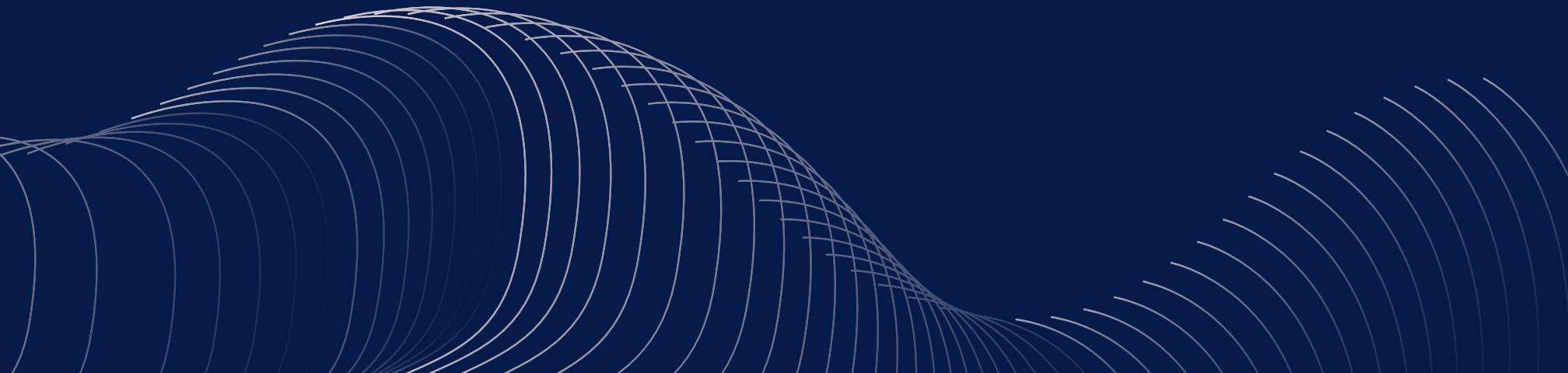




DESCON SOCIETY



CREATING 3D VIRTUAL REALITY WORLD USING BLENDER



AGENDA

- Introduction
- Project Mission and Vision
- Tools and Software
- Approach
- 3D Modeling
- Animation
- Simulation
- Rendering
- Geometry Nodes



INTRODUCTION

This presentation covers our summer project of creating 3D virtual reality models using Blender. The project has been an exciting journey where mentees are divided into teams, each tasked with developing a unique 3D VR model. Within each team, members individually design and construct their 3D models, which are then submitted on a weekly basis for review . This collaborative and iterative approach has enabled us to learn and apply fundamental 3D modeling principles while working towards creating immersive virtual reality experiences. Through this presentation, we will walk you through the progress we've made so far and the skills we've acquired .

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Mission & Vision

1.The way people learn, interact, and create together. This virtual environment will be an immersive, accessible, and dynamic space where creativity is nurtured.

2.To cultivate a comprehensive learning experience in Blender, empowering users to master the art of 3D creation.

3. To create an interactive, and visually stunning 3D virtual world using Blender, leveraging advanced modeling, texturing, lighting, and animation techniques to provide users with a rich and engaging experience.

4. This environment will combine realistic and stylized elements to engage users.

BLENDER

A powerful, free, and open-source 3D creation suite transforming industries with its versatility and capabilities in modeling, animation, visualization, and more .

Architects and interior designers use Blender for architectural visualization, allowing them to produce photorealistic images and walkthroughs of their designs. Additionally, Blender's capabilities extend to the fields of virtual reality (VR) and augmented reality (AR), where it is used to create immersive and interactive 3D environments.



Navigation and Interaction Basics

3D Viewport Navigation:-

- Align View: Numpad keys (e.g., Numpad 1 for front view, Numpad 3 for right view, Numpad 7 for top view).

Selection Tools:-

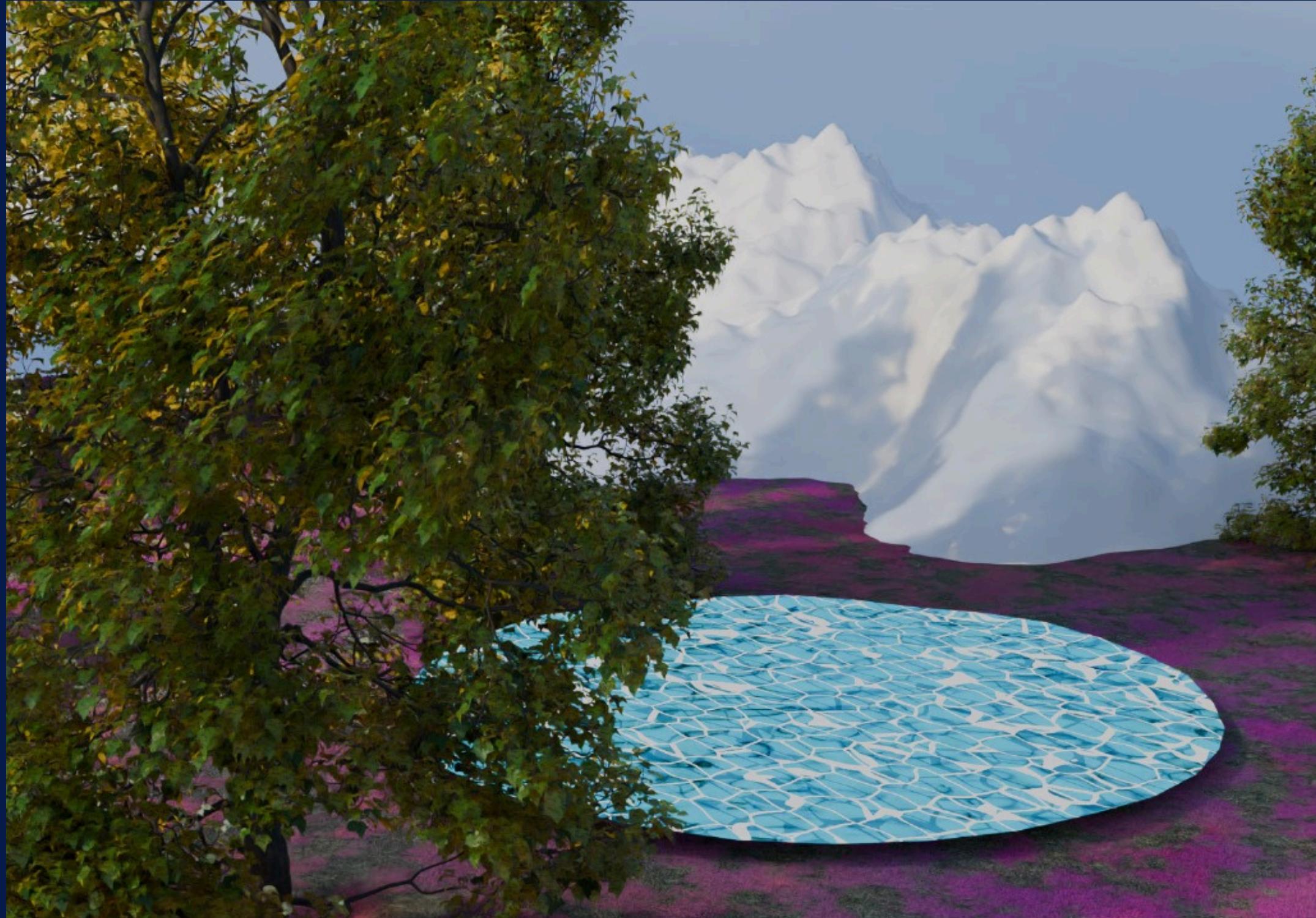
- Select Objects: Left-click on objects.
- Box Select: Press B and drag to select multiple objects.
- Circle Select: Press C and click/drag to select multiple objects.

Transformation Tools:-

- Move: Press G, then move the mouse or click to confirm.
- Rotate: Press R, then move the mouse or click to confirm.
- Scale: Press S, then move the mouse or click to confirm.



Installing BlenderKit and Importing elements



Installing BlenderKit and Importing elements

01

INSTALL BLENDERKIT

Navigate to the BlenderKit add-on .zip file you downloaded and select it. After selecting the .zip file, click on Install Add-on.

02

ENABLE BLENDERKIT

Once installed, search for BlenderKit in the add-ons search bar. Check the box next to the BlenderKit add-on to enable it.

03

ACCESS BLENDERKIT LIBRARY

With the add-on enabled, you'll see a new BlenderKit panel on the right side of your 3D Viewport. If it's not visible, press 'N' to open the sidebar and navigate to the BlenderKit tab.

04

BROWSE ASSETS

The BlenderKit panel allows you to browse various assets like models, materials, and brushes. You can filter your search using keywords or categories.

05

SEARCH FOR ASSETS

Use the search bar to find specific assets. For example, type "chair" to find different chair models available in the library.

06

DOWNLOAD AND USE ASSETS

Click on an asset to see more details. To download and add it to your scene, simply click the

ADDING CAR TO THE PATH AND ADDING KEYFRAMES





ADDING CAR TO THE PATH AND ADDING KEYFRAMES

- 
- 
- O1** **ATTACH TO THE PATH**
position the car along desired path
 - O2** **APPLY BONE CONSTRAINT**
Add a "Follow Path" constraint to the car's root.
 - O3** **ADJUST SETTINGS**
Customize the constraint options, such as "Offset" and "Rotation".
 - O1** **IDENTIFY KEY POSES**
Determine critical animation moments requiring precise control.
 - O2** **SET KEY FRAMES**
Capture car's position, rotation, and scale at key poses.
 - O3** **REFINE ANIMATION**
Adjust timing and interpolation for smooth, natural movement.
 - O4** **REVIEW AND ITERATE**
Refine key frames until desired effect is achieved.

ADDING CHARACTER TO THE PATH AND ADDING KEYFRAMES

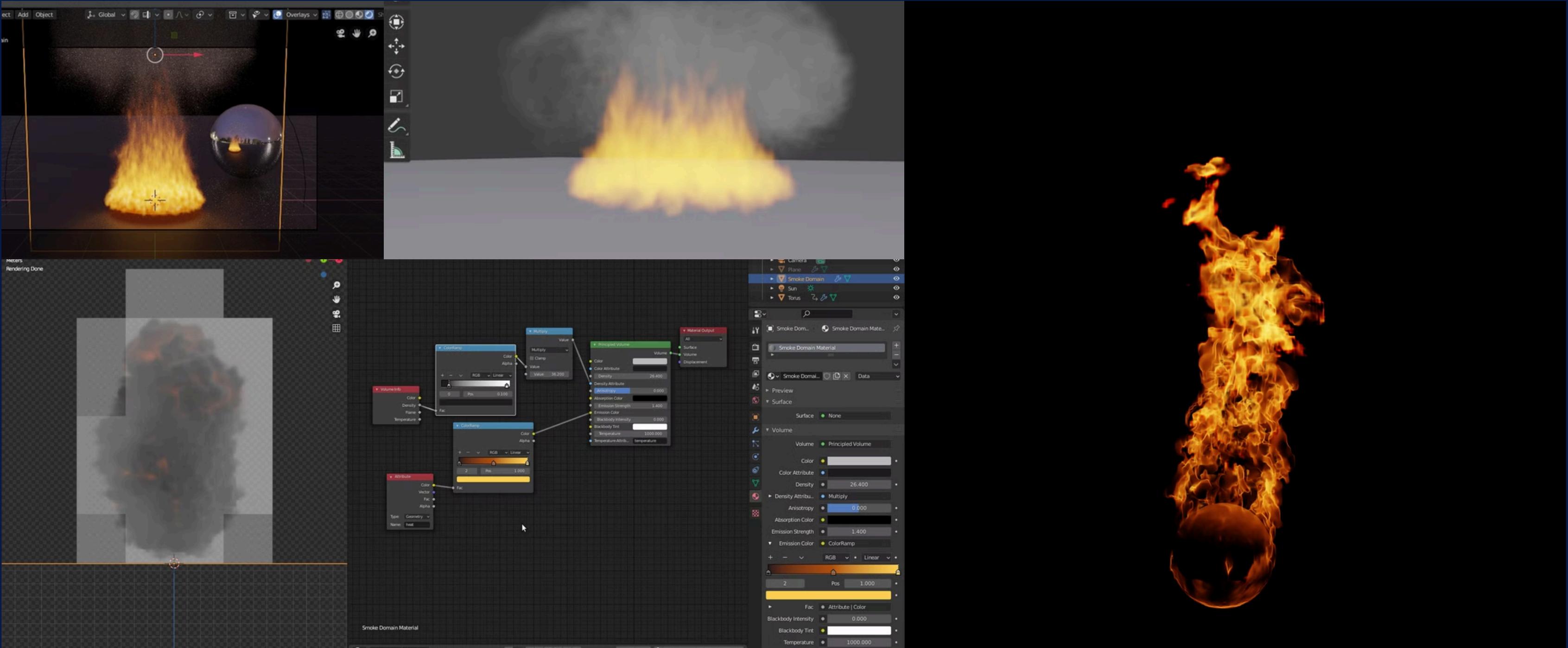


ADDING CHARACTER TO THE PATH AND ADDING KEYFRAMES

- ◆ O1 **IMPORTING CHARACTER**
from mixamo into blender
- ◆ O2 **APPLY CONSTRAINTS**
Add a "Follow Path" constraint to the character's root.
- ◆ O3 **MAKING PARENT AND FIXING CAMERA**
Using empty to parent the character and also fixing the camera to empty to get complete view during render
- ◆ O4 **ADJUST SETTINGS**
Customize the constraint options, such as "Offset" and "Rotation" to create animation.
- ◆ O5 **ACTION FILE AND LOOP**
Creating action file and using loop to create smooth movements for the character.

- ◆ O1 **IDENTIFY KEY POSES**
Determine critical animation moments requiring precise control.
- ◆ O2 **SET KEY FRAMES**
Capture character's position, rotation, and scale at key poses.
- ◆ O3 **REVIEW AND ITERATE**
Refine key frames until desired effect is achieved.

SETTING UP AND RENDERING A FIRE SIMULATION IN BLENDER



SETTING UP AND RENDERING A FIRE SIMULATION IN BLENDER

01

OPEN AND ENABLE ADDONS

Go to Edit > Preferences > Addons and search for "Quick Smoke" in the search bar and mark checkbox.

02

ADD SMOKE DOMAIN

In the 3D Viewport, select the "Add" menu and choose "Fluid" > "Smoke Domain"

03

APPLY QUICK SMOKE

Select the Smoke Domain and navigate to the "Quick Smoke" panel in the Properties Editor. Choose "Quick Smoke" from the dropdown menu and click "Add Fire."

04

CONFIGURING FIRE SIMULATION SETTINGS

Control various aspects of the fire, including its intensity, shape, and behavior.

05

ADJUSTING SMOKE DOMAIN PROPERTIES

Control the overall shape, size, and behavior of the smoke.

01

RENDER SETTINGS

Choose the desired output format, such as PNG or AVI, and set the resolution

02

RENDER ENGINE

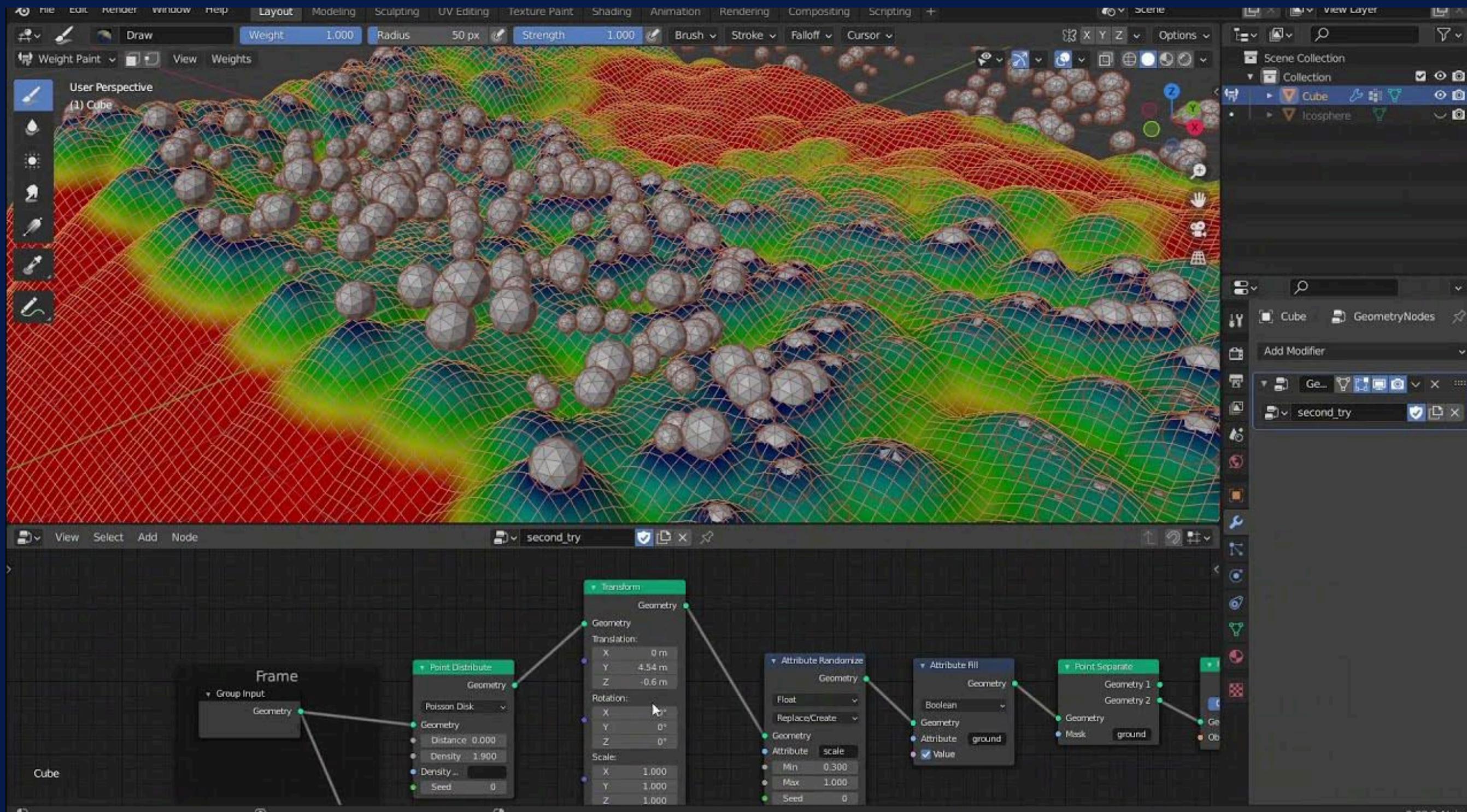
Select the appropriate render engine, such as Cycles or Eevee

03

RENDERING PROCESS

Initiate the rendering process by clicking the "Render" button in the Render Viewport. This will start the simulation and create the final fire output.

ADDING GEOMETRY NODES



ADDING GEOMETRY NODES

01

Switch to Geometry Nodes

Navigate to the "Geometry Nodes" workspace from the Workspace selector.

02

Open Node Editor

Select the object you want to modify and click the "Geometry Nodes" icon in the properties panel.

03

Nodes

Each node represents a specific operation or function, taking inputs and producing outputs.

04

MAKE CONNECTIONS

Connect outputs from one node to inputs of another, forming a data flow through the network.

05

Utilizing Attributes in Geometric Nodes

Store and access data for each point, edge, or face in the geometry, allowing for data-driven design-color, size, position attributes.

06

Modifying Geometry with Node

Modify by Reshaping, Smoothing, Deforming

THANK YOU!!