

FINAL YEAR PROJECT
“VISUALIZATION
OF OUR UNIVERSE AND SOLAR SYSTEM”

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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
DECEMBER 2018



APPROVAL

This Project titled ‘**Visualization of Our Universe and Solar System**’, submitted by Animesh Sarker 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 was held on 29 November 2018.

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DECLARATION

I hereby declare that this project has been done by me and under the supervision of **Dr. Shaikh Muhammad Allayear, Associate Professor & Head, Department of MCT**. 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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ACKNOWLEDGEMENT

First of all, I express my heartiest thanks and gratefulness to almighty God for His divine blessing which made me possible to complete the final year project successfully.

I would like to extend my appreciations to everyone who made the following study feasible and achievement of my ideas and objectives a reality.

To my supervisor **Dr. Shaikh Muhammad Allayear** , Associate Professor and Head Department of MCT, Daffodil International University for their constant support, patience and mentorship throughout the entire process. I can never thank them enough. I would like to offer my deep appreciation to **Dr. Shaikh Muhammad Allayear**, Associate Professor and Head, Department of MCT, DIU.

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

We would like to express our heartiest gratitude to **Dr. Shaikh Muhammad Allayear**, Associate Professor & Head, Department of MCT, for his 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 thanks to our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, we must acknowledge with due respect the constant support and patients of our parents.



ABSTRACT

Nowadays our generation is too fast. they don't have time to reading. children, young people all are dislike reading because of it too boring. Our network is now too strong its 4g network ..young people, children they just search on YouTube and learn to form them easily any topic.so that is my point my project was the universe and solar system ...but There has been a lack of animated work, videos information about the universe and solar system in YouTube and they have very poor resolution 360p and 480p quality and they are just showing with picture and information on the video no 3d animated but now its time to show 3d

so this is my point I want to help the young people and children. this 3d animation universe and solar system information ..they now easily understand and they must like because I make this video with cinematic style with 3d visualization with 1080 p resolution .because of young people and children they don't have any knowledge of our universe and solar system ..how it's created and how it looks like and their works ..our universe is big and amazing ..so I want to explore this video about our universe and solar system how it works .. I want people to know it very easily with this animation because the video is the easy way to understand the difficult topic with an easy way to understand. the main purpose of this project was to create 3d models of the solar system all planets with realistic looks and universe.

initially, a storyboard was prepared to visualizing making of the project ...Several software such as After effect, Adobe premiere pro, element 3d plugin. trapcode particular plugin stardust plugin, for music using adobe audition and render using adobe media encoder.

the animation of the models was created by after effects for particle animations using the plugins trapcode particular plugin stardust plugin ..and finally, composition and video editing was done using premiere pro cc.

this visualized work for use as education purpose in this project ..we can find an overview .how to create the universe how to come to the planet .how the planet works their years, their times all everything I include my animation .. hopes everyone loves my project.



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CHAPTER 1

Introduction

1.1 Background

The most popular theory of the origin of the universe is related to a cosmic cataclysm unmatched throughout history - the big bang. This theory is born of the observation that other galaxies are moving away from our own at great speed in all directions, as if they were all provoked by an ancient explosive force. Before the big bang, scientists believe that the vastness of the observed universe, including all its matter and radiation, has been compressed into a hot, dense mass that is only a few millimeters. This almost incomprehensible state is theorized that it exists only for a small part of the first second of the time.

Supporters of the Big Bang suggest that about 10 billion to 20 billion years ago, the huge explosion allowed all the known matter and energy of the universe - even space and time - to spring from some ancient and unknown energy. From our little world we have been watching the cosmic ocean for thousands of years. Ancient astronomers observe points of light that seem to move among the stars. They called these objects "planets", meaning wanderers, and called them after the Roman deities - Jupiter, the king of the gods; Mars, the god of war; Mercury, the messenger of the gods; Venus, deities of love and beauty, and Saturn, father of Jupiter and god of agriculture. The star stars also watched comets with sparkling tails and meteors or arrow stars, apparently falling from the sky.

The four planets closest to the sun - Mercury, Venus, Earth and Mars - are called Earth planets because they have hard rocky surfaces. The four large planets outside the orbit of Mars-Jupiter, Saturn, Uranus and Neptune are called gas giants. Small, distant, Pluto has a solid but lighter surface than the Earth's planets.



1.2 Motivation

our universe is too big and there is no limitation. only NASA and other powerful country research and find the planets there are 8 planets on our solar system .our universe have milk way, galaxy there are 4 types of a galaxy in our universe ..so i think every Bangladeshi people and all over world people should know about this universe and solar system

different software tools will be used to develop this works such as Adobe after effect, adobe premiere pro cc ..element 3d plugin ,star dust plugin, trapcode particular plugin ,render using adobe media encoder the final output will be a complete animation with proper camera movement and details.I will give information by voice over and subtitles about location, size, , brief history in my final output.

the final output will allow the young generation and who are interest to learn the universe and love to know about amazing things.

Moreover, the project will give me the opportunity to show what I have learned till now as a multimedia student. It will improve my skills and confidence as well.

1.3 Objectives

The objectives of the project are to:

1. Develop 3D models of the 8 planets. These are

Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus

, Neptune then sun and moon.

2.the galaxy, big bang black hole ..8 planets with the cinematic view and description ..

3. types of planets, galaxy lot of more thing also landing moon with an Astronaut .I want to present of this animation video

all of my works overview storyboard, software working footage working adds the chapters.



CHAPTER 2

Literature Review

Introduction

In this chapter, literature from different sources (books and internet websites) on the eight planets, universe, and the galaxy was included for presenting real environment

2.1 Universe

The universe is the name we use to illustrate the accumulation of all the things that exist in space. It consists of billions of stars and planets and large gas clouds separated by a giant empty space called the universe.

Astronomers can use telescopes to see distant galaxies. That's how they see the universe as it used to be. Indeed, the light from distant areas in the universe takes a very long time to reach us. From this observation, apparently the physical laws and constants of the universe have not changed.

Physical experts do not know whether they exist before the Big Bang. They also do not know whether the size of the universe is infinite. The universe is unexplained. [1]

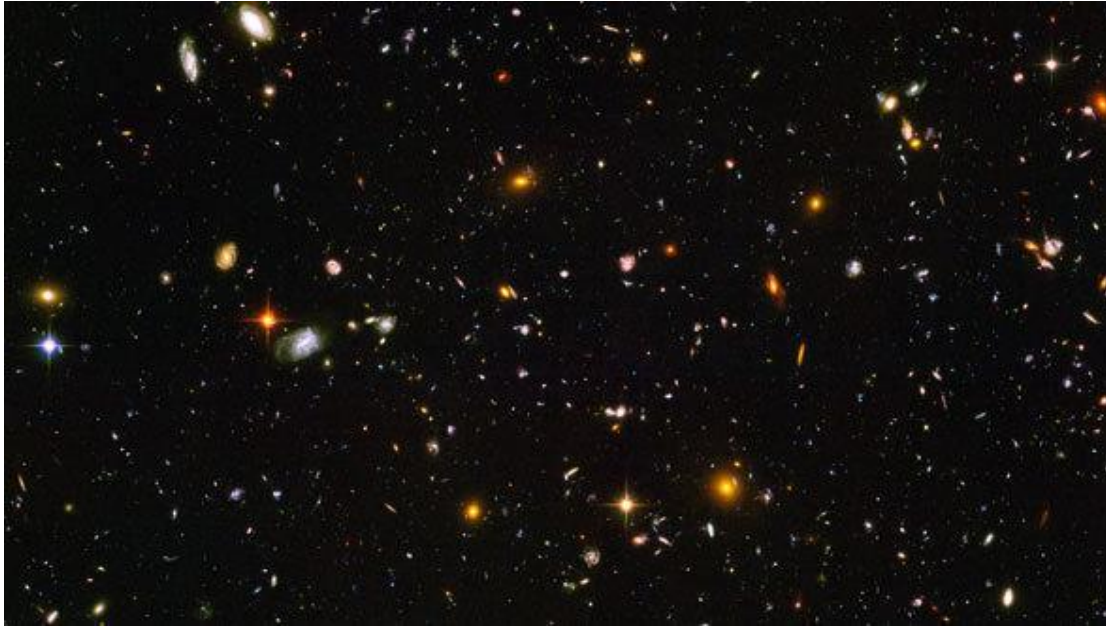


Figure-1 : Real Footage are from NASA gov website



Figure-2 : Real Footage are from NASA gov website

2.2 Solar system and planets

Mercury :

Mercury is only visited by two NASA-Mariner 10 and MESSENGER spacecraft. Two BepiColombo spacecraft will double that number. This mission includes two scientific orbits: Orbiter Planet Mercury ESA and Japanese Mercury Magnetosfer .. [2]

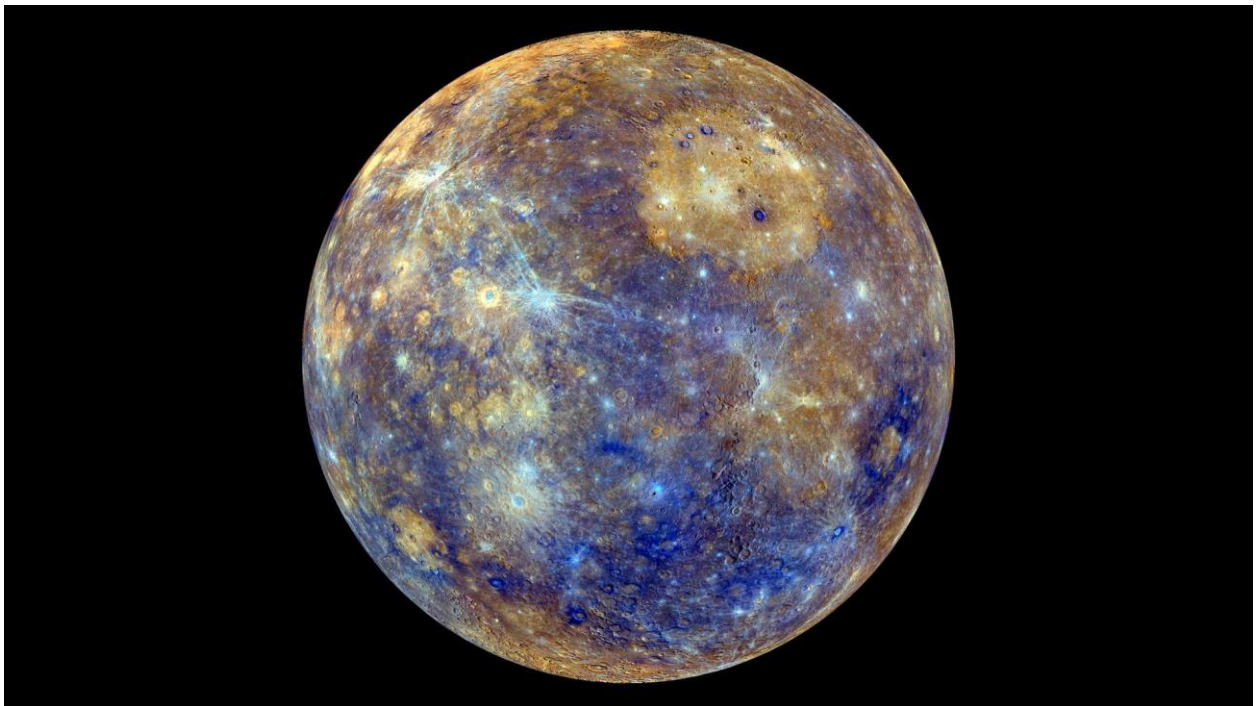


Figure-3: Real Footage are from NASA gov website

Venus :

Second planet from the Sun and our closest planetary neighbor, Venus is similar in structure and size to Earth, but it is now a very different world. Venus spins slowly in the opposite direction most planets do. Its thick atmosphere traps heat in a runaway greenhouse effect, making it the hottest planet in our solar system. [2]



Figure-4: Real Footage are from NASA gov website

Earth :

Our home planet is the third planet from the Sun, and the only place we know so far is being inhabited by living beings. While Earth is only the fifth largest planet in the solar system, it is the only world in our solar system with liquid water on the surface. [2]



Figure-5: Real Footage are from NASA gov website

Mars :

The fourth planet from the Sun, Mars is a world of dust, cold, and desert with a very thin atmosphere. This dynamic planet has seasons, polar ice caps, extinct volcanoes, canyons and weather. Scientists are observing global events - which are actually caused by some local and regional storms that dump dust into the atmosphere of Mars - say that, on Monday, July 23, more dust fell from being raised into thin airplanes. [2]

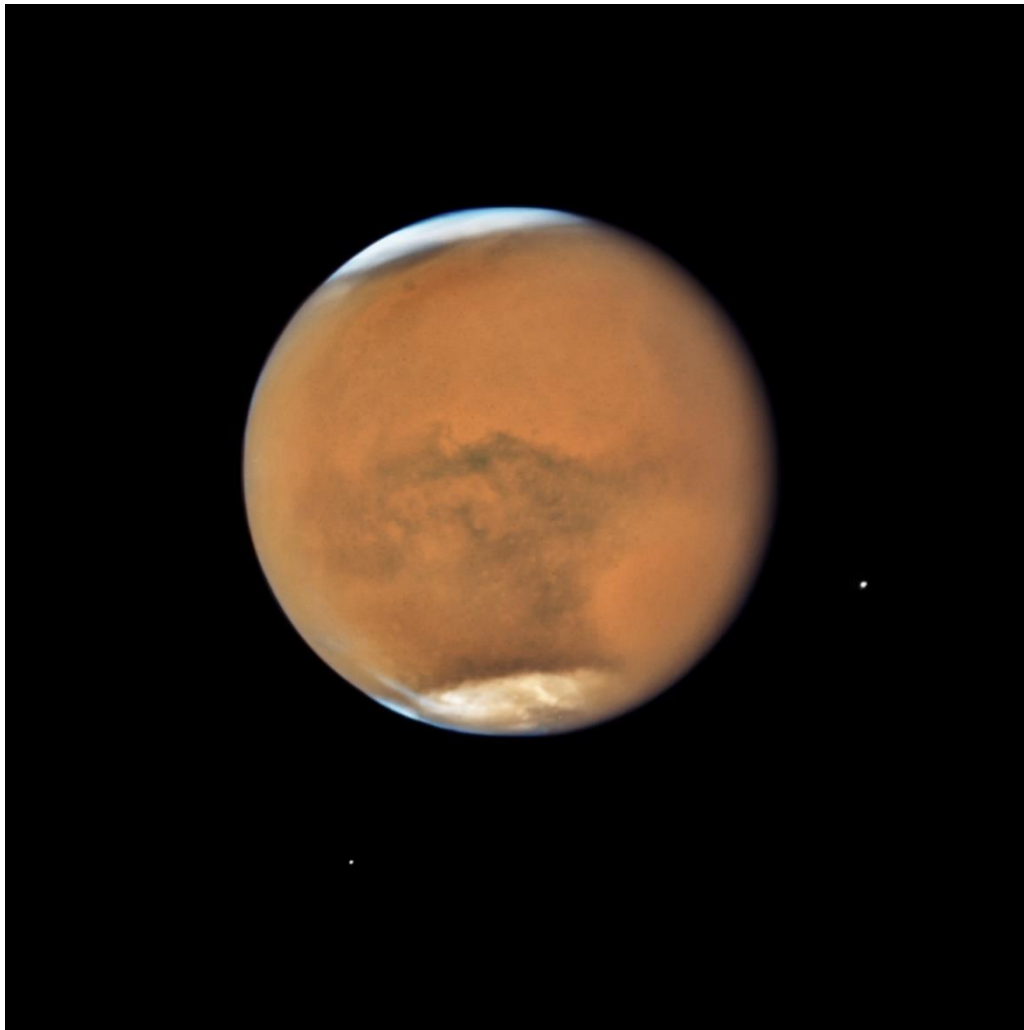


Figure-6: Real Footage are from NASA gov website

Jupiter:

that raised Jupiter's total number of moons to 79—the most of any planet in the solar system. Fifty-three months confirmed and named; 26 others are waiting for the official confirmation of the invention before they are named. The team first saw the months in the spring of 2017 when they were looking for a very distant solar system object as part of the pursuit of the possibility of a planet far beyond Pluto.[2]

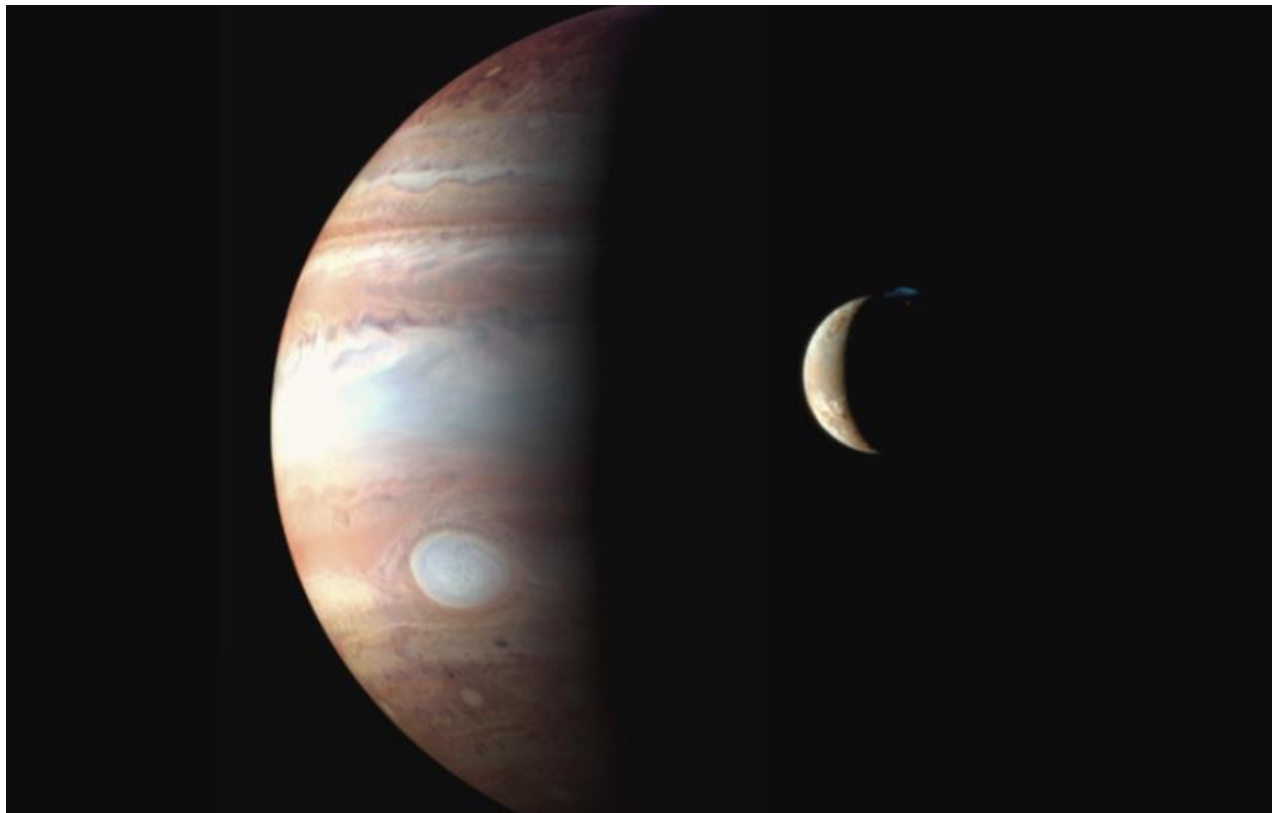


Figure-7: Real Footage are from NASA gov website

Saturn:

Saturn is the sixth planet from the sun and the second largest planet in our solar system. Decorated with thousands of beautiful ringslets, Saturn is unique among the planets. It is not the only planet with rings made of ice and stone pieces-but nothing is as great or complicated as Saturn. Like some Jupiter gas giants, Saturn is a large ball that mostly consists of hydrogen and helium.. [2]



Figure-8: Real Footage are from NASA gov website

Uranus:

The first planet discovered with the help of a telescope, Uranus was discovered in 1781 by astronomer William Herschel, though he initially considered it as a comet or a star. Two years later, the object was universally accepted as a new planet, partly due to observation by astronomer Johann Elert Bode. [2]



Figure-9: Real Footage are from NASA gov website

Neptune:

Neptune's dark cruise is a high-pressure system and is usually accompanied by a bright "companion cloud", which is also now visible on distant planets. Bright clouds form when ambient airflows are interrupted and diverted to dark vortices, causing the gas to freeze into methane ice crystals. [2]

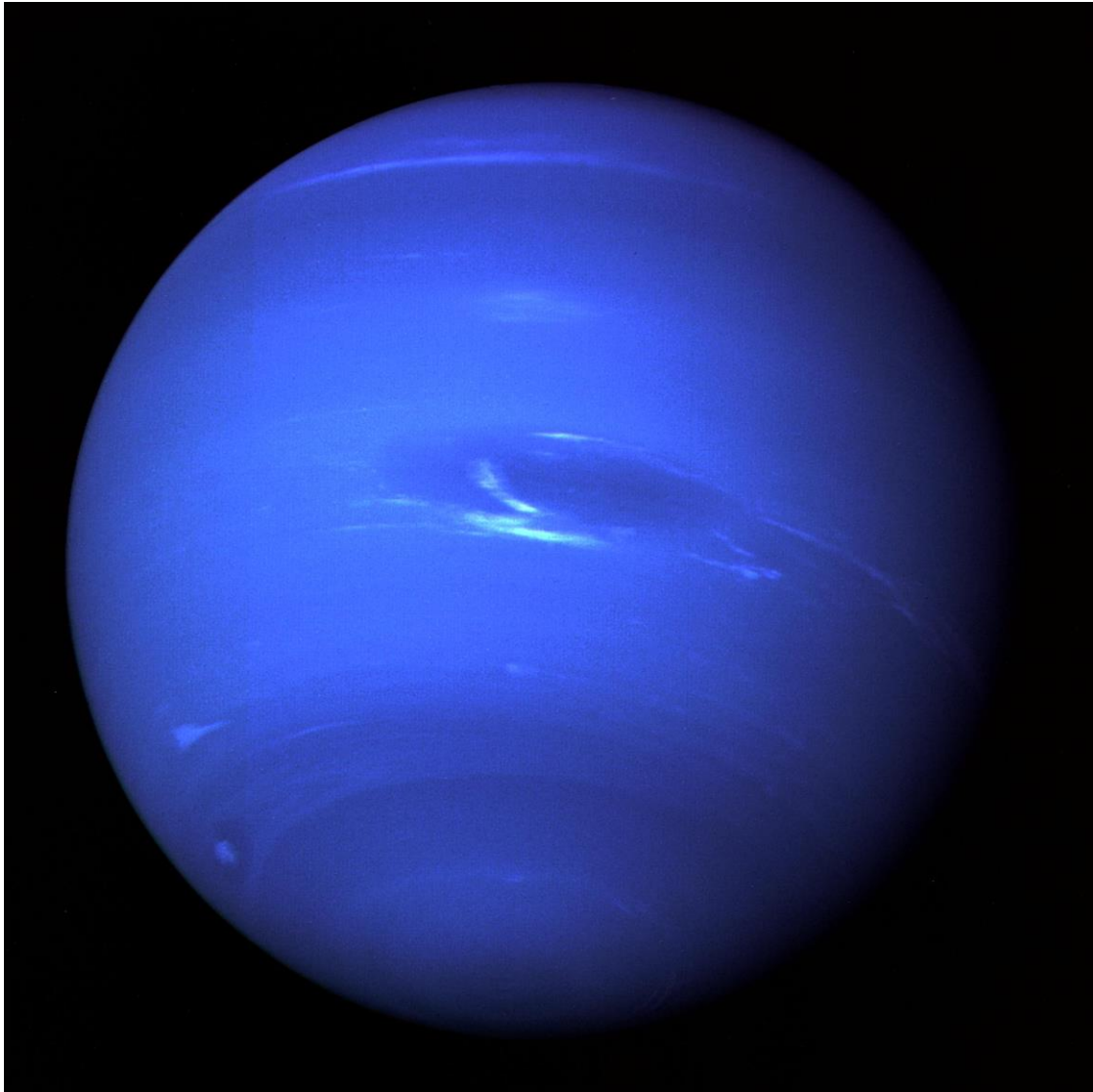


Figure-10: Real Footage are from NASA gov website

The Sun and Moon :

The Sun-heart of our solar system-is a yellow dwarf star, a glowing hot ball. Its gravitational holds the solar system together, preserving everything from the largest planets to the smallest particles in its orbit.Moon is an astronomical body that orbits Earth's planet and natural satellites are Earth-only. It is the fifth largest natural satellite in the Solar System, and the largest among satellite satellites in comparison to the size of the planet it orbits. [2]

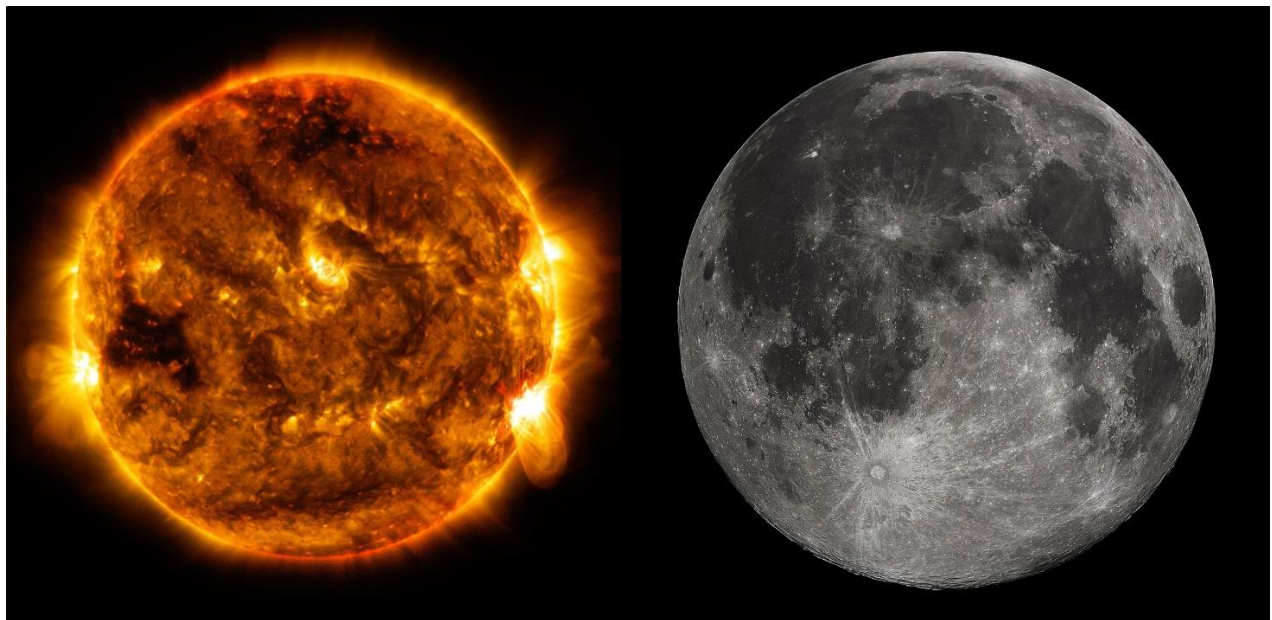


Figure-11: Real Footage are from NASA gov website



CHAPTER 3

3D Model Analysis

Introduction

In this project I research lots of book and website like NASA gov website Wikipedia ..and learn first about the universe and solar system information after that check the real photos who are taken from satellite NASA ..then make the 3d models planets ..this time I create a storyboard for model development, scene development, texture, camera animation ..so in this chapter I have to present my storyboard my ideas in a paper & screenshot of the software are also given in this chapter .

3.1 Story Board:

A storyboard is a graphic 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 my project:

This is my rough storyboard drawing...

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

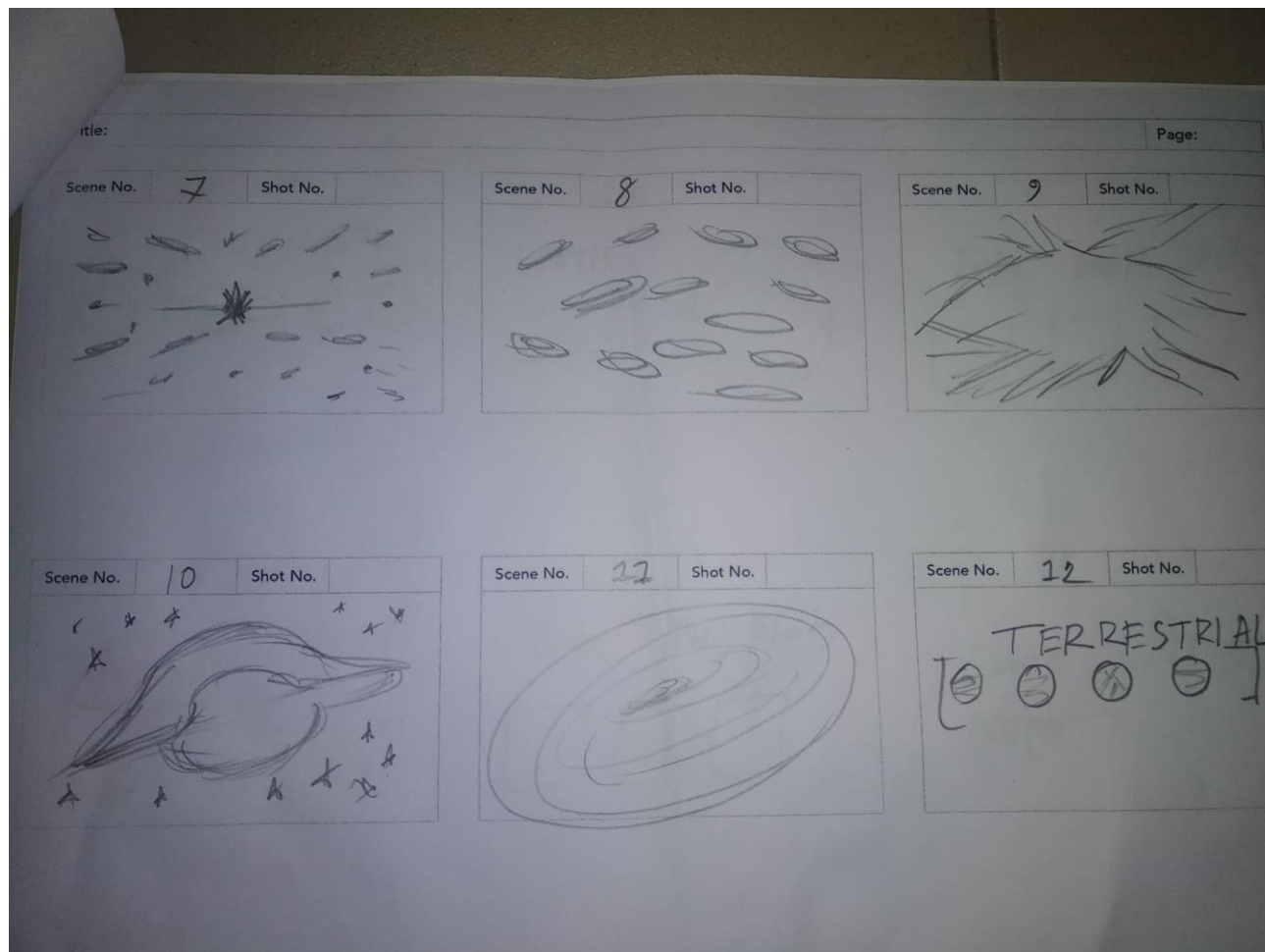


Figure-12: Screen shot of the Story board 1

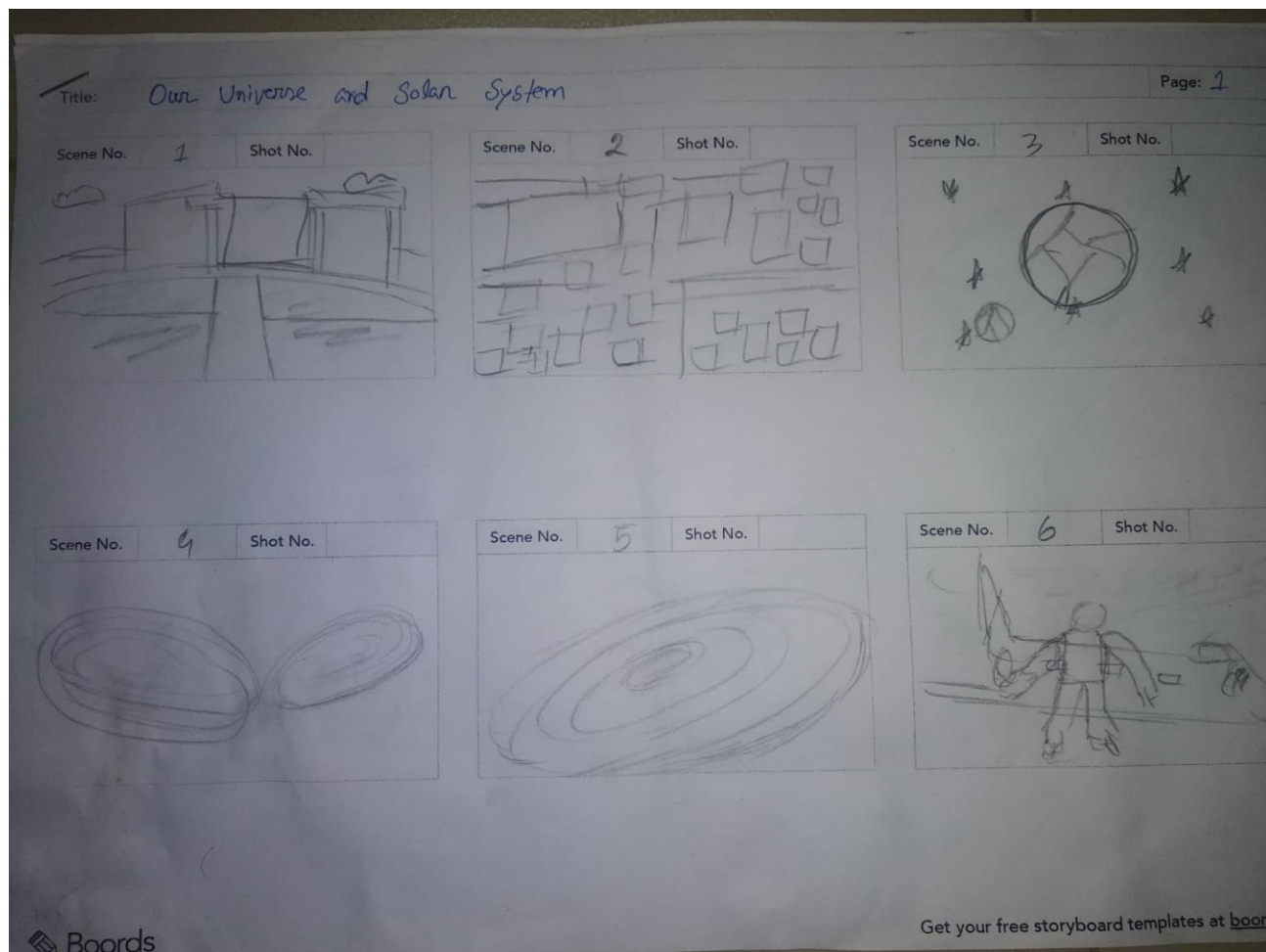


Figure-13: Screen shot of the Story board 2

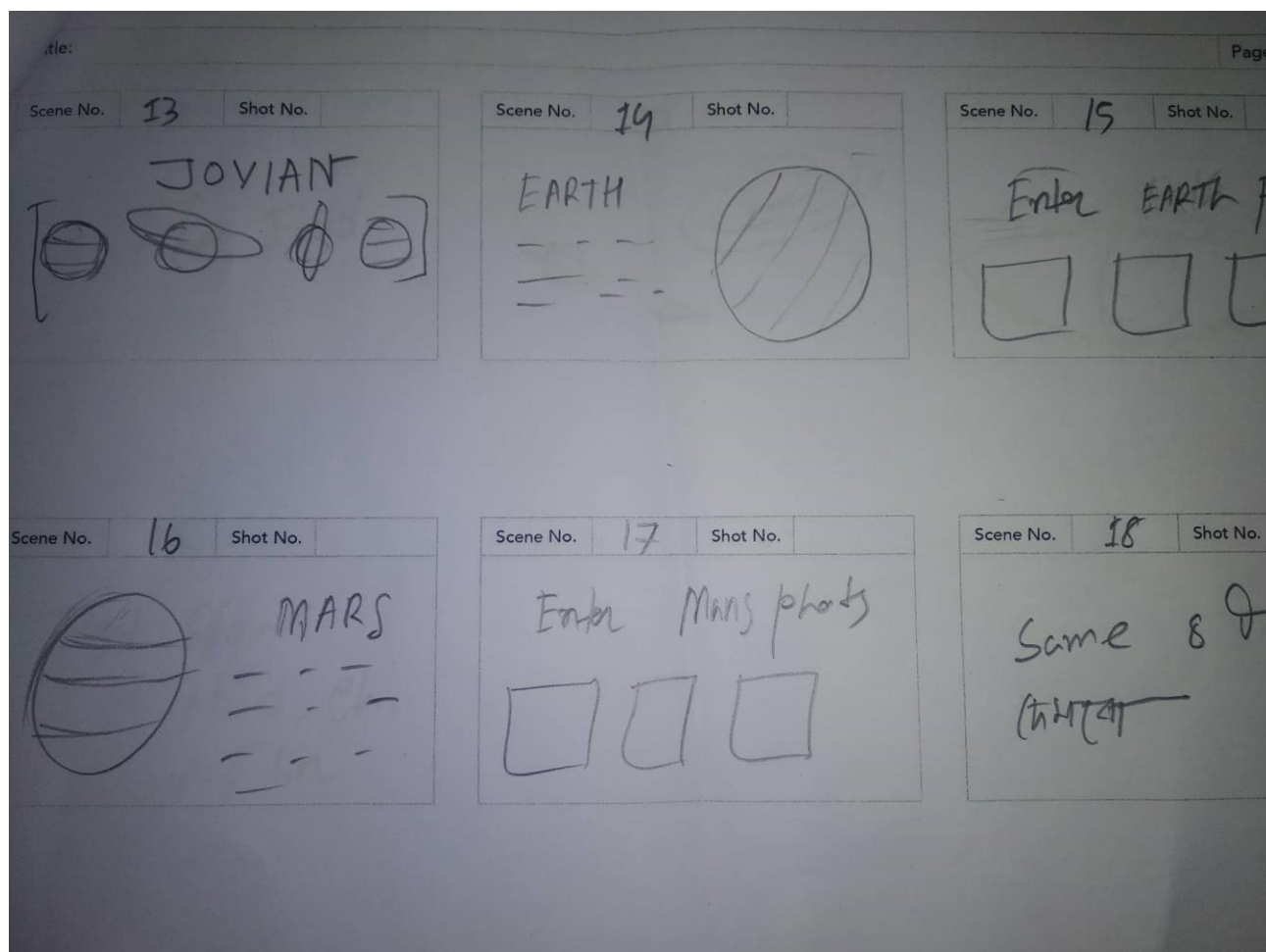


Figure-14: Screen shot of the Story board 3



3.2 Software:

Following software were used to create the final output:

- Adobe After Effects
- Adobe Premiere Pro
- Adobe Photoshop
- Element 3d Plugin
- Optical Flares Plugin
- Trapcode Particular Plugin
- Stardust plugin
- Adobe Audition

Adobe After effect :

Adobe After Effects is a digital visual effects, motion graphics, and compositing application developed by Adobe Systems and used in the post-production process of film making and television production. Among other things, After Effects can be used for keying, tracking, compositing and animation. [7]

Adobe Photoshop:

Photoshop is Adobe photo editing, image creation and graphic design software. This software provides many image editing features for raster images (pixel-based) and vector graphics.

It uses a layer-based editing system that enables image creation and transforms with multiple functions that support transparency. The layer can also act as a mask or filter, changing the base color. [6]



Adobe Premiere Pro:

Adobe Premiere Pro is a timeline-based video editing application developed by Adobe Systems and published as part of the Adobe Creative Cloud licensing program. Adobe Premiere Elements is a video editing software published by Adobe Systems. It's a scaled down version of Adobe Premiere Pro and tailored to new and user editors. [9]

Adobe Audition :

Adobe Audition is a digital audio workstation from Adobe Systems featuring both multitracks, non-destructive / edited mix environments, and edible viewing of destructive waveforms[10]

3.3 Hardware Requirement:

I have used a windows desktop pc with following configuration to create this project:

- Processor: Ryzen Core i7 7000K (8 core processor)
- RAM: 32 GB DDR4
- GPU: Nvidia GTX 1050

3.4 Working workflow:

Earth zoom out scene:

This scene animation I used the software Adobe after effect for camera animation ..the scene I take from google satellite ..and using adobe photoshop to make single by single layer .after that all composite in the after effect software.

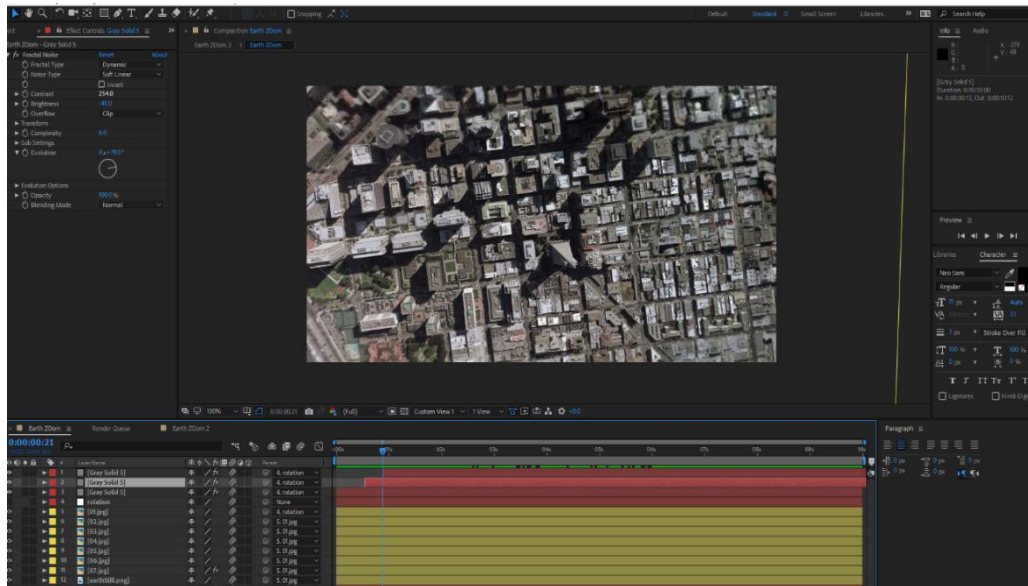


Figure-15: Earth zoom out

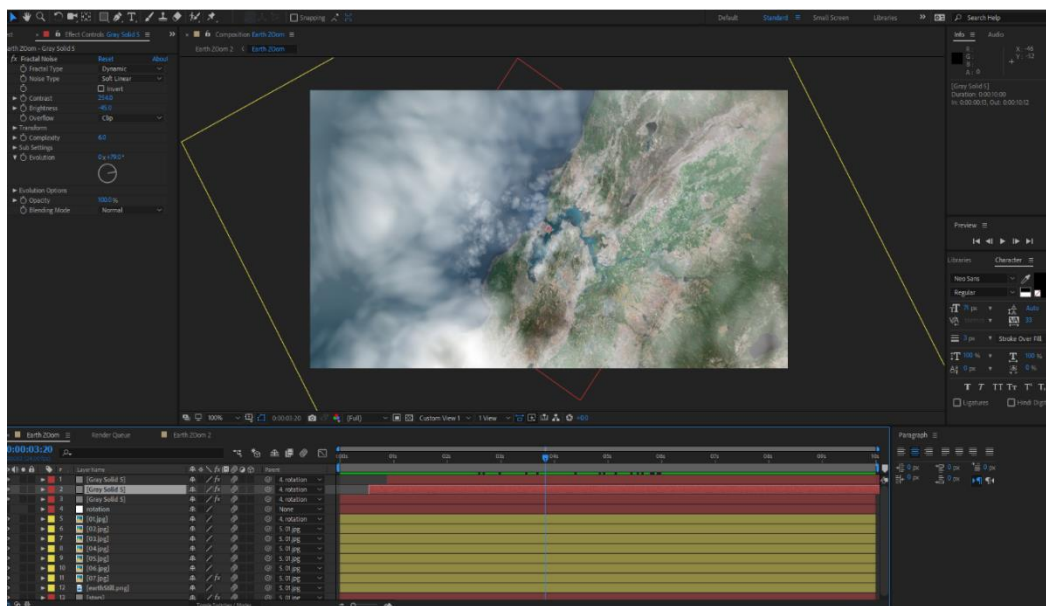


Figure-16: Earth zoom out 2

Universe scene:

Using effect cc sphere to create the realistic earth ,moon model using photoshop for the background layer and stars using effect CC star burst for making stars effects and trapcode particular for making the galaxy for lighting use optical flare plugins..

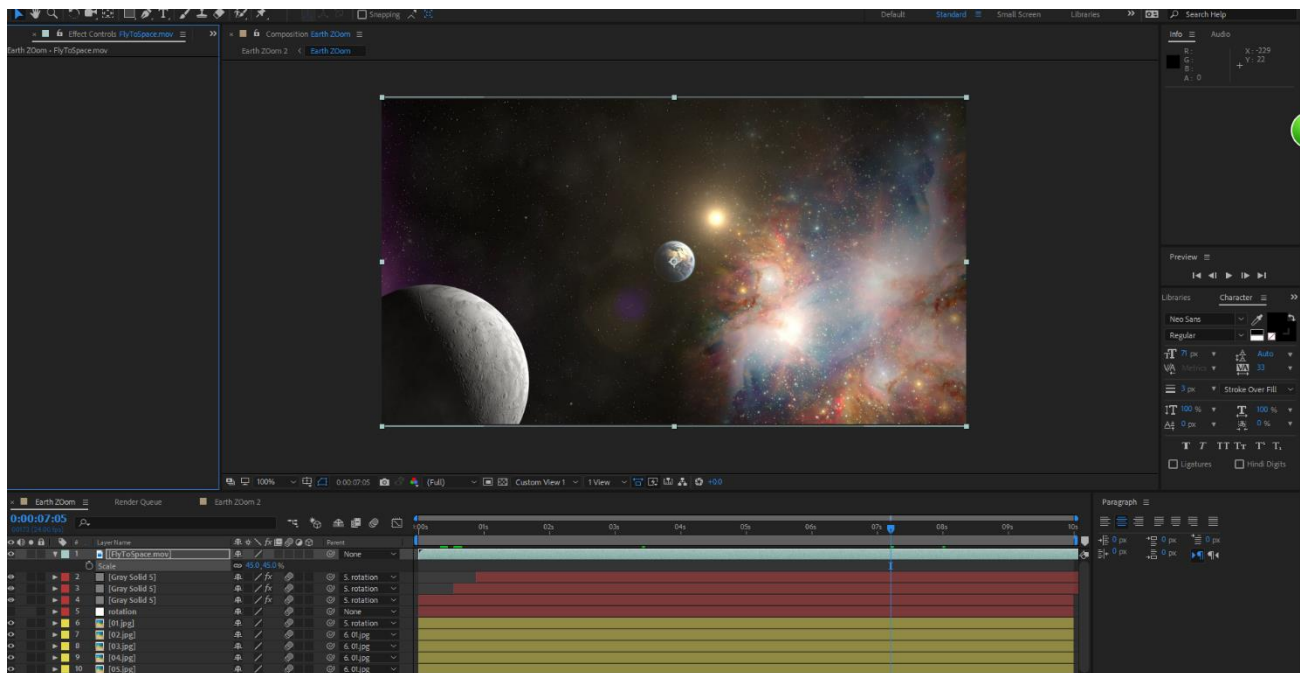


Figure-17: screen shot of the universe

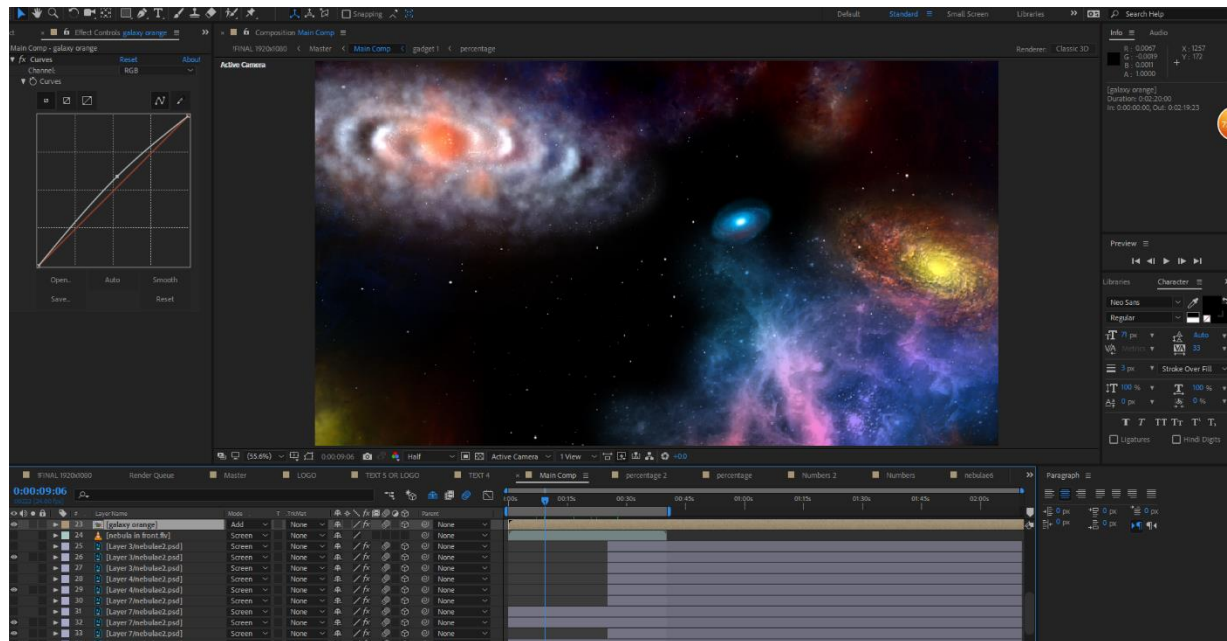


Figure-18: screen shot of universe and galaxy

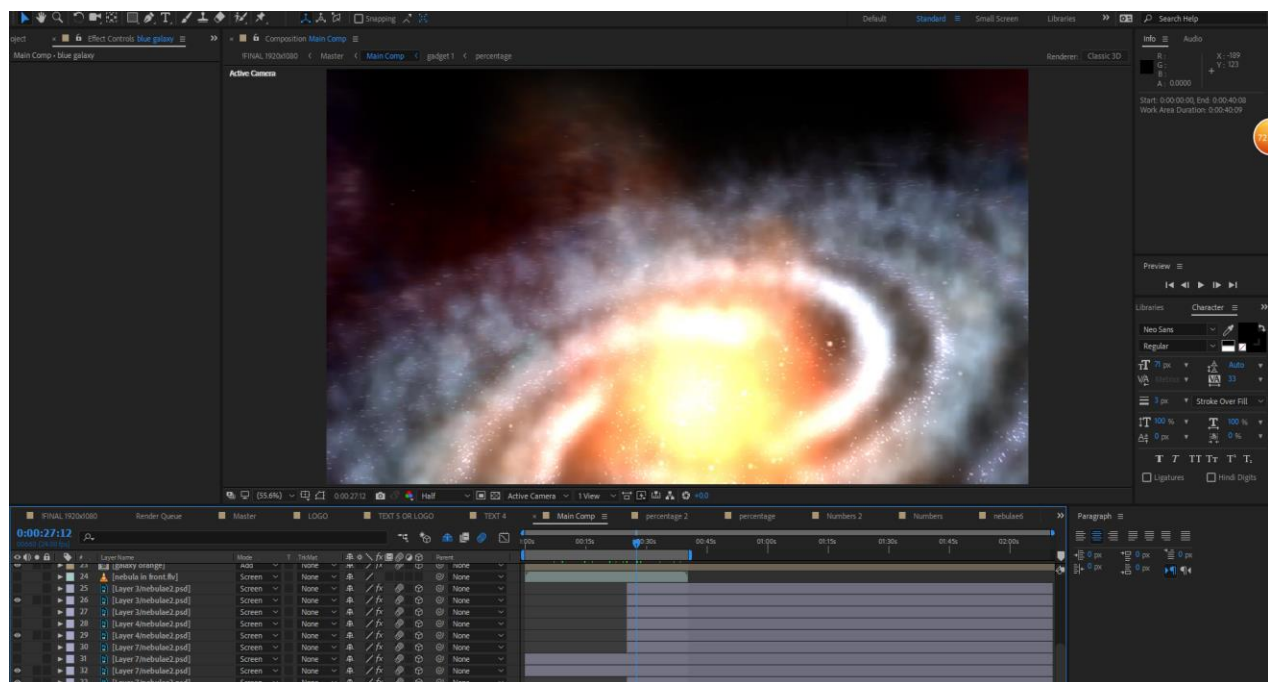


Figure-19: screen shot of Galaxy

Astronaut Landing moon scene:

Using Element 3d plugin for making the plane ..the background making in photoshop .then the astronaut rigging using dulk element 3d rigging ..lighting using optical flare and after all complete after effect using for the full composting .

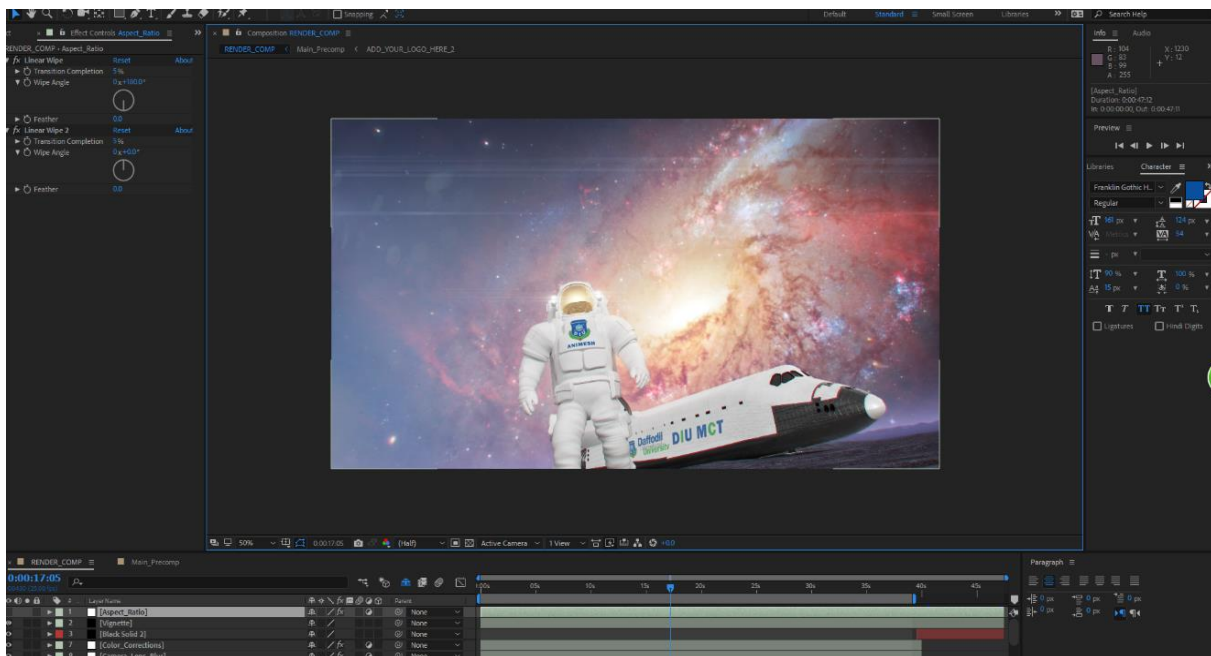


Figure-20: screen shot of astronaut land moon

Big Bang and galaxy scene :

Big bang and the galaxy scene using tarpocode particular for the particle galaxy animation .the starts using effect echo and the explosion using physic mode explosion (master) using air mode ..the background makes in photoshop layer ..and background stars using cc stars burst ..then the million million galaxy scene all are animated in after effect ..the galaxy are all png make on photoshop then composite on after effect.

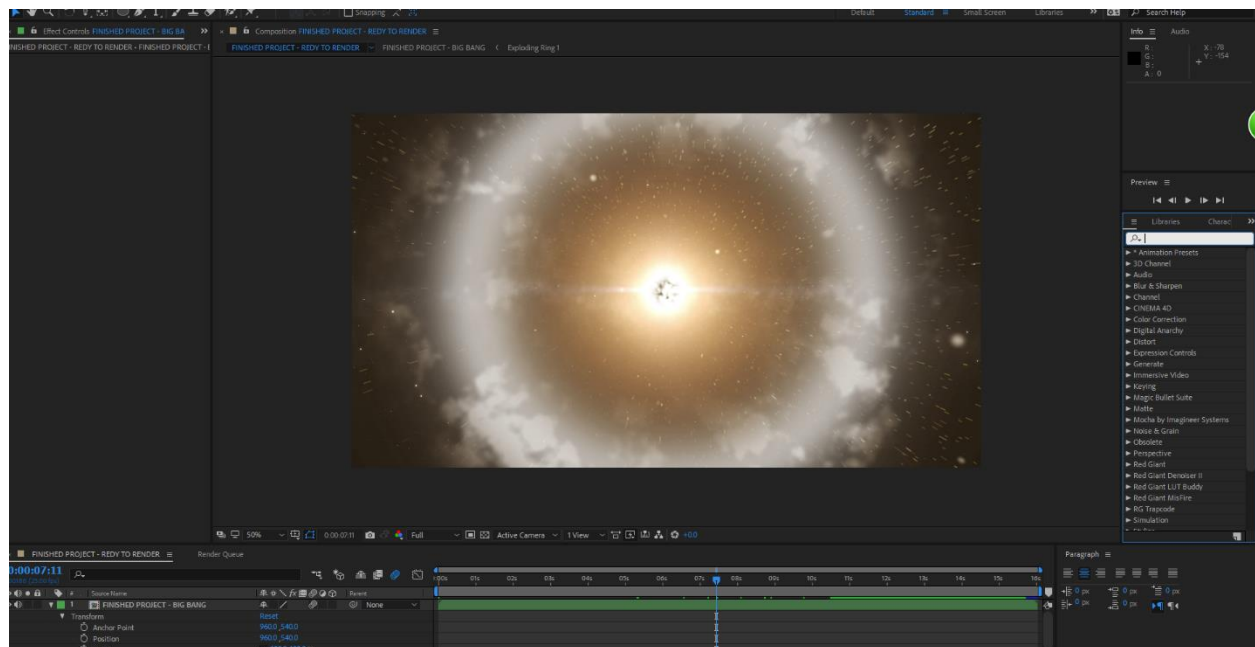


Figure-21: screen shot of the big bang

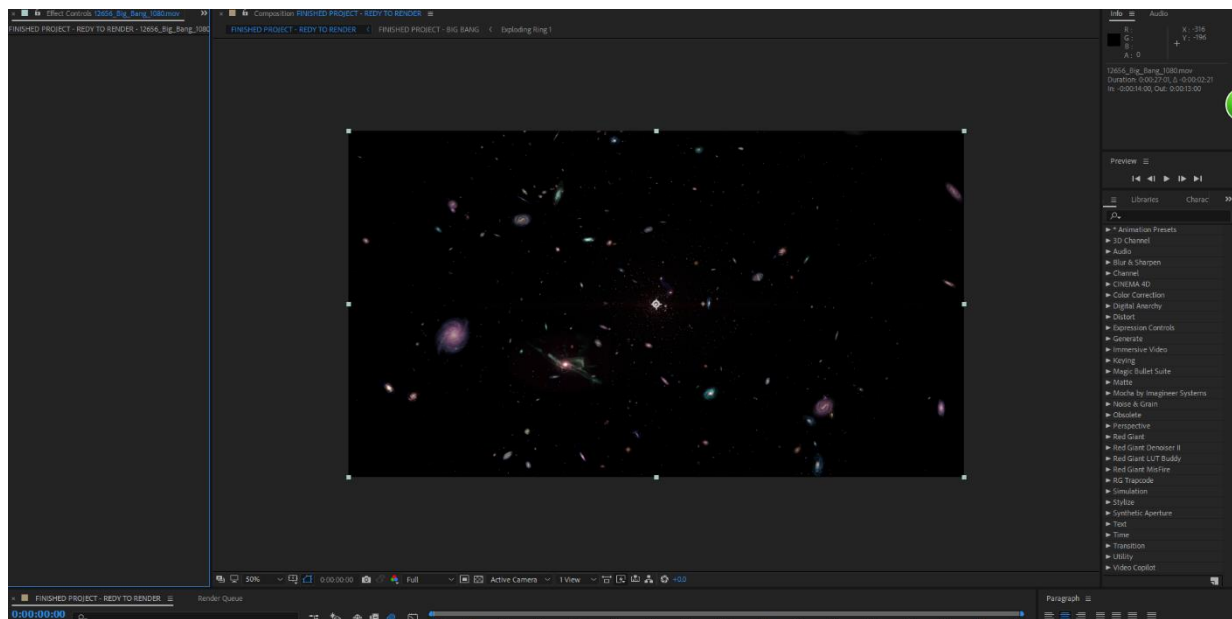


Figure-22: screen shot of the million galaxy

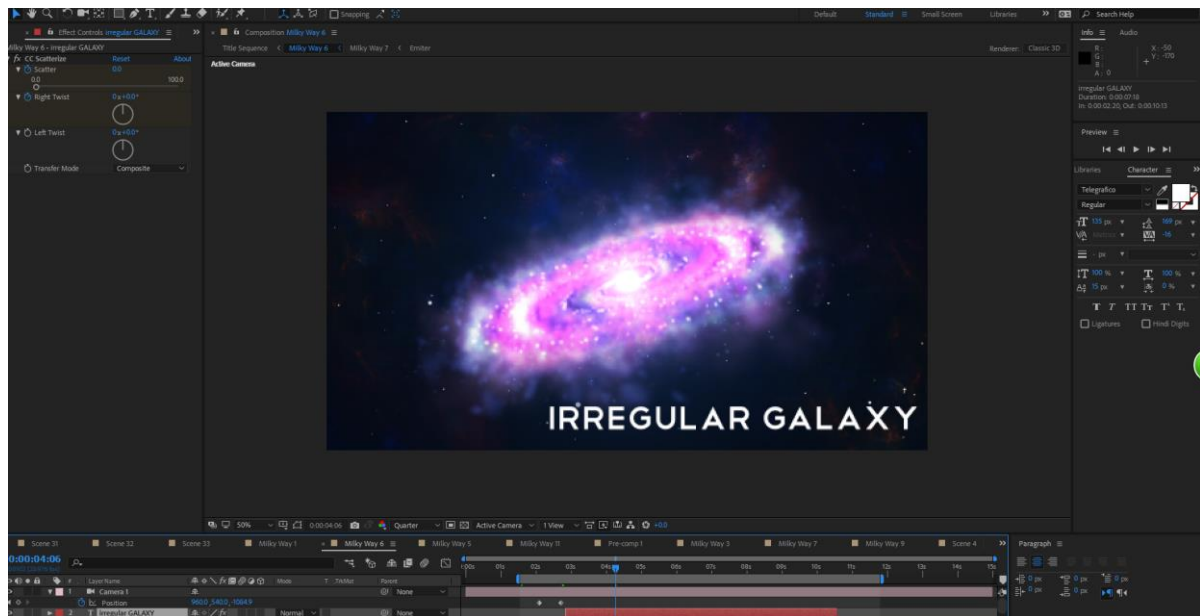


Figure-23: screen shot Irregular Galaxy

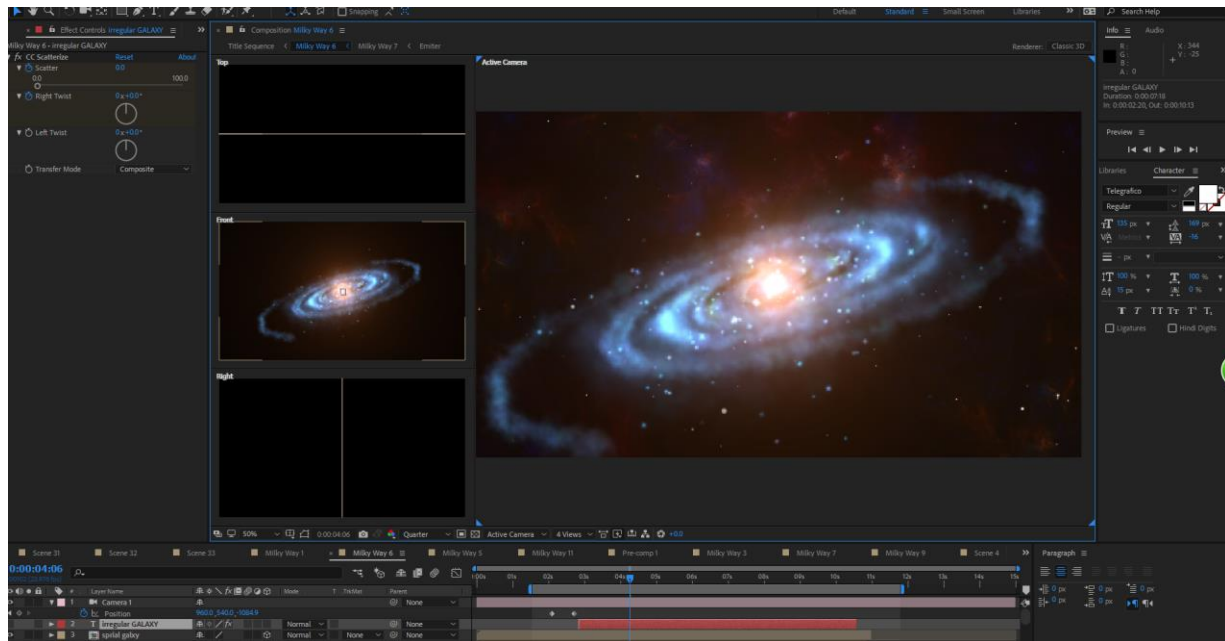


Figure-24: screen shot of the Spiral galaxy

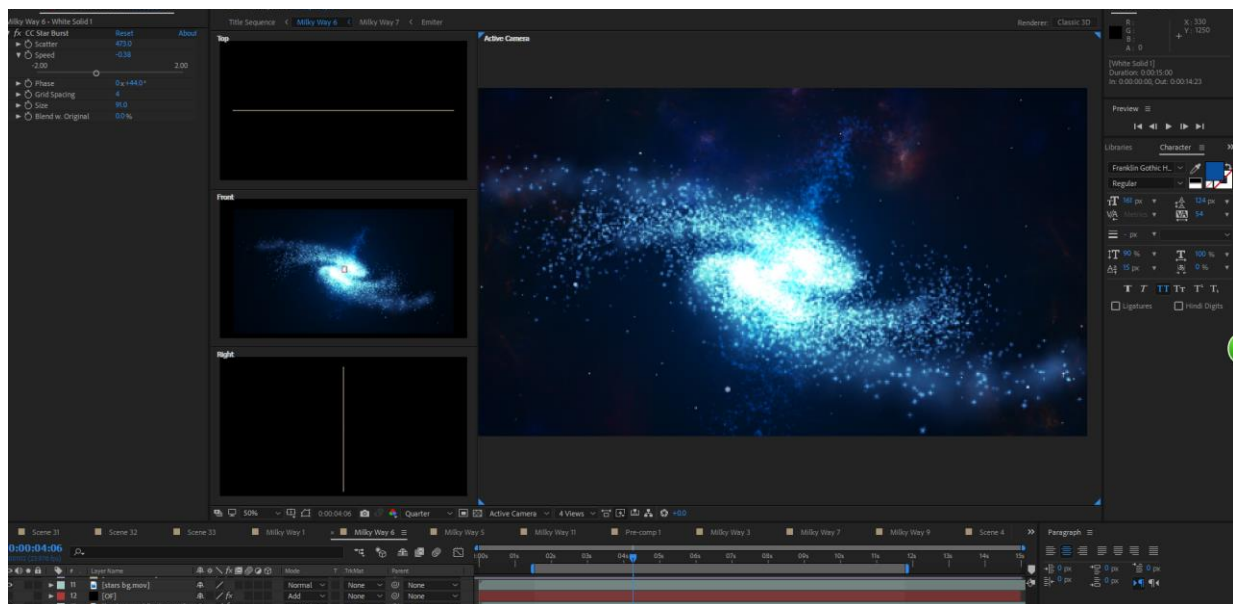


Figure-25: screen shot of the Elliptical galaxy

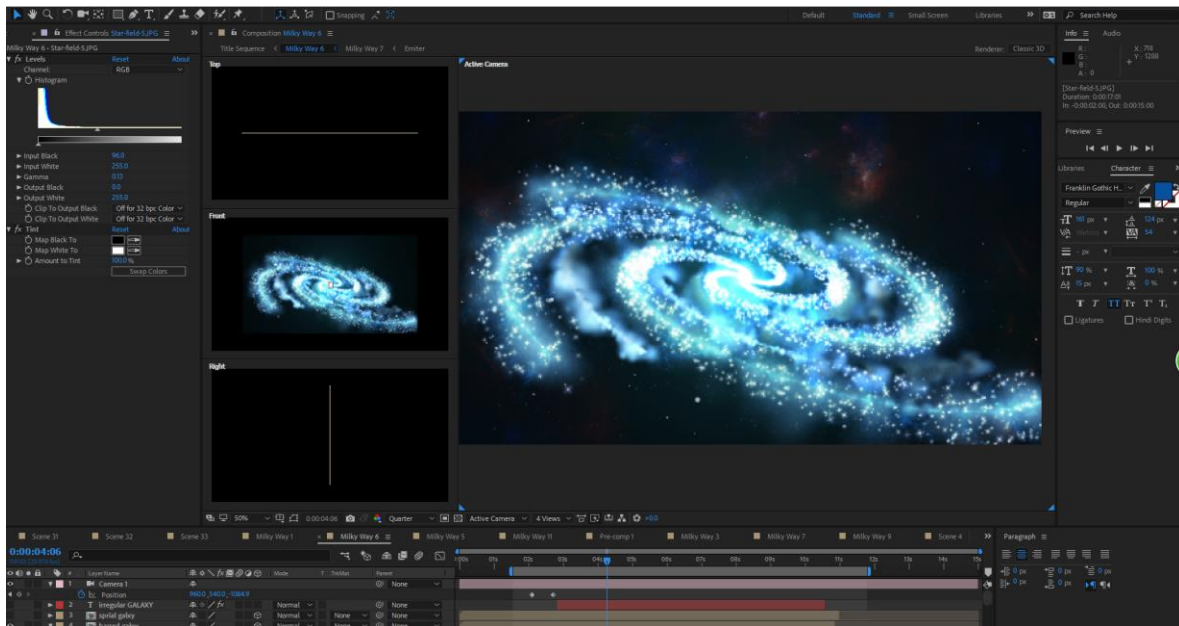


Figure-26: screen shot Barred Galaxy

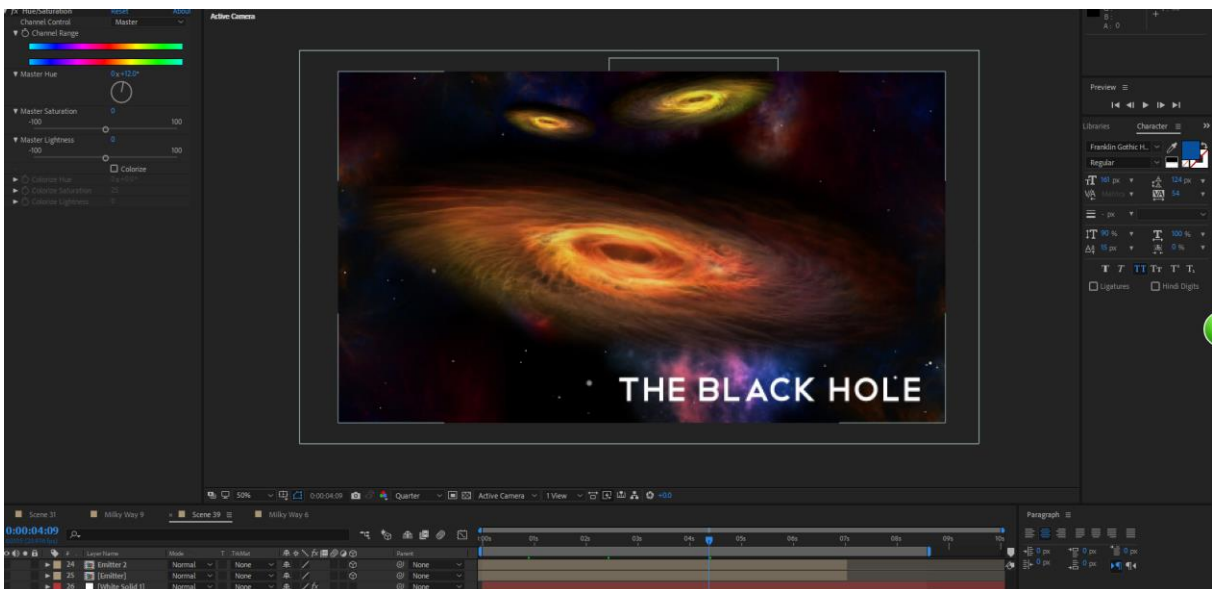


Figure-27: screen shot of the black hole

Solar System making Scnce :

The solar system planet all planet texture map I download from the solarsystemschope/texture website. using cc sphere effect making the planet round and using glow effect for realistic looking the sun using effect fractal noise for the realistic fire ,and the use polar coordinate to making the fire on the globe using the Uranus and the Saturn ring make the same way using polar coordinate effect to making the ring round the ring texture take from the same website solarsystemschope .after that composite on after effect using lighting effect plugin use optical flare .

background stars using cc stars burst animation text all making on after effect all planets making on the same way ..After that using camera animation all first make the layer on 3d then take a camera 28 mm for making the scene animation earth ,sun, Saturn ,Mars, Venus, Uranus all planets

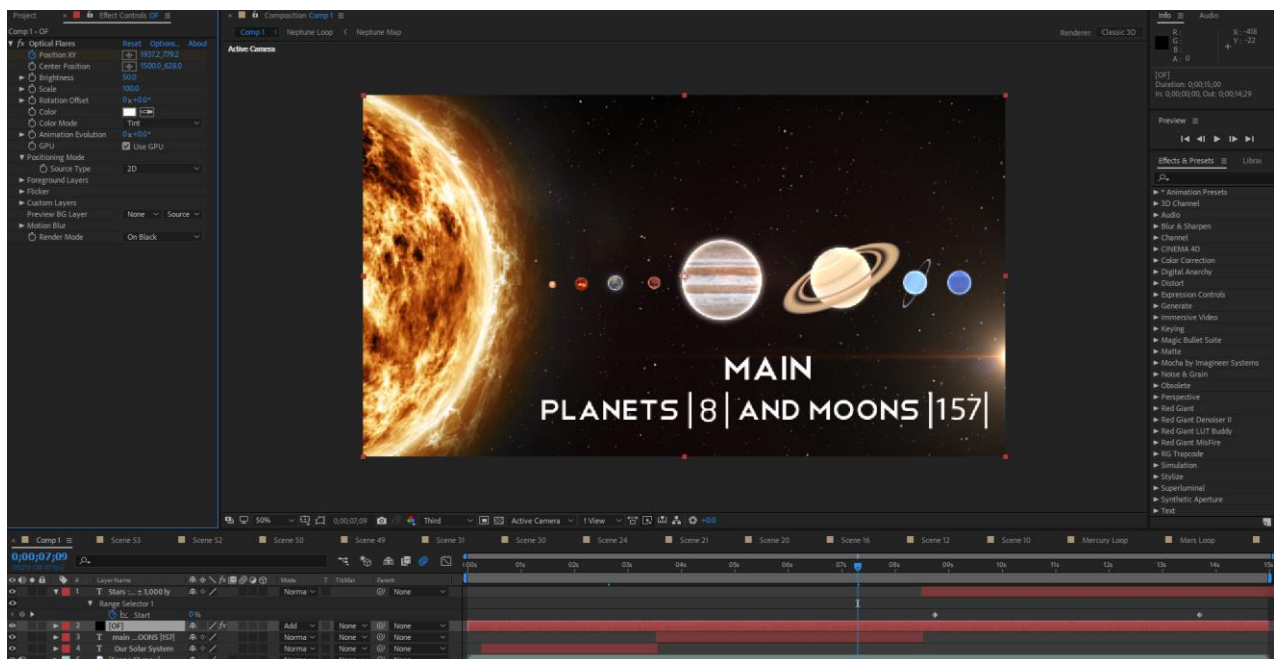


Figure-28: screen shot of the solar system



Figure-29: screen shot of the planet types

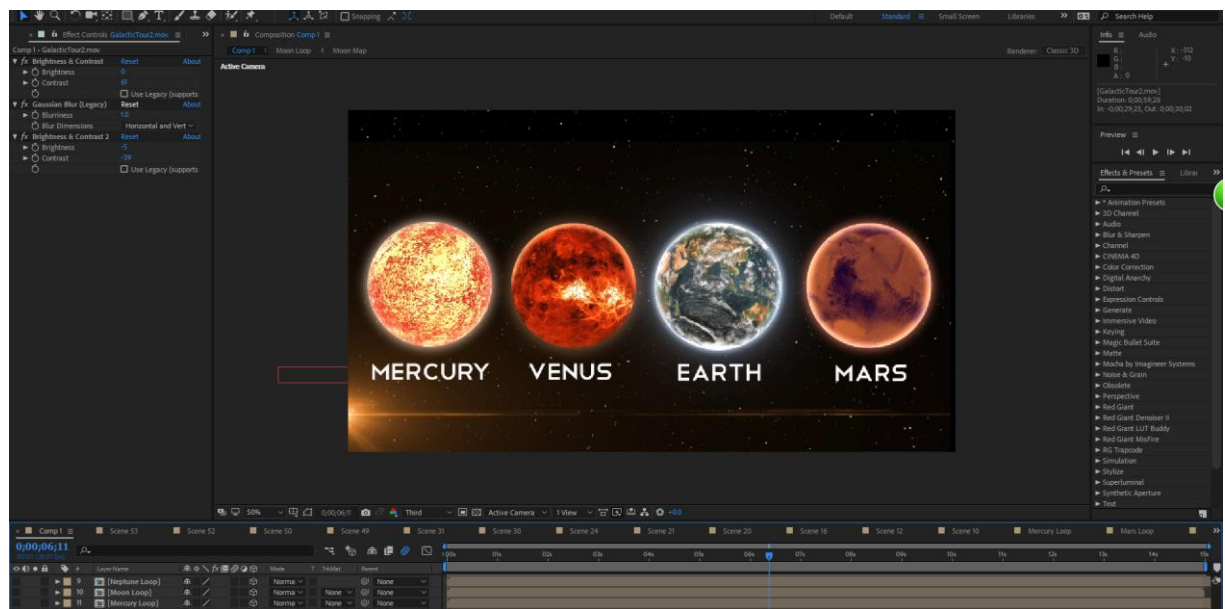


Figure-30: screen shot of the Terrestrial planet

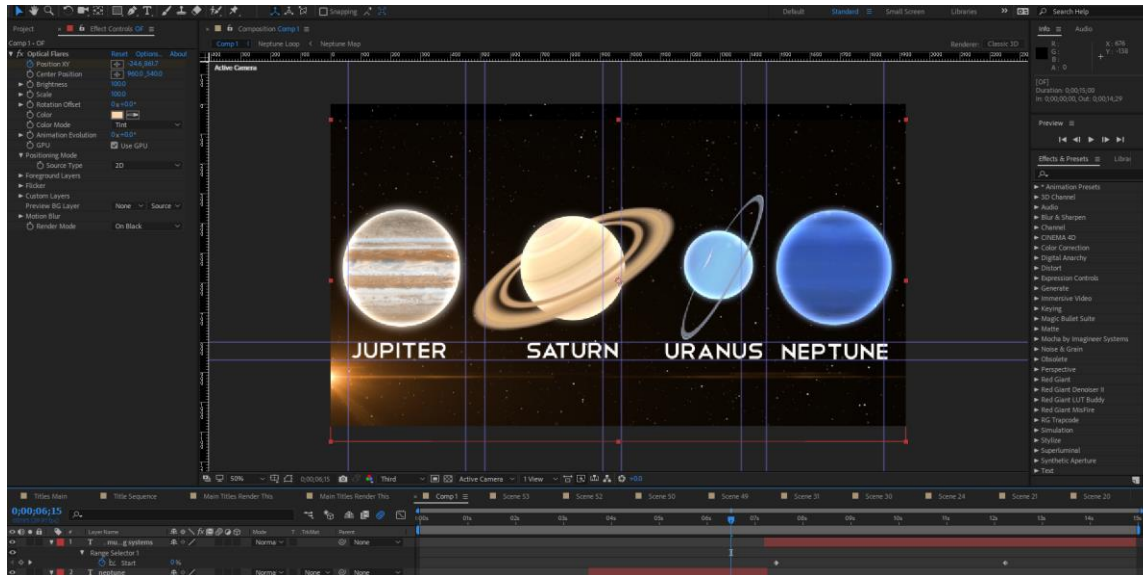


Figure-31: screen shot of the Jovian planet

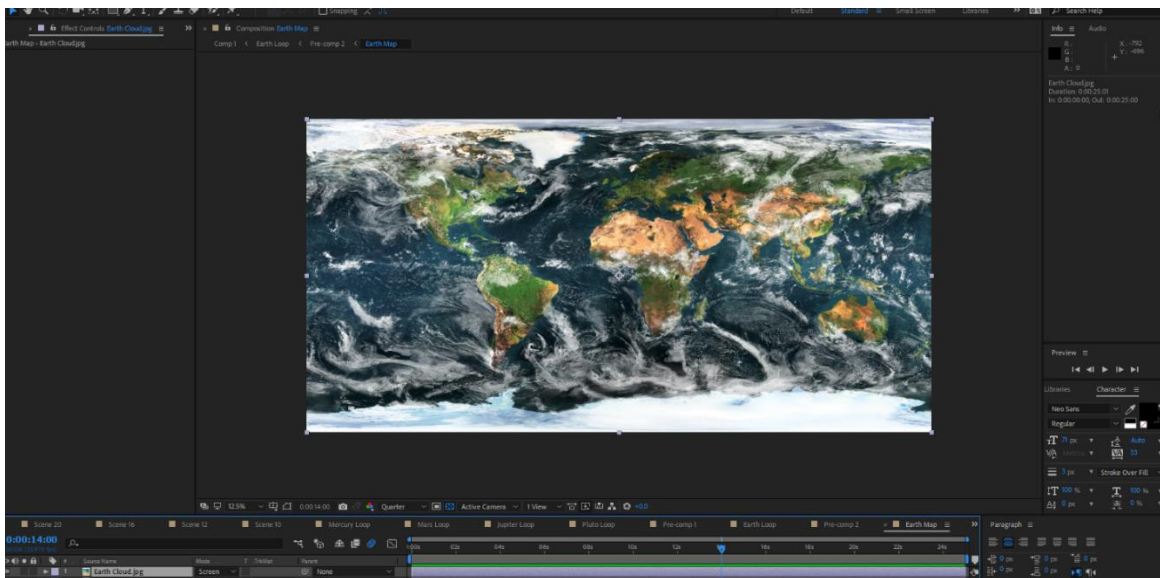


Figure-32: screen shot of the Earth map



Figure-33: screen shot of the earth planet text

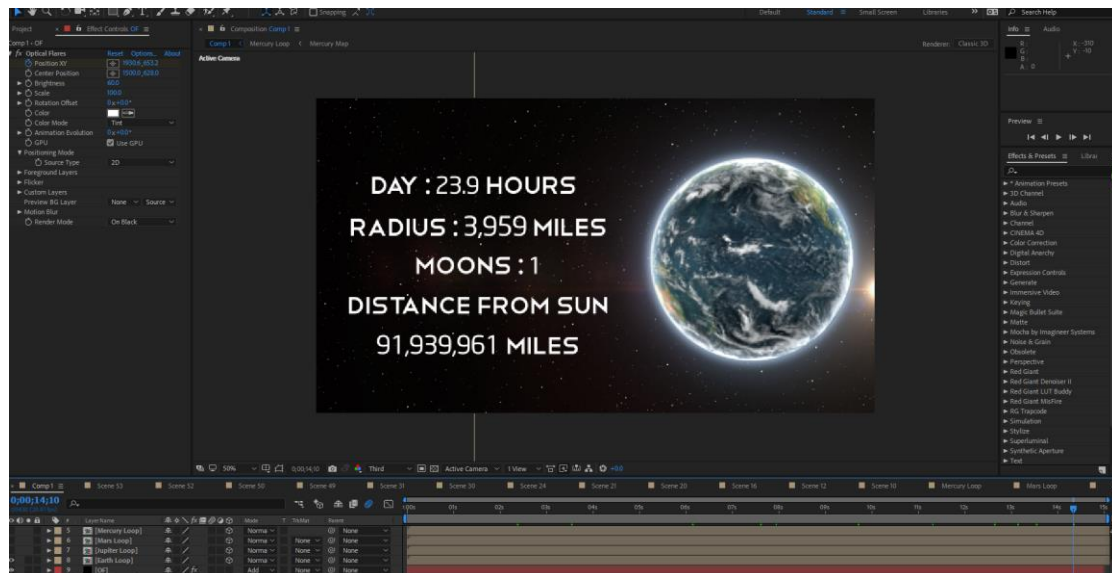


Figure-34: screen shot of the earth description

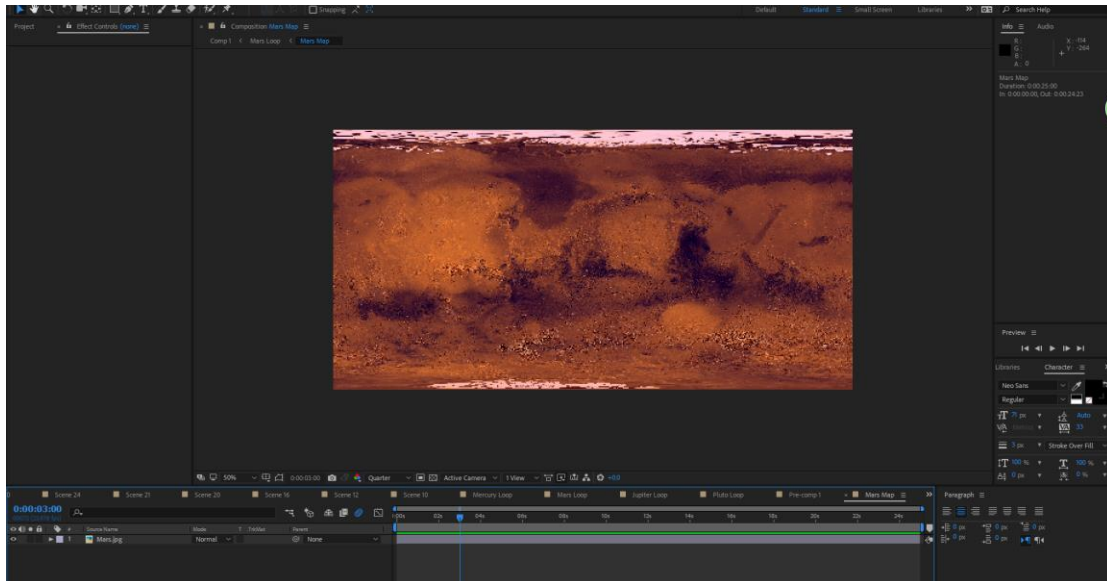


Figure-35: screen shot of the mars maps

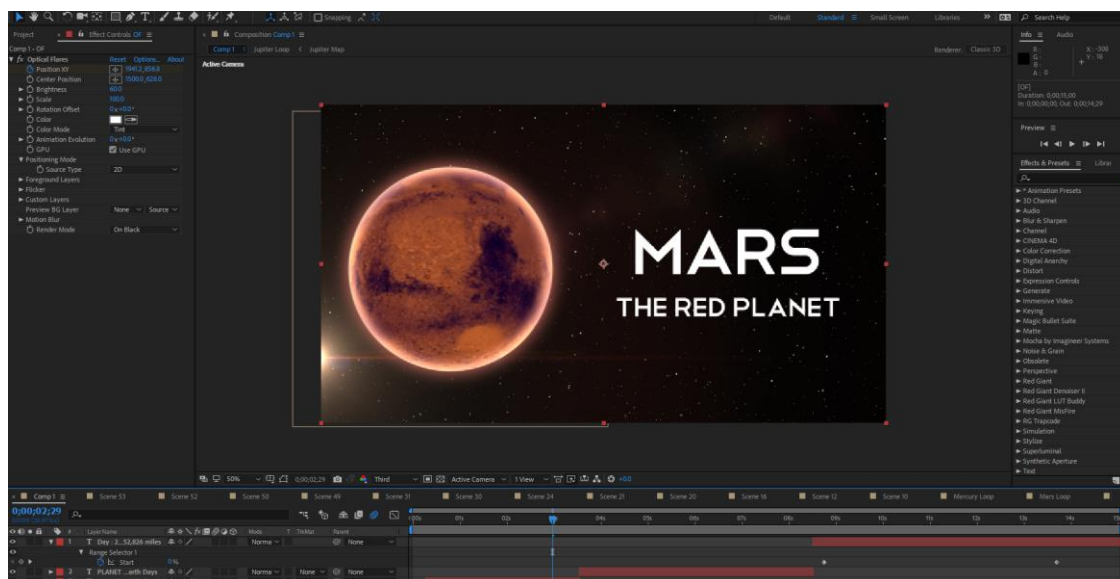


Figure-36: screen shot of the mars text

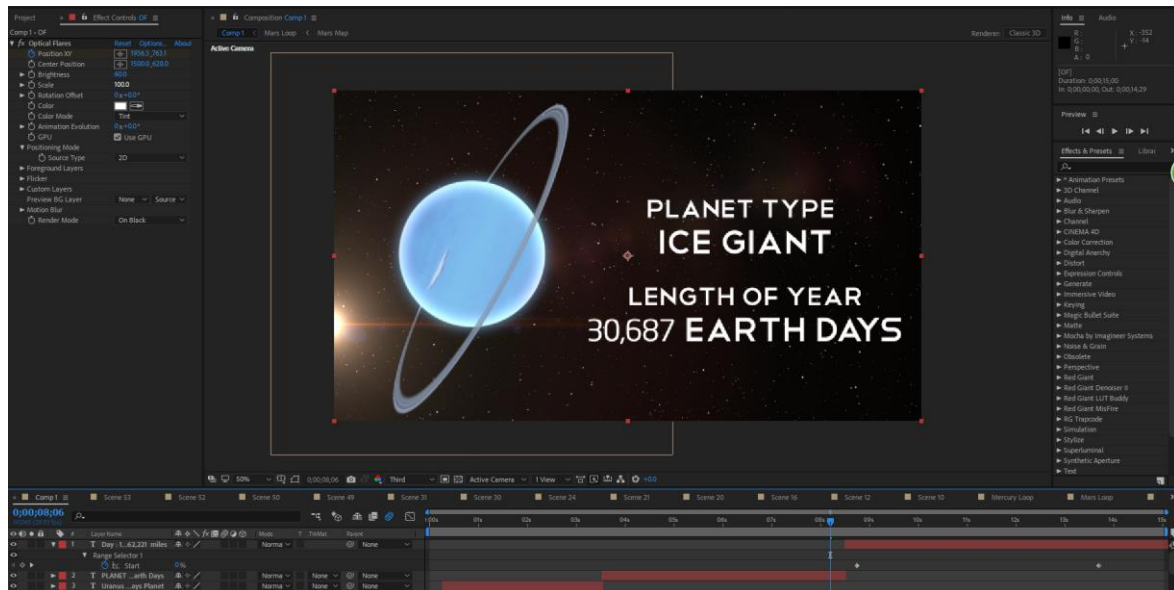


Figure-37: screen shot of the Uranus text



Figure-38: screen shot of the sun



Figure-39: screen shot of the Saturn



Figure-40: screen shot of the all planets



3.5 Texturing :

Texture In visual art, the surface quality is seen from artworks. It is a two-dimensional and three-dimensional design element and distinguishes it from its visual and physical properties. The use of textures, along with other design elements, can deliver a variety of messages and emotions.

Texture mapping is a way to determine high frequency captions, surface textures, or color information on 3D graphics or 3D models generated by the computer.

Texture mappings originally refer to a method (now called more precisely mapped) that simply packed and mapped pixels from the texture to the 3D surface. In recent decades, the emergence of multi-pass rendering and complex mapping such as high mapping, lump mapping, regular mapping, displacement mapping, reflection mapping, specular mapping, squabbling, bowling, and many other variations of techniques (controlled by system materials) have been allowing it to imitate close-photorealism in real-time by reducing the amount of polygons and lighting calculations needed to build realistic and functional 3D scenes.

The texture map is the image applied (mapped) to the surface of the form or polygon. This may be a bitmap image or procedural texture. They may be stored in normal image file format, referenced by the 3d model or material definition format, and installed into the resource group.

In my all planets using high quality maps from website ..all in one I done in my after effect ..using cc sphere ..

This way I can generate 3d looks in my planets here is some screen shot ..[11]

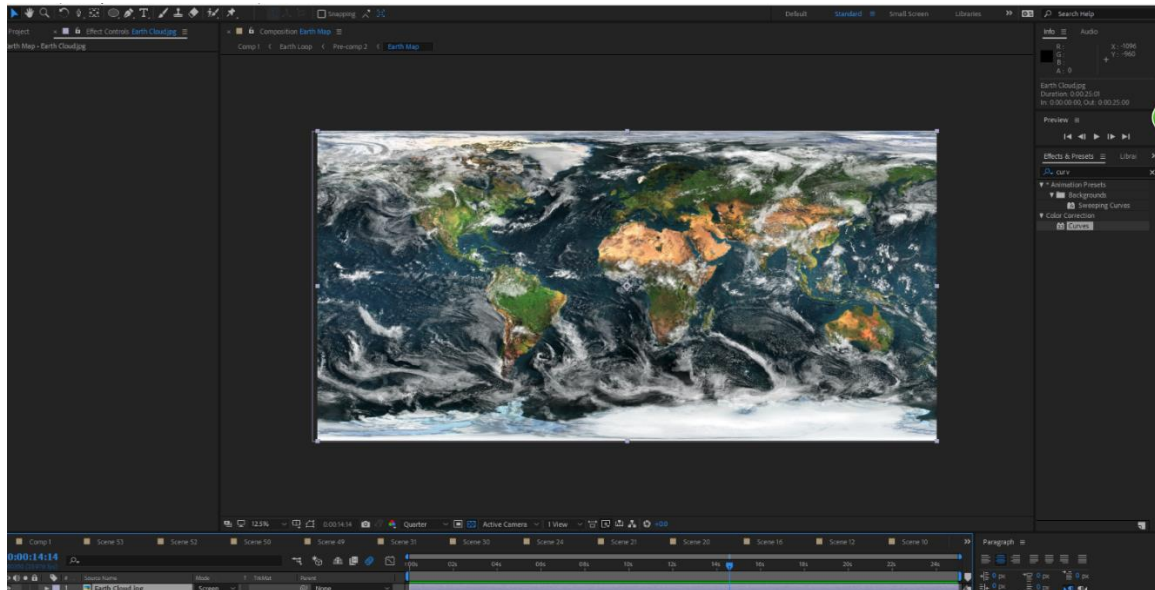


Figure-41: screen shot of the earth texturing

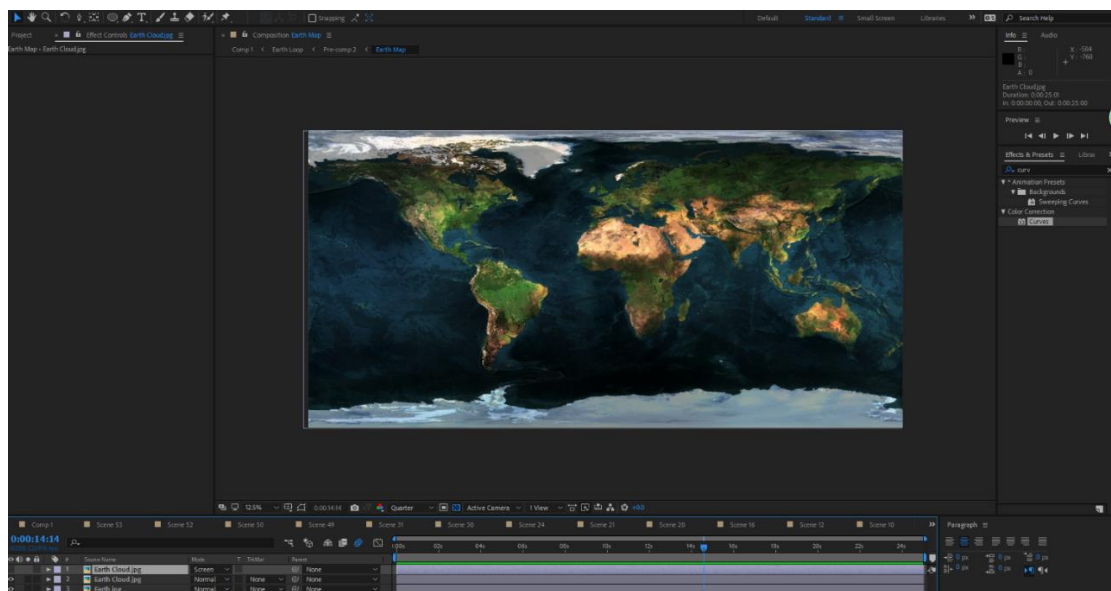


Figure-42: screen shot of the earth texturing 2

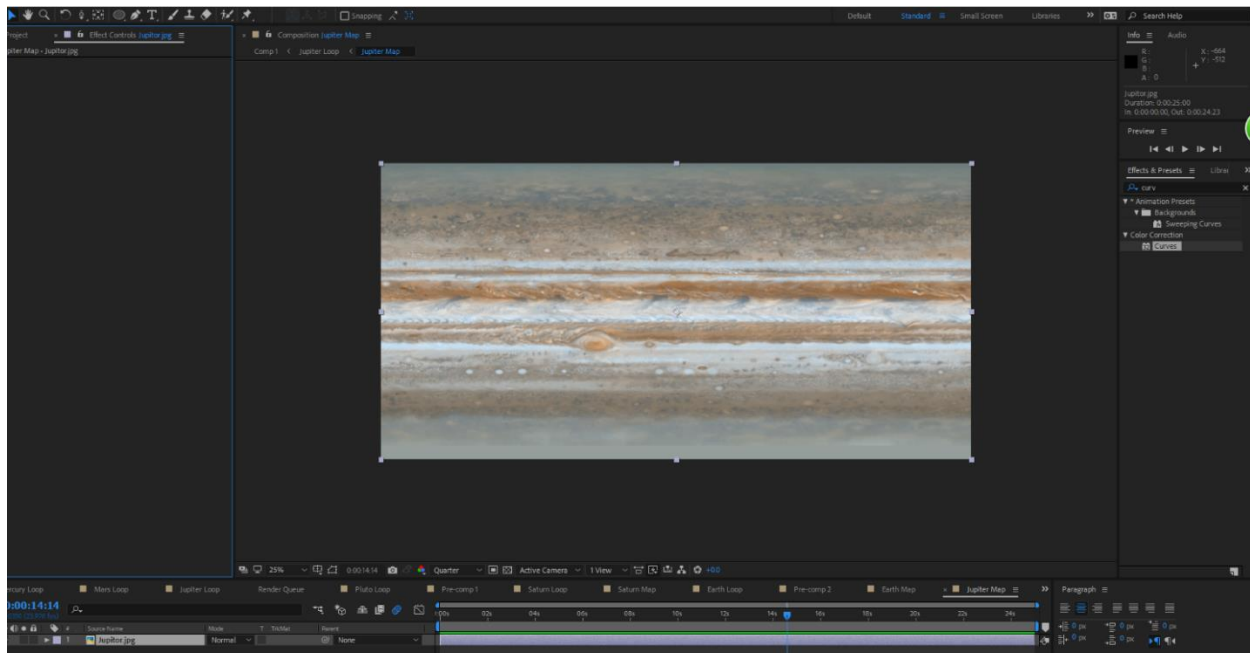


Figure-43: screen shot of the Jupiter texturing

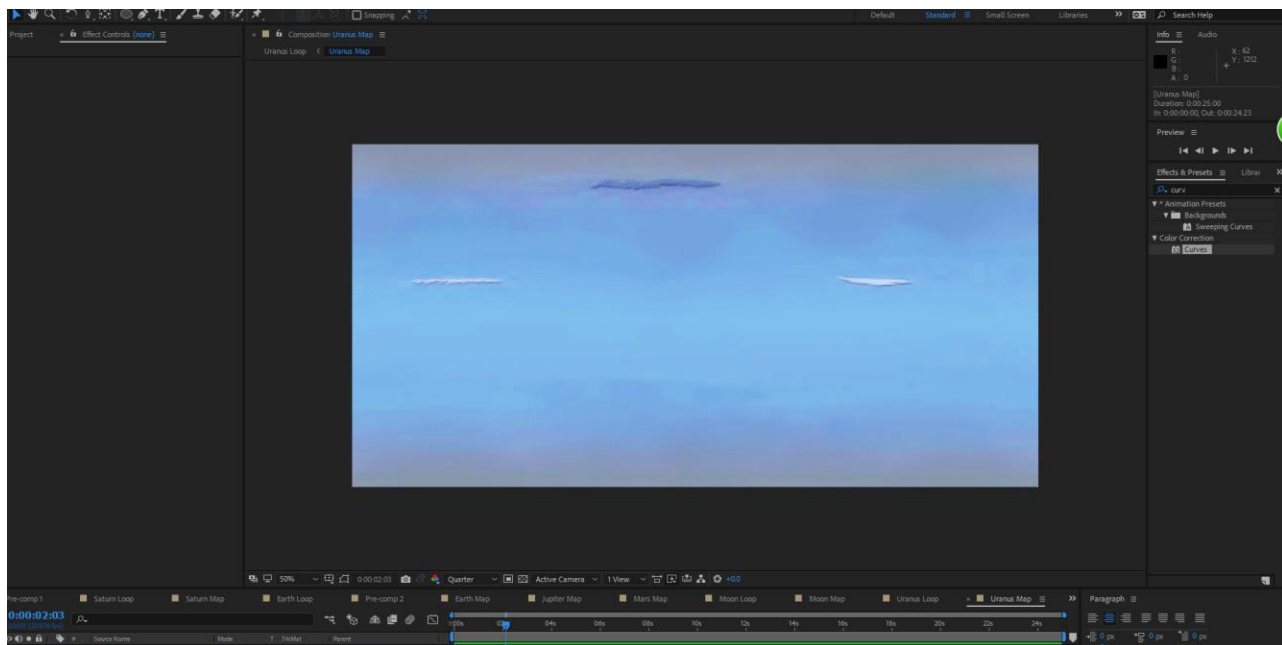


Figure-44: screen shot of the Uranus texturing



3.6 Lighting :

There are some robust 3D lighting techniques, and they are often determined by the type of environment, which technique is best suited to the case. For example, some techniques work well in the internal environment and make a little bit of understanding in outdoor modeling. The same approach works for "studio" lighting because it requires a far different procedure than lighting for animation and 3D movies.[13]

Point or Omni Light

One dot light releases light in every direction from a small source in a 3D environment. It has no particular shape and size

Light direction

This is contrary to omni light, it provides a very remote source of light (like moonlight). The direction light goes in parallel in one direction.

Spot Light

There are target spot lights and free spots, which means that they have no target objects. It is often used to simulate light fixtures, for example, table lamps or street lights, as it emits light rays.

Area Light

The area lights emit light within the boundaries of certain sizes and shapes (rectangular or circular). This light source is often used in the visualization of the architectural model and in the lightning of the product.

Lighting for my project

I have used for light and flare for using extra plugins name optical flare form video copilot and for the particle using stardust plugin and trapcode plugins trapcode mir ..

3.7 Lighting workflow :

When the camera animation all model are done. Lighting using the software I use after effect ..and plugin use for the lighting optical flares ..create a layer making the lighting positions using the accurate brightness and contrast position mod for shading ..the using motion blur.for the color correction using tint effects and brightness for the final lighting touch

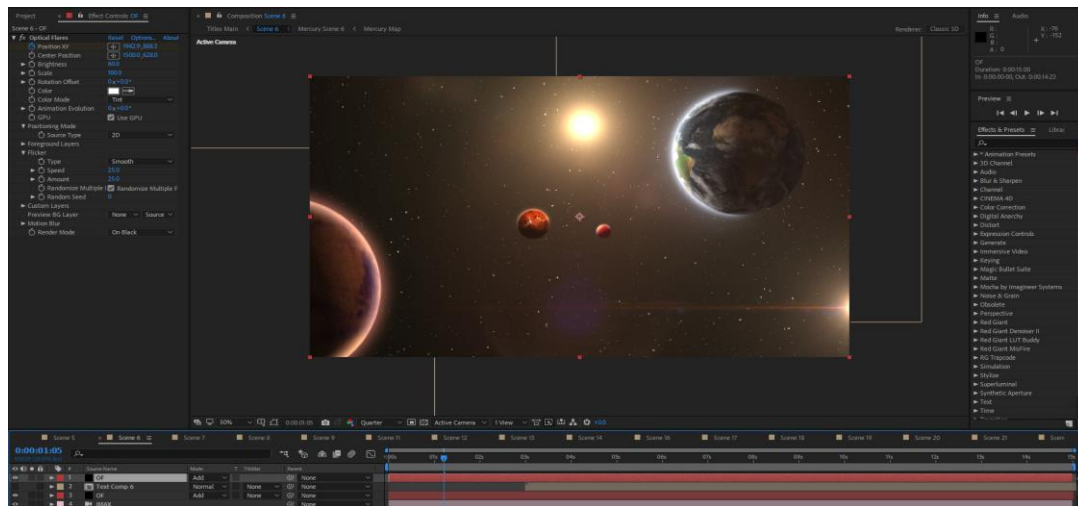


Figure-45: screen shot of the mars earth scene lighting

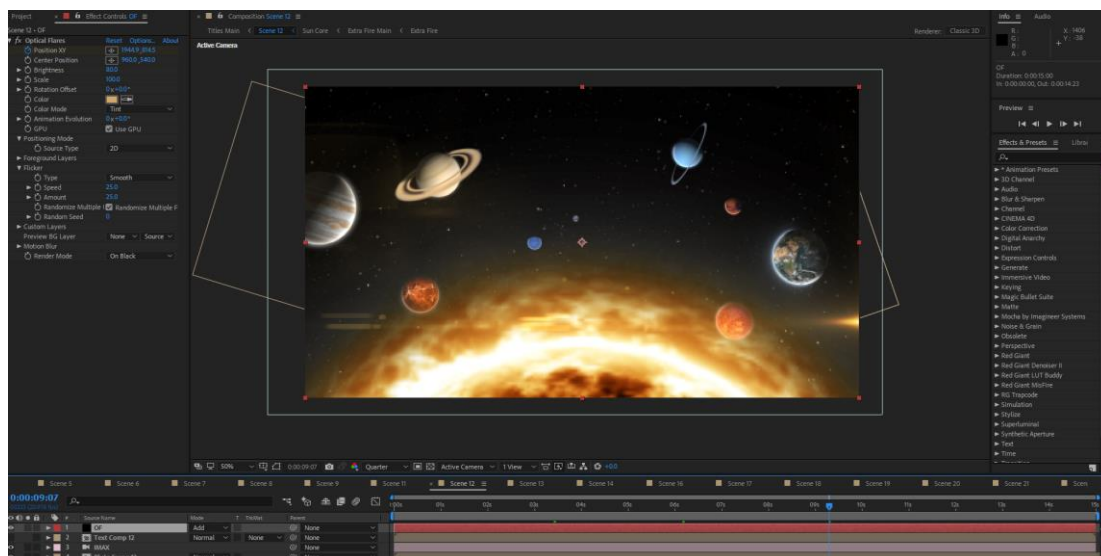


Figure-46: screen shot of the Sun and all planets lighting



CHAPTER 4

Animation

4.1 Introduction

Animation is a motion illusion produced by showing a series of fixed images in rapid replacement. For the current project, some graphics software has been used to create this effect for animation.

Animator is an artist who specializes in animation creation. In general, animations can be recorded with analogue media, flip books, movie images, video tapes, digital media, including animated GIF animations, animated Flash, and digital video. To display animations, digital cameras, computers, or projectors are used in conjunction with the newly created technology.

Several Animation Techniques are:

- Traditional animation
- Stop motion animation
- Computer animation
- Mechanical animation

Visual Effect & 3D Animation

It is the process of generating three-dimensional moving images in a digital environment. Manipulation of 3D models or meticulous objects is done in 3D software to export sequences of images that give them animated illusions or movements. However, this is entirely based on the technique used to manipulate objects. 3D generating procedures are sequentially categorized into three main sections and this is modeling, layout and animation and rendering. Modeling is a phase that describes the procedure of generating 3D objects in certain scenes.



Visual effects (abbreviated VFX) is the process by which imagery is created or manipulated outside the context of a live action shot in film making.

Visual effects involve in the integration of live-action footage (special effects) and generated imagery (digital effects) to create environments which look realistic, but would be dangerous, expensive, impractical, time consuming or impossible to capture on film. Visual effects using computer-generated imagery (CGI) have recently become accessible to the independent filmmaker with the introduction of affordable and easy-to-use animation and compositing software. Animation Created for this project [12]

Mainly, I have focused on camera amination for my project. I have done the camera animation in two methods:

1. Create a camera type-two node camera preset using 28 mm
2. all layer must select in 3d
3. Using keyframe animation (by moving the camera manually)
4. Path animation

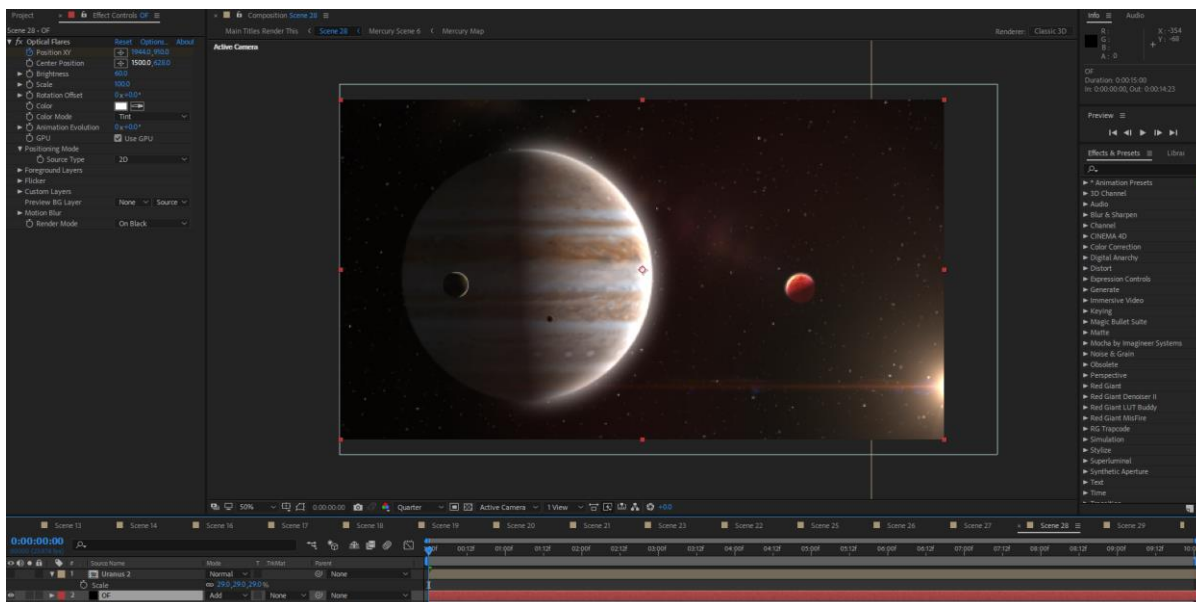


Figure-47: screen shot of the Jupiter scene

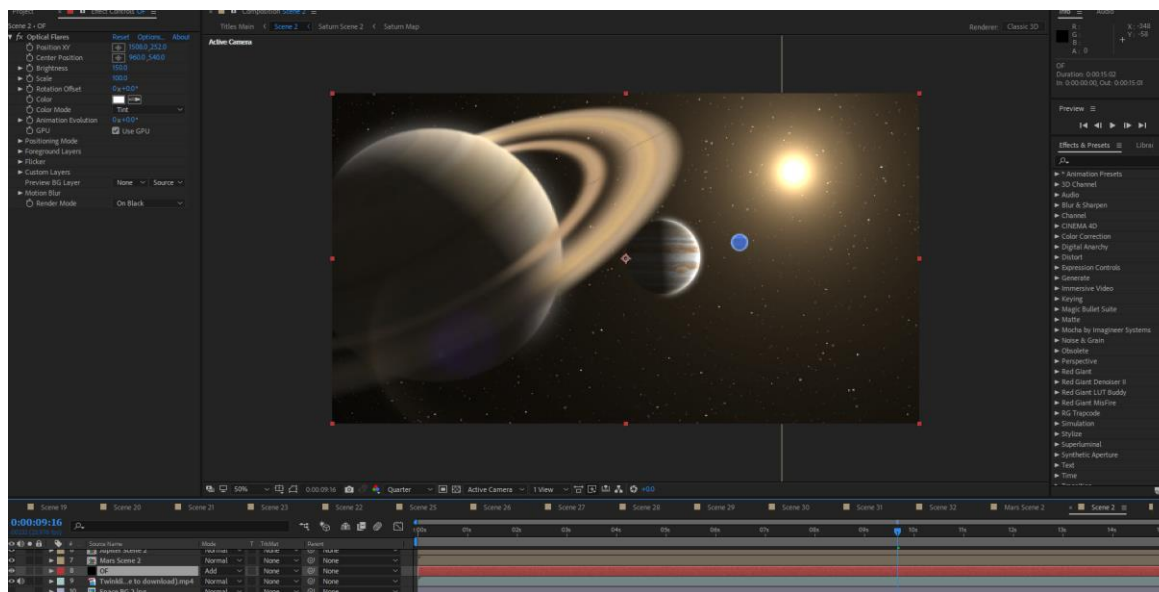


Figure-48: screen shot of the Saturn mars Neptune scene Animation



4.2 Rendering :

Rendering is the creation of a film frame of composition. Frame composing is a composite two-dimensional image creation of all layers, settings, and other information in the composition that forms the model for the image.

See Project settings for more information on project settings that determine how time is displayed in a project, how color data is treated in the project and the sampling rate used for audio.

Software Only: The CPU is used to give effect

Mercury GPU Acceleration: The GPU is used to give effect. On Mac, Mercury GPU Acceleration can use OpenCL or Metal. On Windows, rendering GPU effects uses either CUDA or OpenCL based on your selection.

in this project I first made my animation after effects when I finished video editing finished, I worked on adobe prime pro Main generating output at 1920 * 1080 pixels. Finally, I was given a batch to get the output.

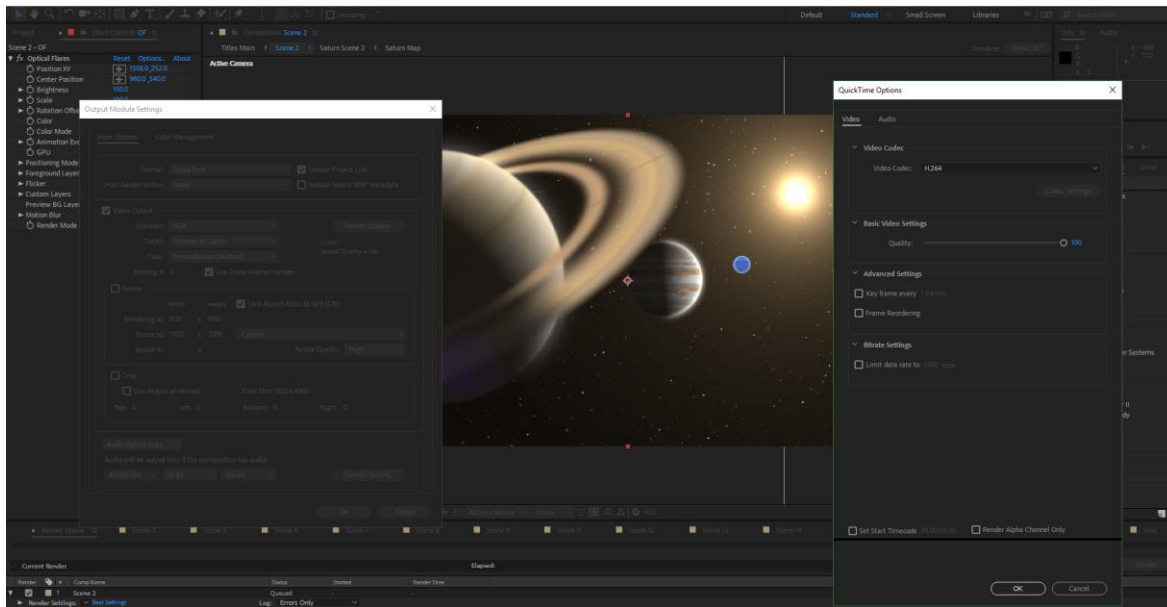


Figure-49: screen shot of the Rendering



Figure-50: Render image Universe



Figure-51: Render image Universe and galaxy



Figure-52: Render image Spiral Galaxy

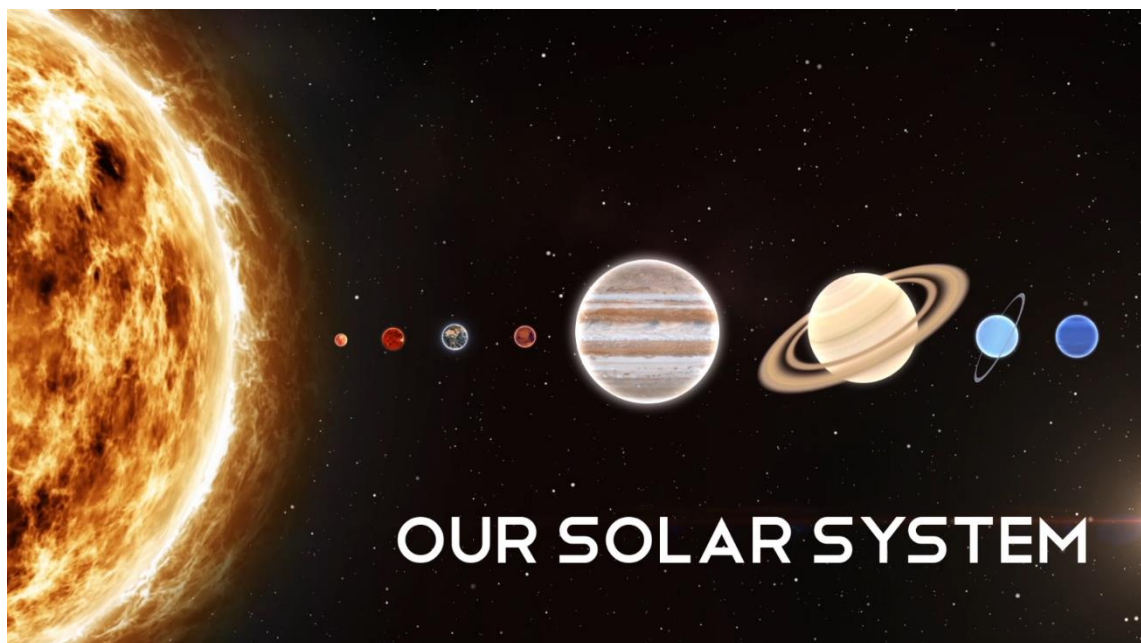


Figure-53: Render image Solar System



Figure-54: Render image astronaut land moon



Figure-55: Sun and planet scene

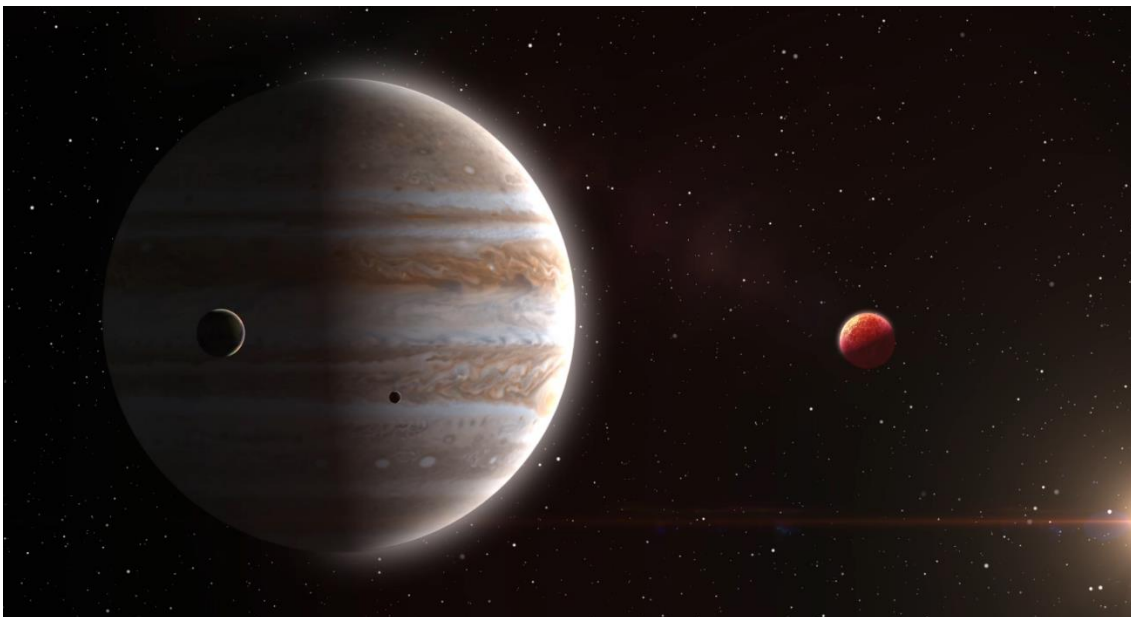


Figure-56: Jupiter planet



CHAPTER 5

5.1 Video composition

Video Composition Rules. ... An offshoot of those artistic rules, used in still photography and video, is called the rule of thirds. The rule of thirds states that you should mentally divide the frame (what you see in the viewfinder) into thirds, both vertically and horizontally.

I have mainly used Adobe Premiere Pro for Video Editing. Adobe Premiere Pro is a video editing program that is part of the Adobe Creative Cloud software collection, as well as Adobe Cc or Adobe Creative Suite. Premiere Pro is used to edit videos, including movies, and is quickly became the go-to program for filmmakers all over the world, both amateur and pro.

At first, I imported all the rendered mov files in Premiere Pro and add those in sequence in desired order. After that, I cut some unnecessary videos and changed length and speed of clips

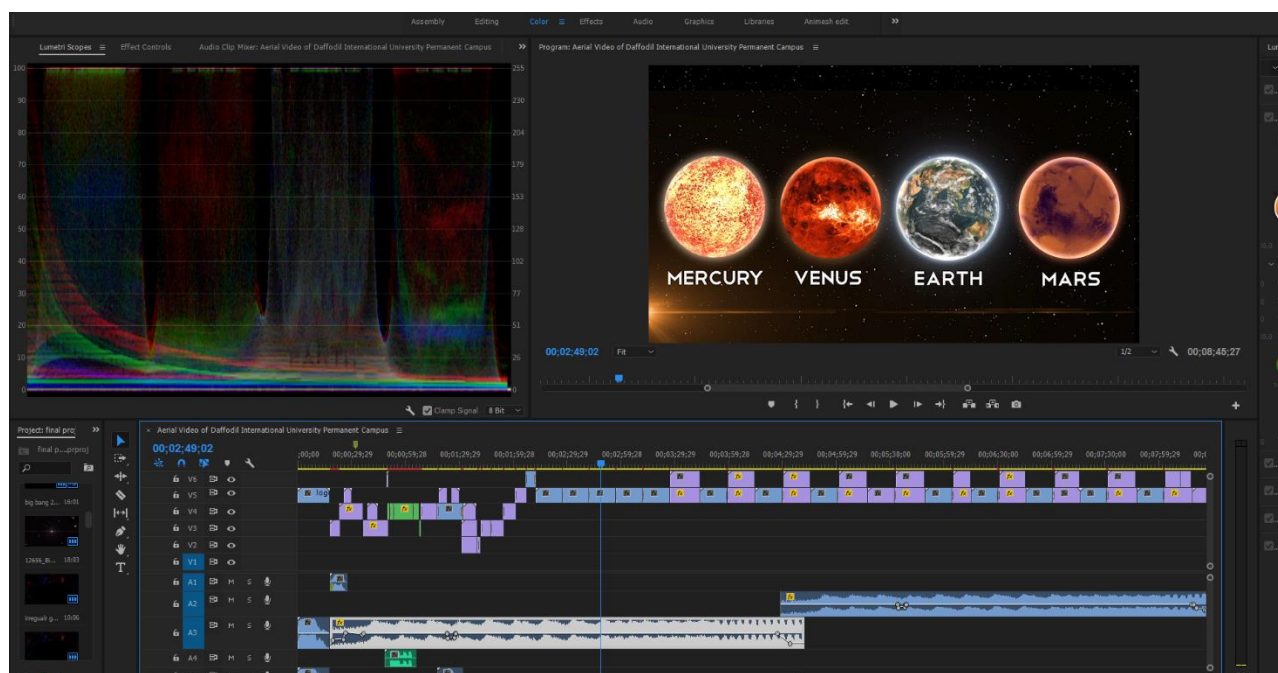


Figure-57: screen shot of video editing

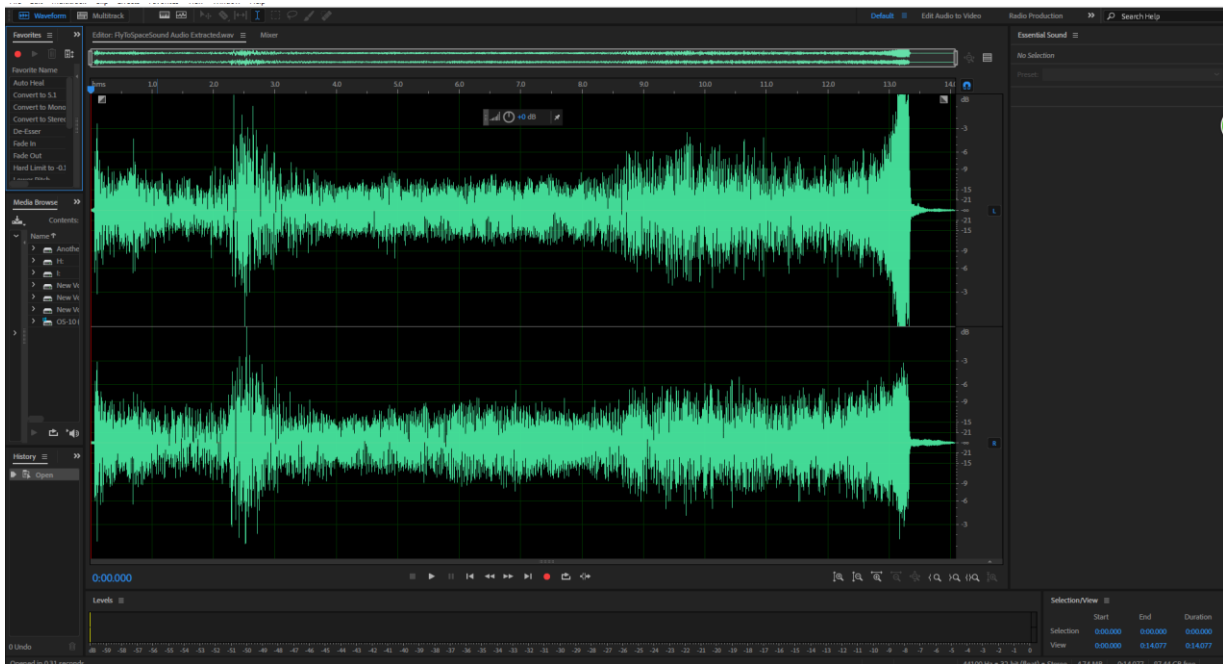


Figure-58: screen shot of Audio editing



CHAPTER 6

Introduction

6.1 Introduction

In this chapter I have made all 3d planets galaxy black hole etc. That I have done for visualization with reference to the real planets and galaxies .it includes a comparison of my created models.

6.2 Discussion

there are many planets are in our galaxies but I have chosen the major eight planets related our solar system in the universe my research project. my project name has also obtained a from which is " Our universe and solar system "

Being a Multimedia and Creative Technology student, I've decided to create 3D modeling of these eight planets galaxy create a descriptive video.

I have searched for many kinds of literature and videos on the internet. Although there are some videos on YouTube regarding these universe and solar system with low resolution but none of these included 3D models with a detailed description. Designing these complex models with all description knowledge about the structures and advanced level skills in 3D animation vfx software.

I've reviewed many kinds of literature, watched many videos and personally visited the sites to get the real pictures, footages, and planets before starting the actual animation work. The project also required good skills in video and audio editing. The final output may act as a benchmark for undergraduate level multimedia students. It may also help to provide knowledge to general people easy to know about our universe and our solar system.

Due to time and resource constraints, I could not include more dead planets like Pluto. During video editing, the important information regarding the universe and planets were successfully completed by my own voice over and text animation.



CHAPTER 7

7.1 Conclusion

We are human and mortal .once day we left this our home planet earth .fish are living in ocean ..they don't know about our earth they only know they have on ocean that's it .same way we are human we don't have lot of knowledge about our universe our solar system because they are far from our earth .we don't know how they look like actually and their works ..but they are amazing ..many powerful countries like China America Russia they are using powerful satellite spaceship to find our universe our galaxy our solar system how they look like.

but our children, young people they don't know about this universe how to come to the planets the sun moon and all other planets ..there are million galaxy in our universe they are countless.. so in this my project I tried to show how our universe created ..the big bang theory the black hole and the major planets with details description ..so people are easy to understand ..my planets are so realistic like the NASA video footage planets .. I try my best to make this project better .. created the planets they look 3d all I did in my after effect software lighting, texture, rendering all I done my after effect software this project I have chosen because I want to show people how our universe so amazing how it looks like this is my main purpose

there are many problems I face my computer many times crash my software but I don't give up again making the composition create the planets galaxies .. various problem was faced...in future I will improve my skill and make this type of project for VR ..that mean virtual reality I will make for this type of project in future ..



7.2 Reference

- [1] <https://en.wikipedia.org/wiki/Universe>
- [2] https://en.wikipedia.org/wiki/Solar_System
- [3] <https://solarsystem.nasa.gov/planets/overview/>
- [4] <https://space-facts.com/solar-system/>
- [5] <http://solarviews.com/eng/solarsys.htm>
- [6] <https://www.adobe.com/products/photoshop.html>
- [7] <https://www.adobe.com/products/aftereffects.html>
- [8] <https://www.redgiant.com/products/trapcode-particular/>
- [9] <https://www.adobe.com/products/premiere.html>
- [10] <https://www.adobe.com/products/audition.html>
- [11] <https://www.solarsystemscope.com/textures/>
- [12] <https://en.wikipedia.org/wiki/Animation>
- [13] <https://en.wikipedia.org/wiki/Lighting>