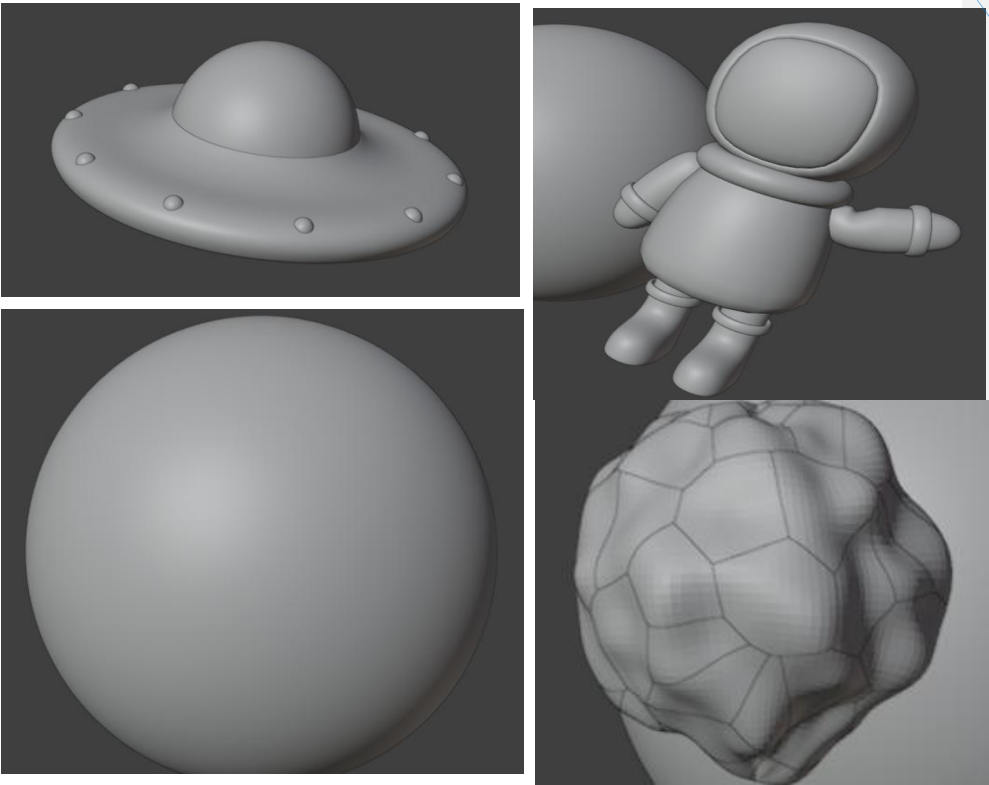


Modelling

Subdivision surface modifier	
Used where	This modifier is used on the ufo, all 4 planets, the astronaut and the asteroids.
Purpose	To increase the divisions in the object so I could get better shapes for the models I created and prepare them for smoothing
Part of labs?	yes
Related module content	Deformation and modelling
Advantages	Simple shapes can be divided enough to more realistic
Disadvantages	Increases the poly count so the animation takes longer to render
Alternatives	Using normal or displacement maps

- Commented [UB1]: What part of you work is this technique used for. Include? image of object.
- Commented [UB2]: What is the goal of using this technique?
- Commented [UB3]: What content that was discussed in class is this technique related to?
- Commented [UB4]: List advantages of using this technique
- Commented [UB5]: List disadvantages of using this technique
- Commented [UB6]: How else could the same goal have been achieved?



Displace modifier	
Used where	for the asteroids
Purpose	To create the texture and shape of the asteroids
Part of labs?	yes
Related module content	Procedural textures
Advantages	Easily creates complex textures and shapes without manual modelling.
Disadvantages	Can produce sharp or unnatural results if parameters are not adjusted properly.
Alternatives	Sculpting manually.

Commented [UB7]: Add as many tables as needed

Smooth shading	
Used where	On the ufo to the path
Purpose	To guide the ufo along the path
Part of labs?	yes
Related module content	Deformation and surface shading
Advantages	Makes it easy to key frame the location and rotation of the ufo as it follows a predefined path
Disadvantages	Can cause shading issues if normals are incorrect.
Alternatives	Flat shading.

Mirror modifier	
Used where	Used on the astronaut
Purpose	To mirror the limbs of the astronaut to create the second arm and leg
Part of labs?	no
Related module content	kinematics
Advantages	Prevents me from having to model and position each limb individually
Disadvantages	If not separated properly the behaviour of the mirrored object will be strange.
Alternatives	Copy and pasting the second limb and positioning it carefully

Commented [UB8]: Add as many tables as needed

Solidify modifier	
Used where	Helmet, rings and mask of the astronaut
Purpose	To thicken the two components
Part of labs?	deformation
Related module content	Lecture 6 and 2
Advantages	Adds thickness quickly and consistently.
Disadvantages	Can create internal geometry issues if thickness is excessive.
Alternatives	Manually extruding geometry.

Commented [UB9]: Add as many tables as needed

<b>Extrusion</b>	
Used where	Astronaut
Purpose	To create feet for the astronaut
Part of labs?	yes
Related module content	Deformation and vertex manipulation
Advantages	Easy way to create shapes
Disadvantages	Requires precision
Alternatives	Creating new shapes

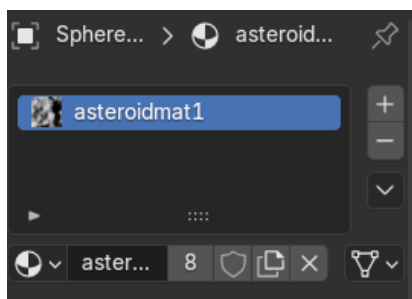
Commented [UB10]: Add as many tables as needed

<b>Parenting</b>	
Used where	Used to parent each object and its components to an empty
Purpose	To make it easy to move around each object
Part of labs?	yes
Related module content	kinematics
Advantages	Makes it easy to move the objects around without deforming them
Disadvantages	The hierarchy can become complicated to keep track of
Alternatives	Joining objects together

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<b>Materials</b>	
Used where	On the planets, ufo, asteroids and astronaut
Purpose	To add distinct colours and materials to the surfaces
Part of labs?	yes
Related module content	Surface properties
Advantages	Adds realism to the objects
Disadvantages	Extends rendering time
Alternatives	Using textures

Commented [UB12]: Add as many tables as needed



Loop cuts	
Used where	On the ufo and astronaut
Purpose	To form a ring of light on a portion of the ufo and to properly shape the astronaut
Part of labs?	yes
Related module content	deformation
Advantages	Allows for more precision in details
Disadvantages	Increases the poly count quickly
Alternatives	Displacement textures

Commented [UB13]: Add as many tables as needed

Rigging	
Used where	On the astronaut
Purpose	To allow me to move around the limbs of the astronaut
Part of labs?	yes
Related module content	Skeleton structures and kinematics
Advantages	Easy posing and assigning of joints
Disadvantages	Can be difficult to set up in more complex models
Alternatives	Shape keys for simple animations

Commented [UB14]: Add as many tables as needed

Sculpting techniques	
Used where	In the ufo and astronaut
Purpose	To create distinct shapes for my models
Part of labs?	yes
Related module content	deformation
Advantages	Precise creation of models
Disadvantages	Can become difficult to blend with other models
Alternatives	Combining objects together

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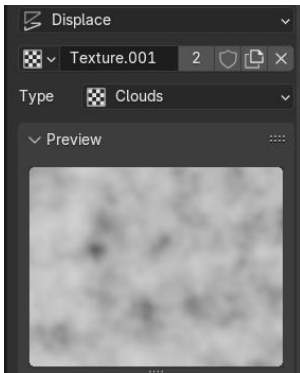
Geometry nodes	
Used where	For the stars and planets
Purpose	To produce procedural planets and stars
Part of labs?	yes
Related module content	Procedural textures
Advantages	Allows for a realistic and consistent way of designing planets and stars without creating 100s of them to simulate space
Disadvantages	Can be demanding on the computer
Alternatives	Manually modelling each instance

Commented [UB16]: Add as many tables as needed



Textures	
Used where	planets
Purpose	To add a realistic look to the planets
Part of labs?	yes
Related module content	Texture mapping
Advantages	Enhances realism significantly without increasing geometry complexity.
Disadvantages	Can increase render time.
Alternatives	Use procedural shading.

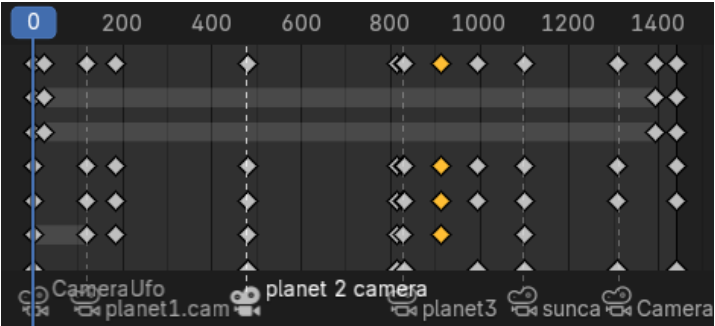
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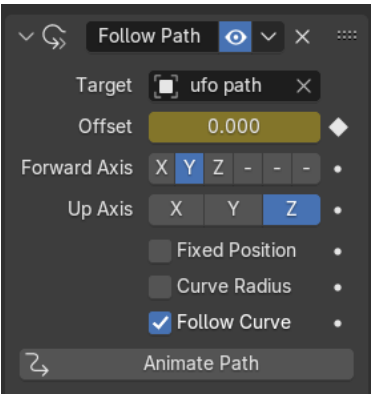
## Animation

Key framing	
Used where	Used to animate the position and rotation of the ufo along the path, the position and pose of the astronaut, the rotation and positions of the asteroids
Purpose	To animate the different objects of the animation
Part of labs?	yes
Related module content	Keyframing and interpolation
Advantages	Simplifies animating
Disadvantages	Can get hard to manage and distinguish between many key frames

Alternatives	Procedural animations
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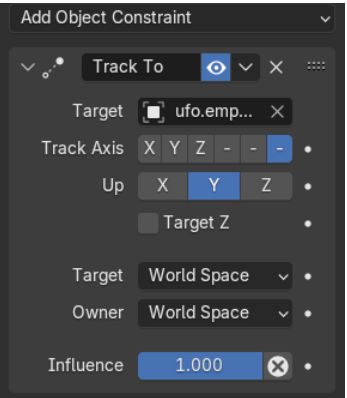


Follow path Constraint	
Used where	On the ufo to the path
Purpose	To guide the ufo along the path
Part of labs?	no
Related module content	Orientation and shape interpolation
Advantages	Makes it easy to key frame the location and rotation of the ufo as it follows a predefined path
Disadvantages	Rotation of object will have to be manually changed as the path can rotate unintentionally
Alternatives	Manual movement of the objects

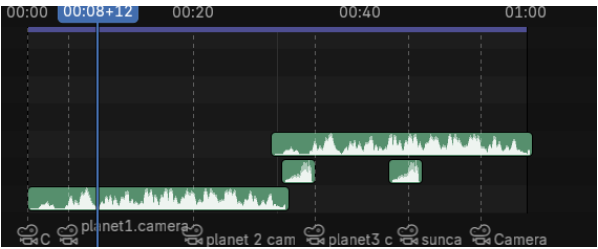


Track to Constraints	
Used where	On the lights for the empty of the planets

Purpose	To make the lights track to the empty and the empty track to the lights so the light rotated around the planet
Part of labs?	yes
Related module content	Orientation and shape interpolation
Advantages	Makes it easy to position the light source for the planet
Disadvantages	Positioning may become difficult
Alternatives	Moving the objects independently

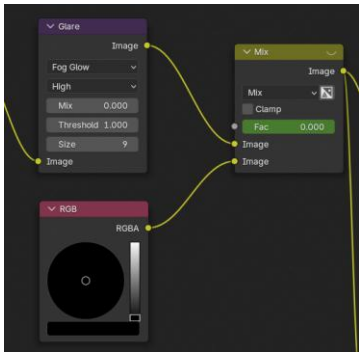
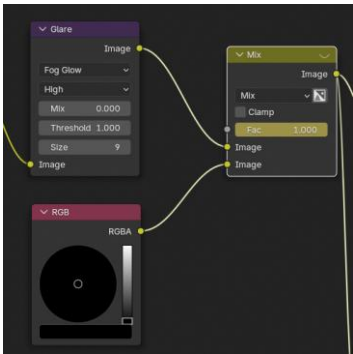


Noise animation	
Used where	Throughout the animation
Purpose	To replicate the sound given off in space by the sun, the sound of the ufo going past the camera and the sound of the asteroids crashing
Part of labs?	no
Related module content	Additional animation effects
Advantages	Adds realism to the animation and enhances the visuals
Disadvantages	Sound can be lost during the render (happened so I had to go with an alternative)
Alternatives	Adding in the sound post render

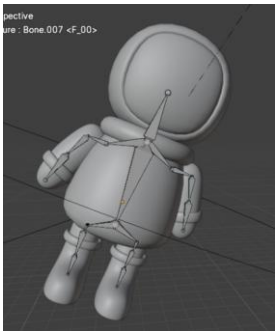


Dark blend in and out	
Used where	At the beginning and end of the animation

Purpose	To transition in and out of the animation to and from black
Part of labs?	no
Related module content	Visual transistions
Advantages	Helps ease into the animation and ease of at the end
Disadvantages	Requires extra frames of animation to account for the time needed for the transition or frames will be hidden if replaced with the fade frames.
Alternatives	Key framing the brightness levels of the light sources

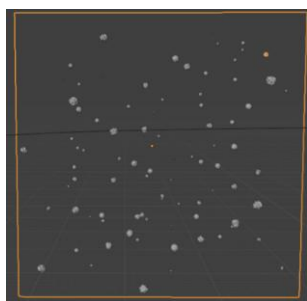


<b>Rigging</b>	
Used where	In the astronaut
Purpose	To create the waving animation for the astronaut
Part of labs?	yes
Related module content	kinematics
Advantages	Can easily create movement in object and pose them correctly
Disadvantages	Can deform the model if the shapes are too simple or if the parts of the model are separated and parented together
Alternatives	Keyframing individual sections of a model

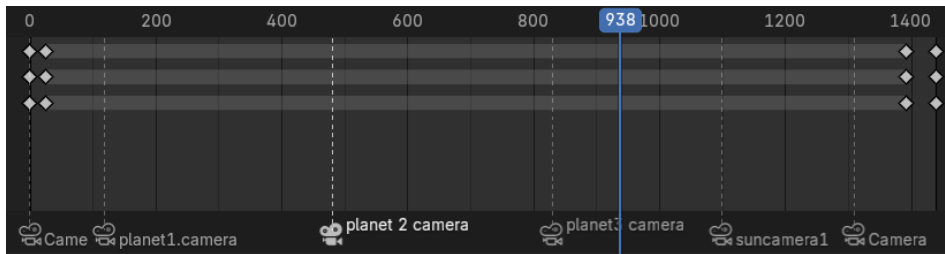




Particle	
Used where	In asteroid field
Purpose	To create the asteroid field within the area of a cube
Part of labs?	yes
Related module content	Particle systems
Advantages	Can easily create many asteroids to form an asteroid field that are spaced out well
Disadvantages	Can increase render time
Alternatives	Manual placement of objects



Camera changes	
Used where	Used throughout animation on the planets and the ufo
Purpose	To animate the spinning effect of the ufo and to show the path of the ufo across the planets
Part of labs?	no
Related module content	Display pipeline
Advantages	Allows for easy animation of the ufo spinning without changing the rotation and to show the journey of the
Disadvantages	More objects need to be parented together so the camera follows the ufo as intended. Many cameras are needed and have to be positioned correctly
Alternatives	Changing the rotation of the ufo and creating keyframes. For the path of the ufo I could have moved 1 camera around the path.



### 3<sup>rd</sup> party Assets used in the coursework

Note: You are **not allowed** to import any animation, models, or model parts from external sources.

3rd party resources that explicitly permitted are:

- Music and sound effects
- Textures
- Reference images
- [https://youtu.be/nKggj3CTXO0?si=NY\\_XB4osAs\\_FXla1](https://youtu.be/nKggj3CTXO0?si=NY_XB4osAs_FXla1)
- [https://youtu.be/v-066afkdus?si=lf1FSXlrIV\\_5swBA](https://youtu.be/v-066afkdus?si=lf1FSXlrIV_5swBA)
- <https://youtu.be/Zvw8SRBrGls?si=IloS1oDb2Ne2gA3H>
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