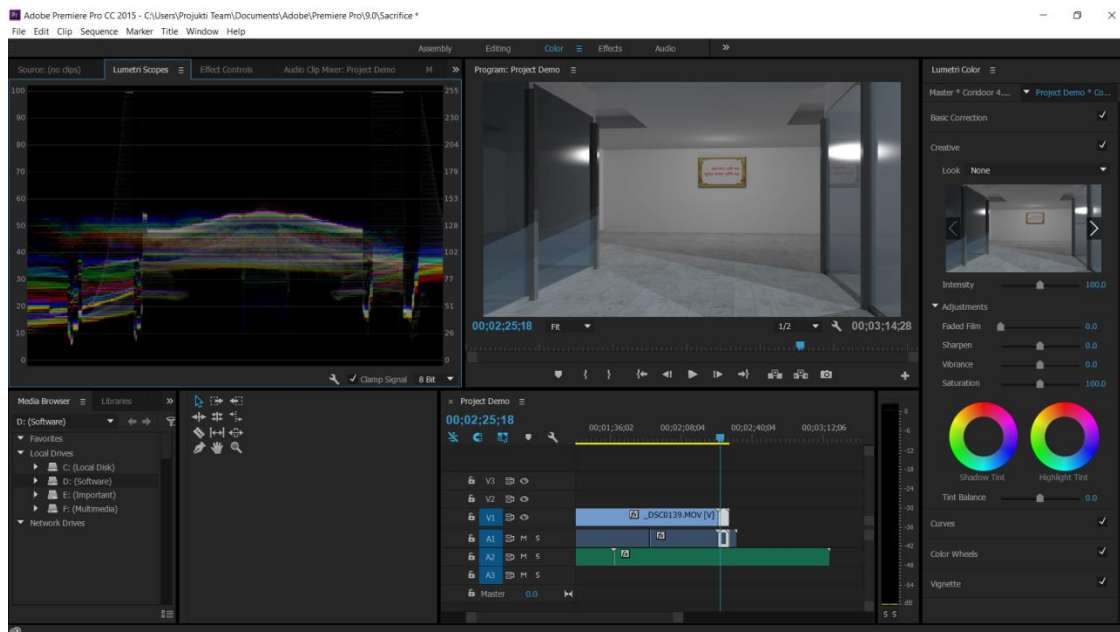


Figure 69: Screen shot of video compositing with Adobe Premiere Pro CC.

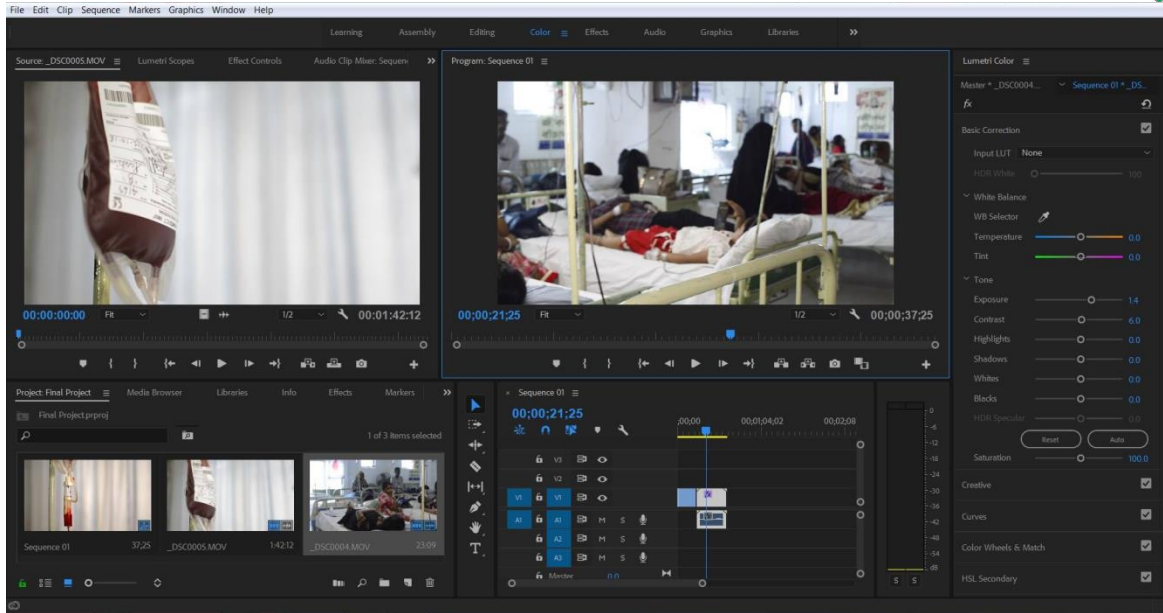


Figure 70: Screen shot of video compositing with Adobe After Effects CC.

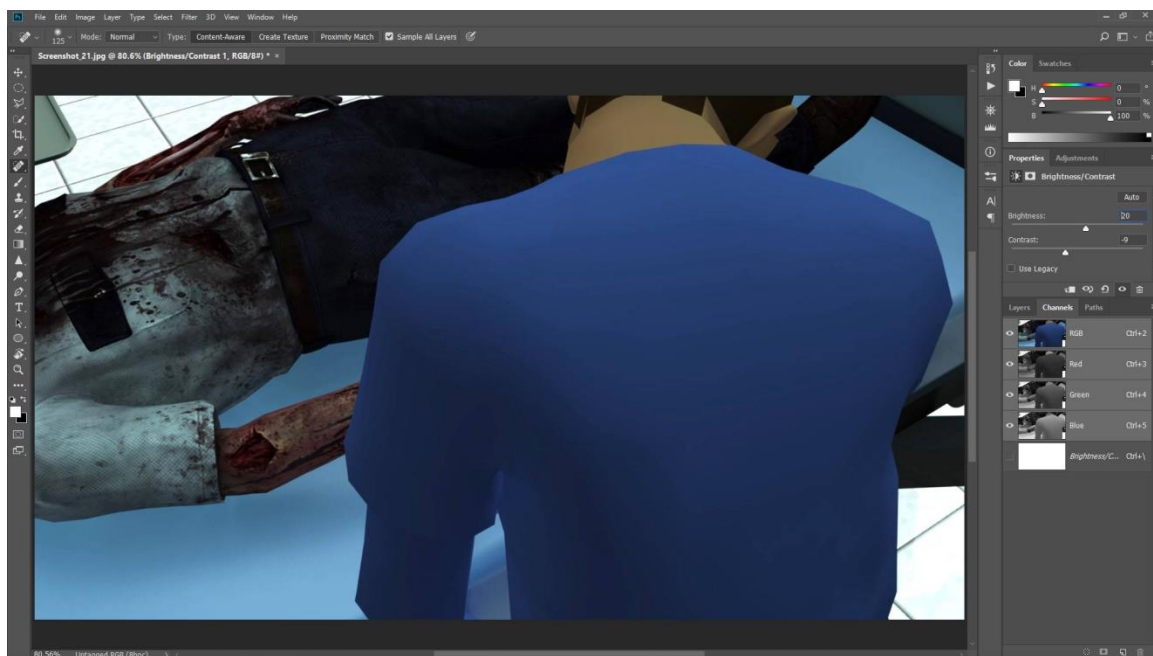


Figure 71: Screen shot of video color correction with Adobe Photoshop CC.

After doing all those things we organized all the scenes numerically and made one single video. And this is total output of 3D works.

5.2 Making Intro

Basically Intro is the part we usually see at the very beginning of any movie, cartoons, documentary or other videos. In this part we see the name of the program and production. There may have some motion graphics.

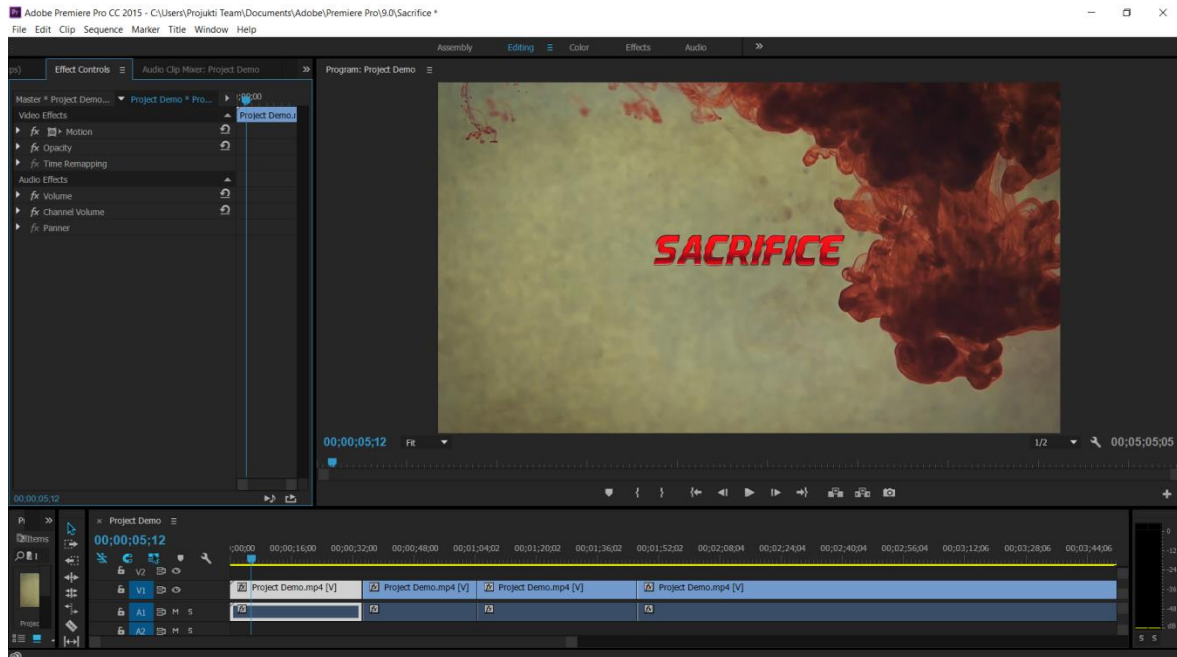


Figure 72: Screen shot of making intro with Adobe Premiere Pro CC.

In our project also made a intro of our project. Here we showed the name of our project and also made an intro environment which is related to our project. Then we animated this with Adobe Premiere Pro CC.

5.3 Editing and adding sound effects

At the final stage we put the 3D video, the Intro and other texts pages together. After that we added some effects on the video such as Fade in, Fade out, Slow in etc.

When we were done everything with video we focused on the sound. We added some several types of sound effects with our video such as ambulance sound, public place noise sound, sound of bus and some different background Sound Effects.

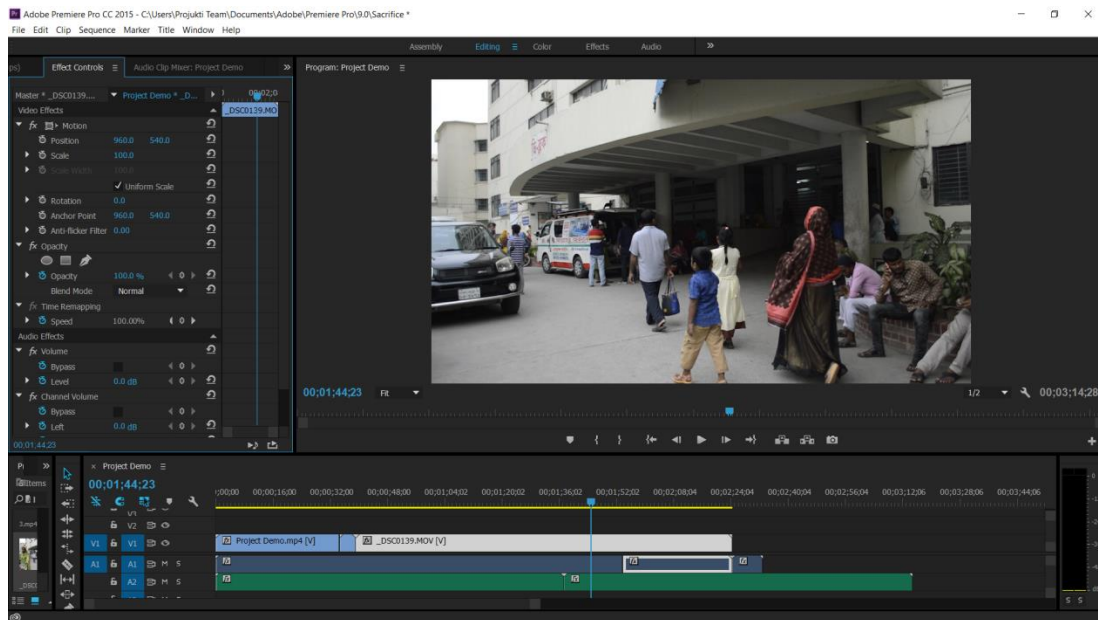


Figure 73: Screen shot of editing and adding sound effects into Adobe premiere Pro CS6.



Figure 74: Screen shot of final edit image.



CHAPTER 6

DISCUSSION

We are living in a problematic world. Many people suffer because Thalassemia disease and lack of blood, some of them died. Many people are not interested to donate blood. We choose these topics for our project because we want to help people. We convince them who are not interested to donate blood.

We want to make awareness about blood donation and Thalassemia in Bangladesh. Nowadays Animation is becoming more interesting sector.

We can easily through any concept if we are well capable to do animations.

We tried to learn new things and increase our skill level by using these software and capturing real footage.

We saw many videos for completing this project. We went to many hospitals and visited many patients. We talked with patients about knowing their problem. We have done lots of research on the internet. We learned so many things through working on our project. We learned how to work under pressure.

Many people died and suffer for blood. That's why we tried to focus on blood donation so that; healthy people can take a step in donating blood.



CHAPTER 7

CONCLUSION

In our project, we gave emphasize on the blood donation, awareness and thalassemia. Blood donation is a noble work. But most of us don't know that. Many people suffer for lack of blood, some of them died. So, it's high time to take a step about blood donation and thalassemia.

We have created a 3D animation and captured videos based on blood donation and thalassemia. We haven't enough time and money for making the documentary most effective but further bigger and more complex projects can be taken by a group of multimedia producers.

Our department head inspired us to do this type of documentary which is informative & helpful for the society. Our future plan is spreading that information all over the country. Many of us especially rural people don't know about this important information.

Various problems were faced, nevertheless, the documentary was completed and managed to overcome all the information successfully. More students of multimedia and creative techniques will be interested to create such type of projects in the future. It will improve their skill in multimedia software and spread the history of Bangladesh.



APPENDIX

Sacrifice

A sacrifice is a loss or something you give up, ordinarily for a superior reason.

Blood Donation& Awareness

Blood donation is a core service within health care systems and individuals who donate their blood provide a unique contribution to the health and survival of others.

Thalassemia

Thalassemia is an inherited blood-related disorder due to the absent or reduced production of hemoglobin, a protein present in red blood cells responsible for carrying oxygen through the body.

Story Board

Storyboard is a graphical organizer in the form of illustrations or images displayed in sequence for the purpose of pre-visualizing a motion picture, animation, motion graphic or interactive media sequence.

3D Model

Three-dimensional (3D) models represent a physical body using a collection of points in 3D space, connected by various geometric entities such as triangles, lines, curved surfaces, etc.

Walk Cycle

In animation, a walk cycle is a series of frames or illustrations drawn in sequence that loop to create an animation of a walking character. The walk cycle is looped over and over, thus having to avoid animating each step again



Lambert

Lambert is a material of Autodesk Maya that represents matte surfaces with no specular highlights, such as chalk, matte paint, and unpolished surfaces.

Blinn

Blinn is a material of Autodesk Maya that is particularly effective at simulating metallic surfaces which typically have soft specular highlights, for example, brass or aluminum.

Phong

Phong is a material shader of Autodesk Maya that represents glassy or glossy surfaces with a hard specular highlight, such as ambulance car moldings, medical equipment.

mia_material x

The mental ray mia_material is a monolithic material shader that is designed to support most materials used by architectural and product design renderings. It supports most hard-surface materials such as metal, plastic and glass. It is especially tuned for fast glossy reflections and refractions and high-quality glass.

Gamma Correct

Gamma Correct Converts an HSV (Hue-Saturation-Value) color into an RGB (Red-Green-Blue) color. This is useful when you want to control a color using HSV values. For example, we can animate a material to run through all the rainbow colors.

Hypershade

The Hypershade is the central working area of Maya rendering, where we can build shading networks by creating, editing, and connecting rendering nodes, such as textures, materials, lights, rendering utilities, and special effects.

Rendering

3D rendering is the 3D computer graphics process of automatically converting 3D wire frame models into 2D images with 3D photorealistic effects or non-photorealistic rendering on a computer.



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