



FOSSEE Summer Fellowship 2020

On

Models , Motion Graphic Designs in Blender 2.82a

Submitted by

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Under the guidance of

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Acknowledgement

I would like to express my gratitude to **Prof . Kannan M.Moudgalya** whose vision of FOSSEE has enabled me to work on such a noble and creative endeavour, imparting the gift of comprehension to those that need it. I would like to thank my mentor **Mr. Khushalsingh K. Rajput, (FOCAL Lead and Sr. Software Engineering . FOSSEE , IIT Bombay)**. If not for his quick witted insight and mind-boggling creative suggestion , the animation would not have turned out to be as wonderful as they are now . He can understand the talent of students and give projects related to the student's talented topic . This may improve the quality of the project and gain a depth knowledge about the topics.

At last, we would like to take this opportunity to express our gratitude to the person who was instrumental for the conduction of this great programme. We show our greatest appreciation to **Prof . Kannan M.Moudgalya** for tremendous support throughout the internship.

We perceive this opportunity as a first milestone in our career development . We will strive to use gained skills and knowledge in the best possible way and we will continue to improve , in order attain desired career objectives . We also hope to continue cooperation with all of you in future.

With Regards,

S. RaviKumar

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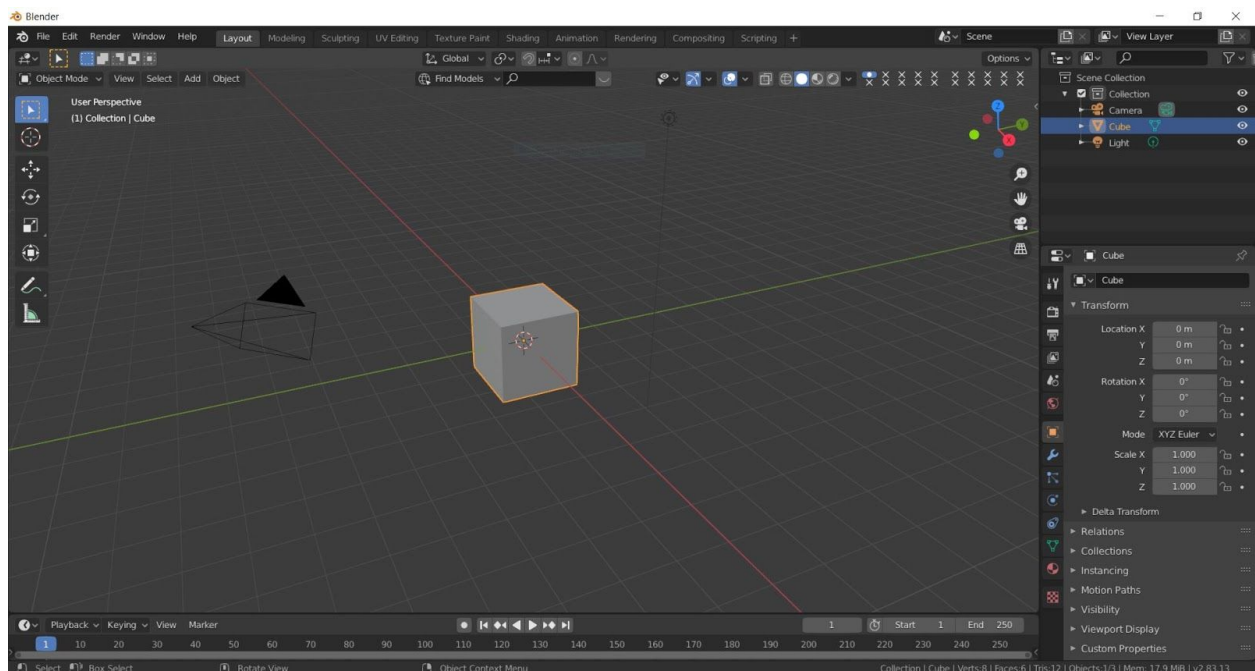
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1 Introduction

1.1 About Blender

Blender is a free and open-source 3D computer graphics software tools used for creating animated films, visual effects, art, 3D printed models, interactive 3D applications and video games. Blender's features include 3D modelling, UV unwrapping, texturing, raster graphics editing, rigging and skinning, fluid and smoke simulation, particle simulation, soft body simulation, sculpting, animating, match moving, rendering, motion graphics, video editing and compositing.

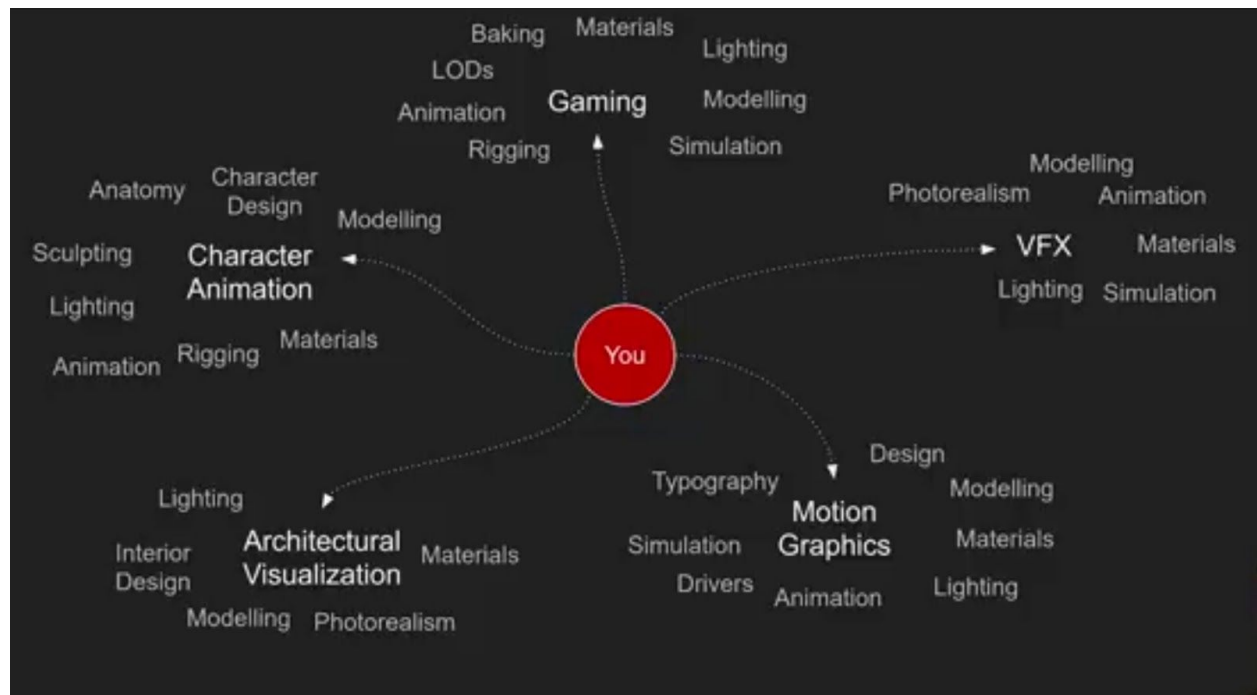
For this project using 2.82a and it had three render engines can work, one is blender Workbench , Cycles and EEVEE render engine. In this project , I had used Cycles and an EEVEE render engine.



1.2 Skill Required to 3D-Artist

Blender provides a lot of toolsets and it has different methods and concepts like modelling, Texturing, Lighting, Sculpting, Drivers, Simulation, Material Creation, Realism, Animation, Rigging etc. These combination of methods can make a complete domain 3D artist

Some of the domains are Motion Graphic, VFX, Architectural Visualization, Gaming and Character Animation etc



1.3 About Models and Motion Graphic Designs

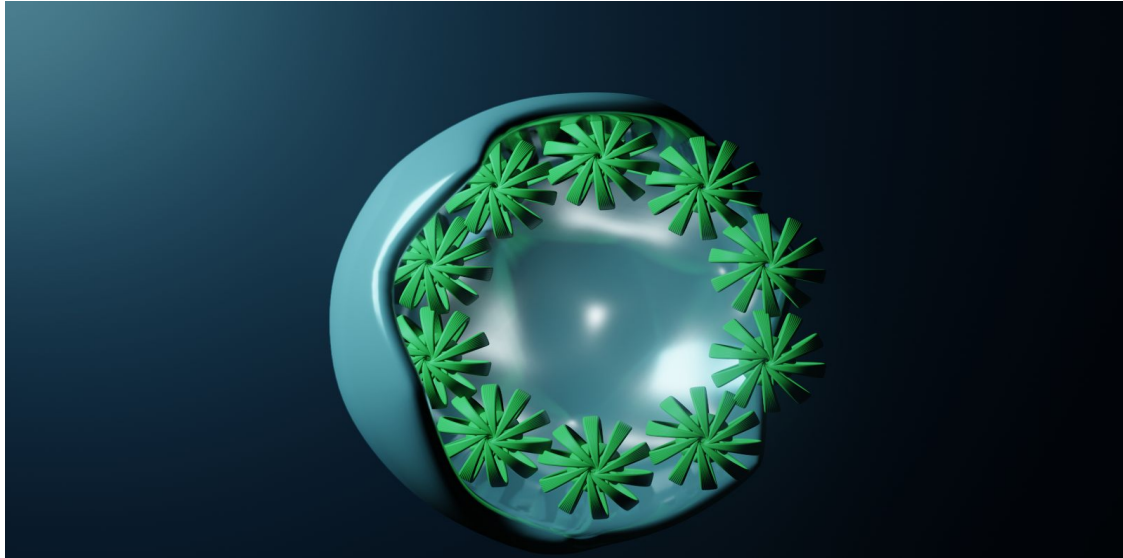
A 3D model is an mathematical representation of three dimensional 3D Models are used to portray real-world and conceptual visual of art, entertainment , drafting , simulation and are integral to many different industries Including virtual reality , video games , 3D printing , marketing , TV and motion picture , scientific and medical imaging and computer aided designs etc

I had created Interior , Exterior 3D models . these models are very useful to retailers, Printing shops and it can be used as assets in another project also.



Motion Graphic Design is the subset of graphic design in that the user uses graphic design principles in the film making and video production context through the animation and film techniques . Motion graphic design learns the traditional graphic design and he can add an additional element to the existing skill of the user.

I had created the Abstract and Looping design in a Motion Graphic . these motion graphic design can be used in add effecting in the film making and some the video editing etc



2. Work Flow

2.1 Studying About Topics

First step to making a video is to read and study about the topic on which you will be making a tutorial . so that you don't pass any wrong or incorrect information to the viewers.

I used wikipedia, youtube , instagram for inspiration ,khan academy to collect information about the topics and get the idea of what we want to show to viewers to help them understand the concepts.

2.2 Types Of Motion Graphic Designs

Motion graphics take a variety of forms. Some are entirely animated, others incorporate live action video or photography. The latter may include animated overlay such as data visualization , icons , illustration and explanatory text used to complement and enhance the audience.

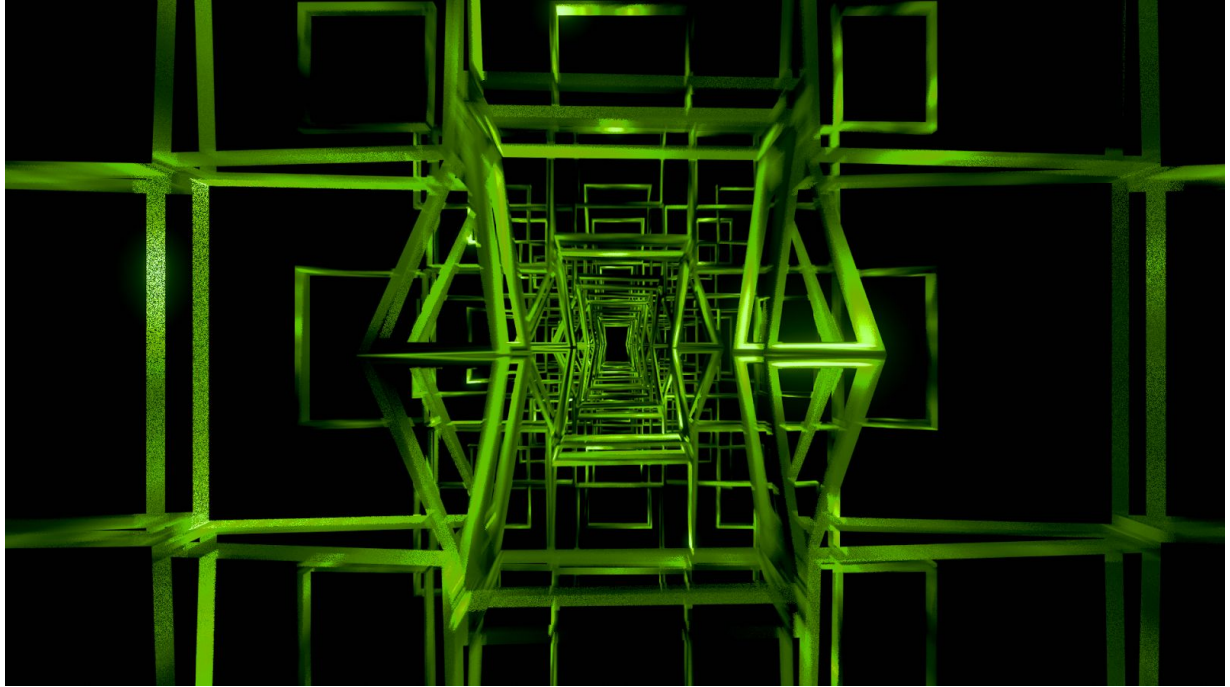
There are three primary types of motion graphics , which marketers choose to use depending on the goals they wish to achieve with the motion graphic .
Explainer motion graphics seek to elucidate the product , concept or process.
Emotive motion graphic , aim to inspire a emotional response in audience and finally
Promotional motion graphic art raises awareness about the product, service and process.

In the project, I had used the Abstract Motion Graphic and Looping Motion Graphic design . These designs are used to increase communication efforts via direction, art direction and animation.

2.2.1 Looping Motion Graphic Designs

Design that repeatedly comes like looping structure is called Looping Animation . the design can inspired by any type of art and its make used to violence , inspiring things etc

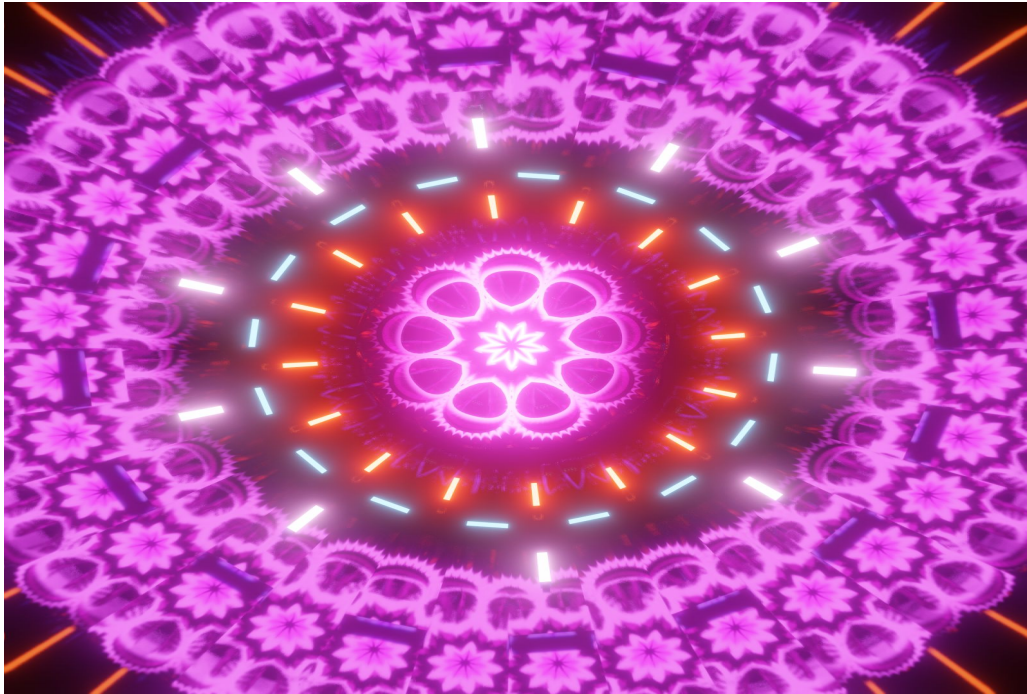
In this project , I had done VJ looping , Square motion looping and glowing torus looping



2.2.2 Abstract Motion Graphic Designs

An Abstract art uses visual language of shapes , forms , colors and the line to create composition which may exist with the degree of independence from visual reference from the world. This is an art of non- figurative art , non-objective art , non- representative art of closely related terms .

In this project , I had used a Flower abstract design , Ring abstract design and Pattern abstract design . Abstract design are used in Abstract design factory , comics etc



2.3 Models and Landscapes

A 3D model is an mathematical representation of three dimensional

3D Models are used to portray real-world and conceptual visual of art, entertainment , drafting , simulation and are integral to many different industries Including virtual reality , video games , 3D printing , marketing , TV and motion picture , scientific and medical imaging and computer aided designs etc

I had created Interior , Exterior 3D models . these models are very useful to retailers, Printing shops and it can be used as assets in another project also.

Landscapes are nothing but the realism that occurs in nature and it can be placed in a natural landscape . I had created the natural landscape using the procedural structure of a node tree and generated the albedo , uv , roughness using the basic assets and I had a textural of the mountain .

2.3.1 Interior Models

Interior models essentially spatial floor plan of an Apartment , Office, Hotel or any structure with any structure . In general , interior models are fabricant on the basis of interior design concept ,sketches and other cad files. A high-quality Interior models may feature appropriate space layout ,befitting color scheme, lighting , well- arranged furniture and a few things to mimic the file of the scene.

I had created the interior models like study room, living room .these Models are used assets in another project . It may be useful to create low poly projects too.



2.3.2 Exterior Models

Exterior models essentially an Apartment , Office, Hotel or any big structure . In general , Exterior models are big in size and rough on the basis of exterior design concept ,sketches and other cad files. A high-quality exterior models may feature appropriate space layout ,befitting color scheme, lighting , well- arranged buildinge and a few things to mimic the file of the scene.

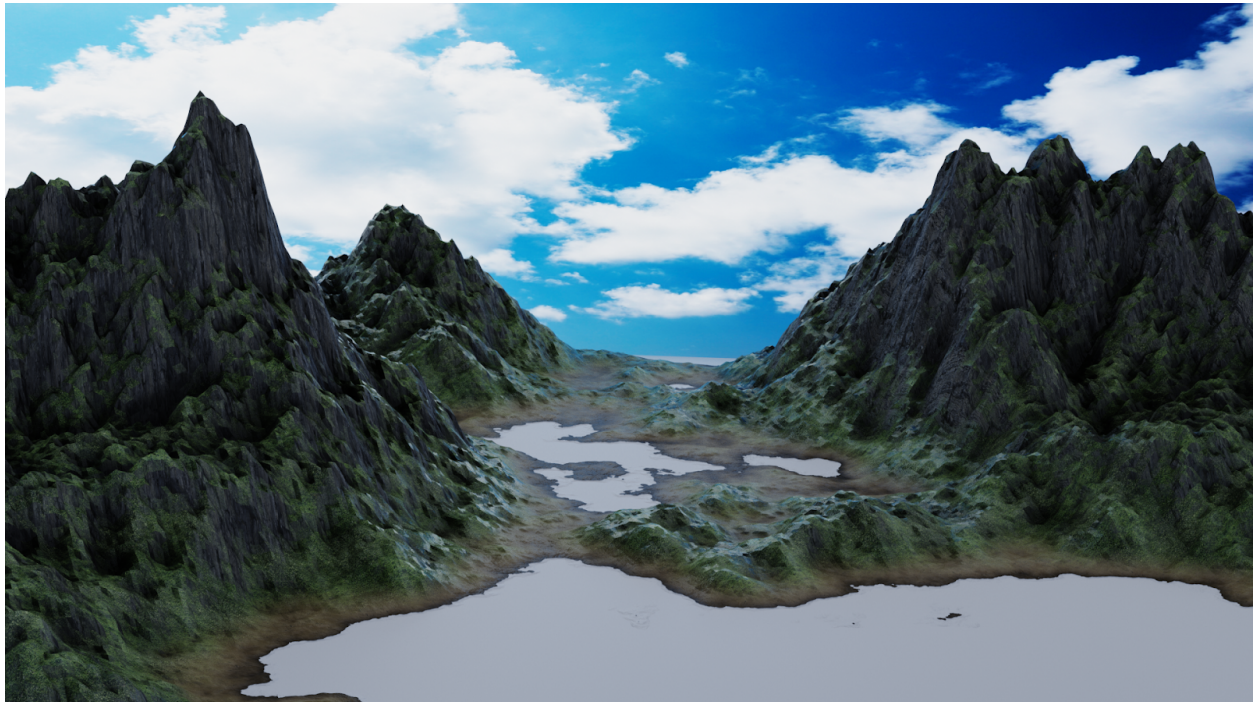
I had created the Exterior models like coffee shop, railway station .these Models are used assets in another project . It may be useful to create low poly projects too.



2.3.3 Natural Landscapes

Landscapes are nothing but the realism that occurs in nature and it can be placed in a natural landscape. Normally, landscapes are the places seen in real life and it may or may not be a realistic landscape. I had created the natural landscape using the procedural structure of a node tree and generated the albedo, uv, roughness using the basic assets and I had a textural of the mountain.

In this Project, I created the procedural mountain landscape. It used to add a landscape to another project and it gave full hdri lighting to the scene also.



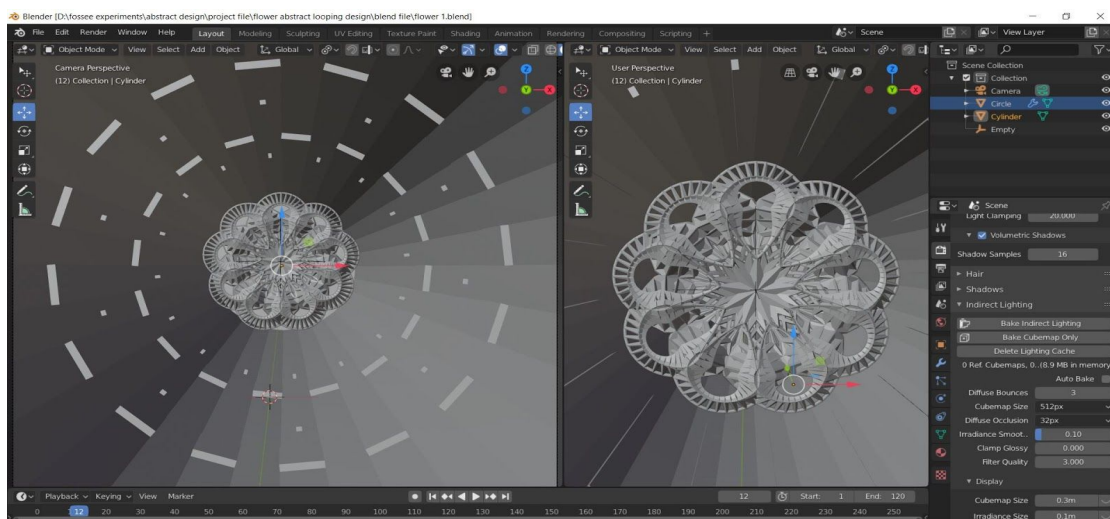
2.4 Animation and Creating Models

Animations are a set of pictures which are played in continuous motion to create an illusion of continuous motion.

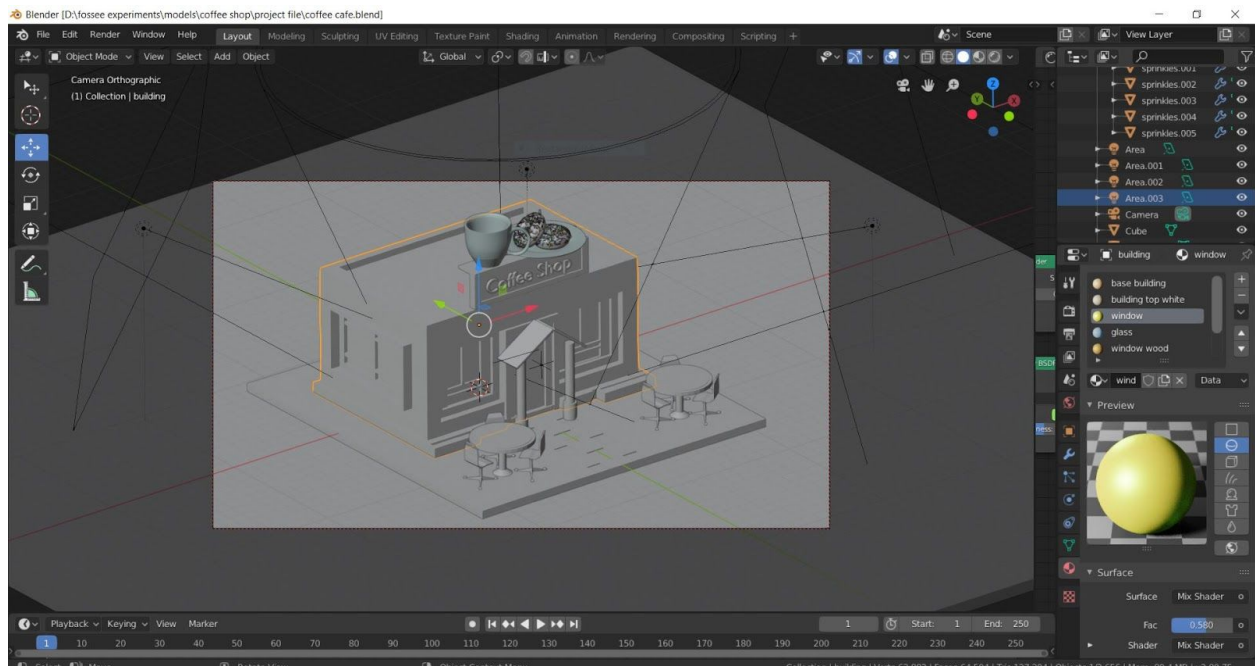
2.4.1 Modelling

Modeling is a technique in computer graphics for producing a 3D digital representation of any object or surface. An artist uses special software to manipulate points in virtual space(called vertices) to form a mesh: a collection of vertices that form an object. These 3D objects can be generated automatically or created manually by deforming the mesh, or otherwise manipulating vertices. These points are mapped into a 3D grid and joined together as polygonal shapes, usually triangles or quads. Each point or vertex has its own position on the grid and by combining these points into shapes, the surface of an object is created

Modelling a motion graphic design using a customization of polygon shape and with the help of modifiers like solidify, wave , mirror , subdivision surface etc. empty is used in modifiers with indication of motion on particular axis .

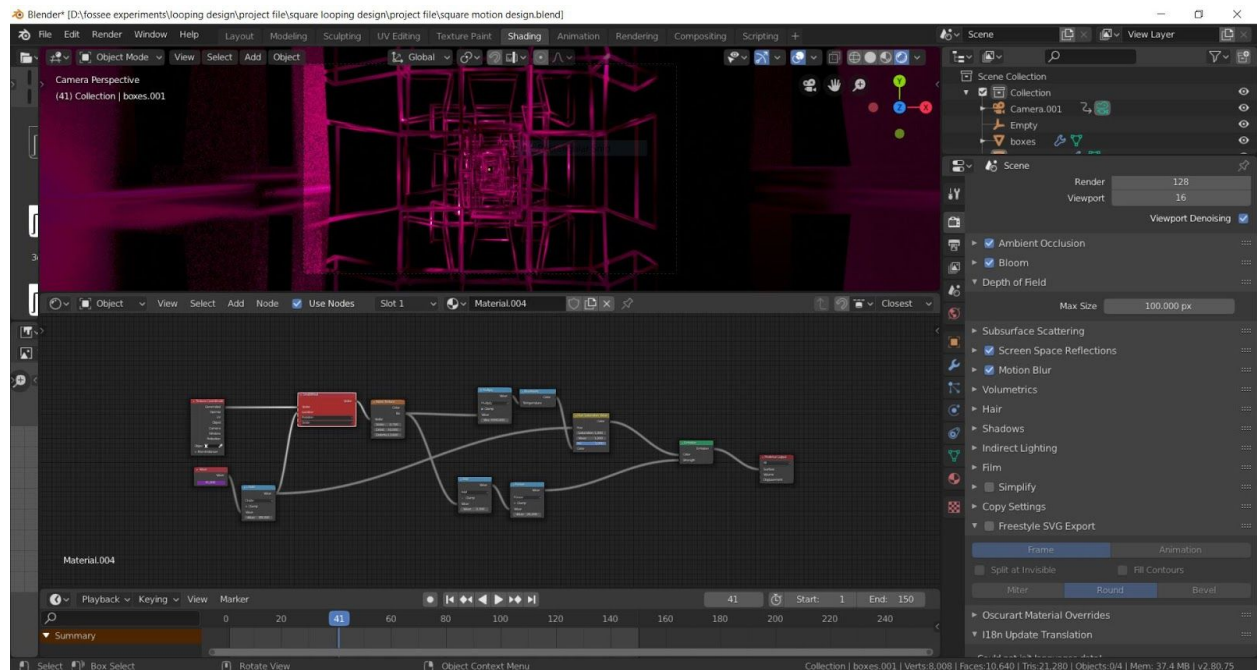


Modelling a 3D model using a customization of polygon shape and with the help of modifiers like solidify, wave , mirror , subdivision surface etc. we want to reference the image to modelling when customize the polygons. some model are used hard surface and soft surface modelling .this two types of modelling is used according to the model



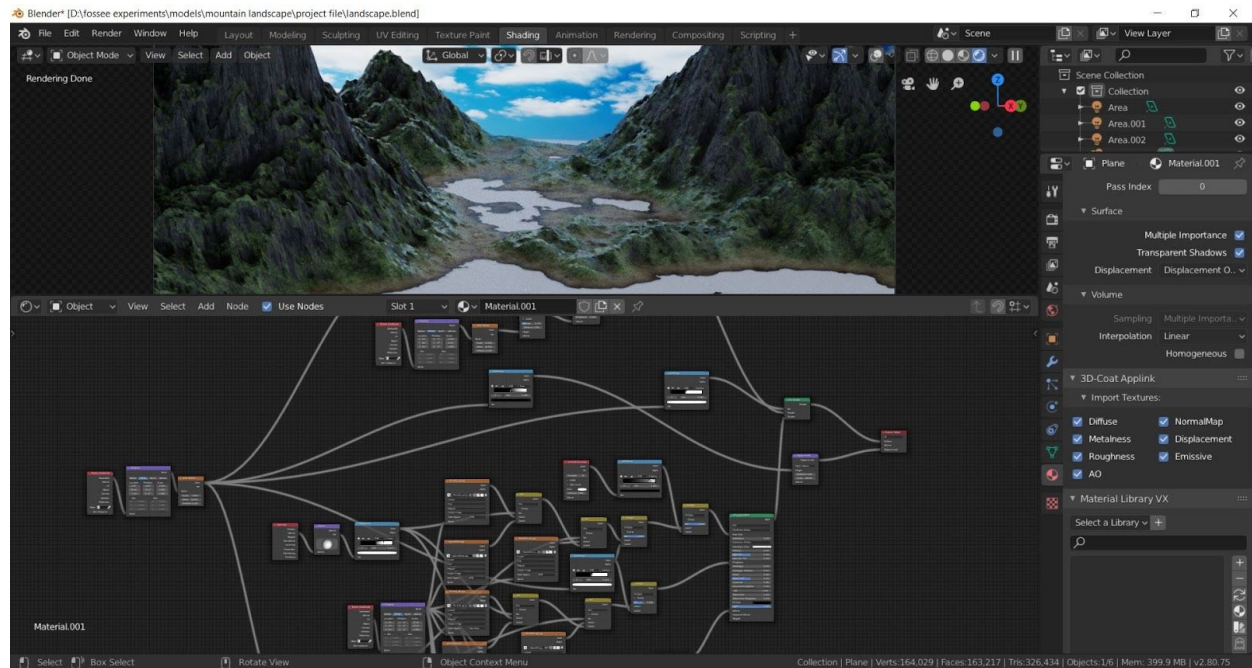
2.4.2 Texturing and Procedural Nodes

Once the 3D model is done, material is added to it. This step is pivotal in making sure the 3D models appear photorealistic. Blender's cycles and eevee render engine has been used and material nodes have been used extensively. Material helps to give color to the model and different reflection and diffuse properties to it .



Natural mountain Landscape is created in a procedural node tree and it is only created through a node . In mountain projects, modelling is not used because nodes have generated the natural landscape and I used these landscapes to textures . I had generated the albedo , normal , roughness of grass , sand and rock assets and I had used these maps in the mountain landscapes.

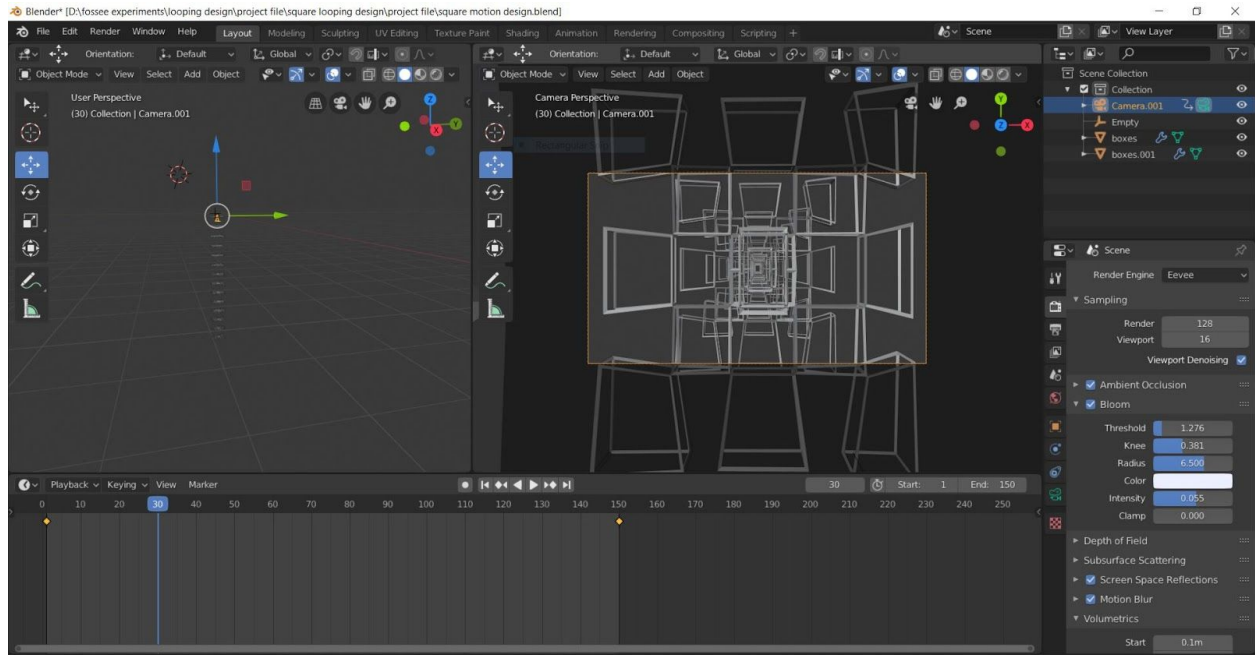
In this Project , I created the procedural mountain landscape . It used to add a landscape to another project and it gave full hdri lighting to the scene also.



2.4.3 Animation

Animation includes moving the objects and armature(bones) to different frames and adding keyframes to make it animate from one place to another. To make it move then using graphs and nodes to adjust the speed and distance of the animation.

Keyframe can be inserted into nodes, tabs in blender and used animation nodes. We can control animation in graphs in a dopesheet. In a dopesheet, There are multiple options to control with the circle path tracing. Some we control the object to tracing on a circle. Normally, we can't control the speed on the object. In that time, we want to use a graph editor to control speed.



2.4.4 Testing

Testing is the final part of confirming that the animation you have made is going the same way as you planned . Because sometimes you might get errors with frame speed or material . Before finally showing it to others that the video made is creating that VR effect which you want the viewer to experience.

2.4.5 Rendering

Rendering is the process involved in the generation of a two - dimensional or three-dimensional image from a model by means of application programs. Rendering is mostly used in architectural designs, video games, and animated movies, simulators, TV special effects and design visualization.

This is the part which takes the most time to complete as now you will be rendering all the frames as images and then make the video by playing the images at a certain speed, normally called as fps.

When you are creating a big project it can't render in laptops or computers which have less graphic card . In that case , we can use the render farm provided by the blender community . It may render quickly and it saves a lot of time to the user.

3. Issue Faced and the Solutions

The Major issue was creating different types of design . In that design are not similar . I didn't get the correct reference to work in the motion graphic design. So I learned to play with modelling techniques . It gives a lot of new designs. Then I don't know how to create the correct material for the design. Blender add on shader kit pro . I learn the node tree from the add on . This is used to improve my node tree knowledge and at the same time the issue was cleared.

4. References

To Study

- Wikipedia - Concept Study
- Youtube - Concept Study
- Blender 2.82a Documentation

Reference Link

1. [Flower Abstract](#)
2. [Abstract Pattern](#)
3. [Ring Abstract Design](#)
4. [Square Looping Design](#)
5. [VJ Looping](#)
6. [Glowing Torus Design](#)
7. [Fluid Simulation](#)
8. [Rigid Body Simulation](#)
9. [Multi Color Text](#)
10. [Breaking Text](#)
11. [Coffee Shop](#)
12. [Earth Sci-Fi](#)
13. [Railway Station](#)
14. [Living Room](#)
15. [Study Room](#)
16. [Watch](#)
17. [Mountain Landscape](#)