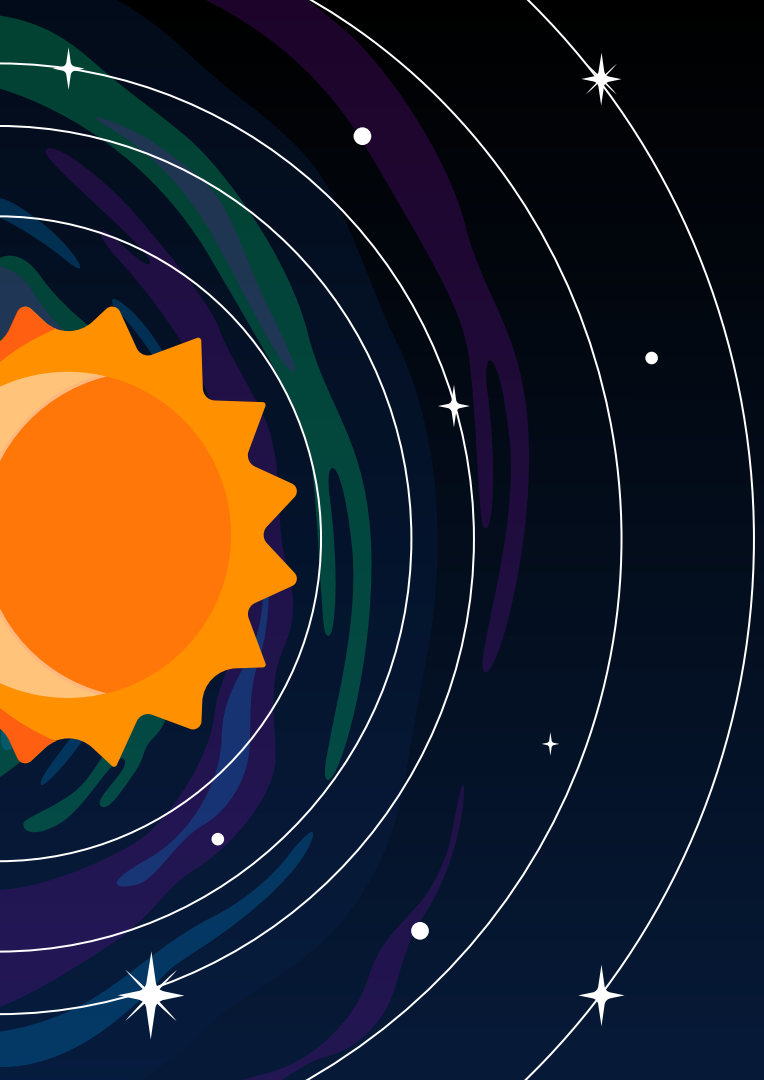


Three.js Solar System

Artur Romão - 98470

Introduction to Computer Graphics – 2021/2022 – Project 1

Main ideas

User interactive solar system

Possibility to stop the system elements

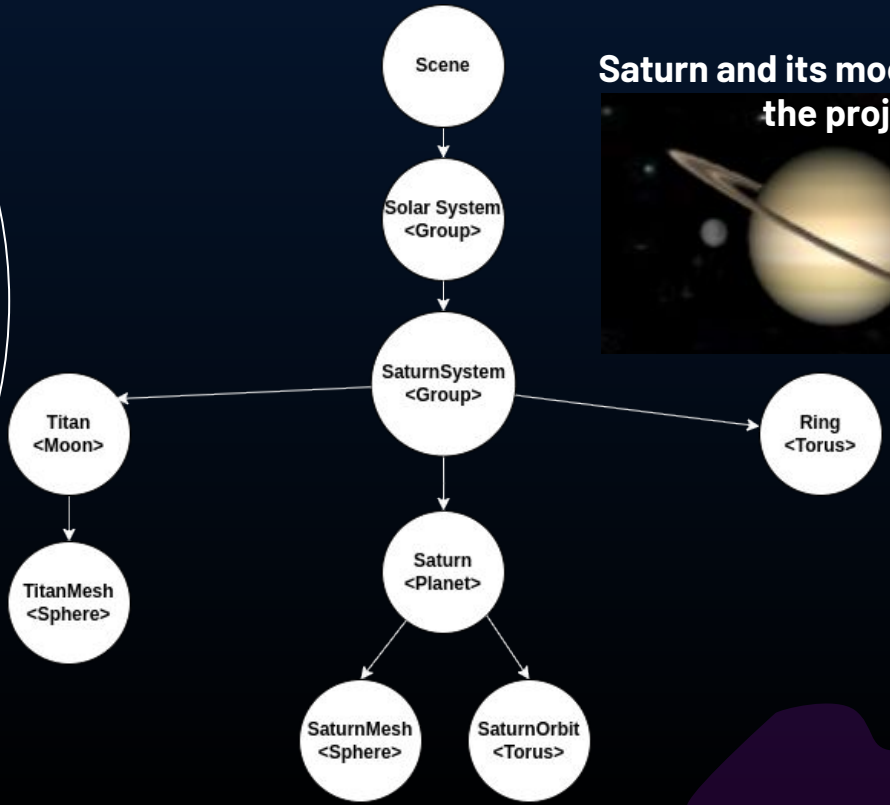
Option to hide/show the planets' orbits

Zoom-in planet's and moon's surface

Use of the OrbitControls Three.js module

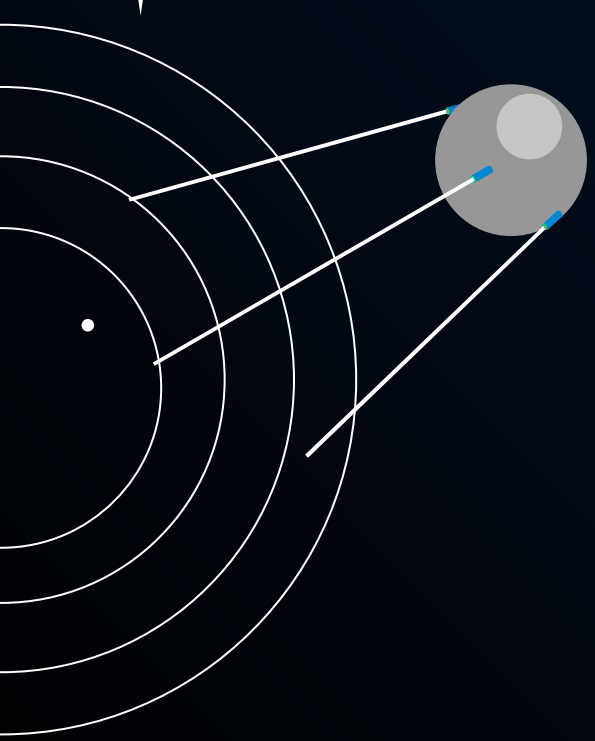
URL: https://artur-romao.github.io/three.js-solar-system/

Models and Scene Graph



Saturn and its moons display in the project

Animations

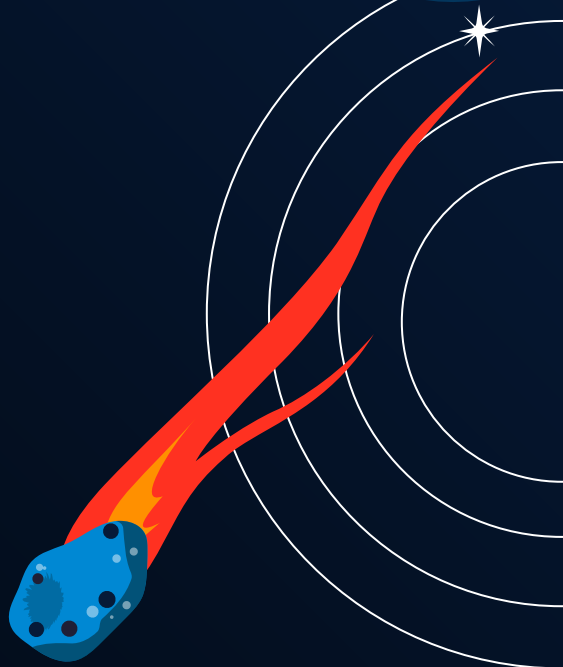


Sun, planets and moons self rotation

Planets and moons translation around the sun

Moon translation around the respective planet (through a mathematical expression)

Zoom-in planet's and moon's surface

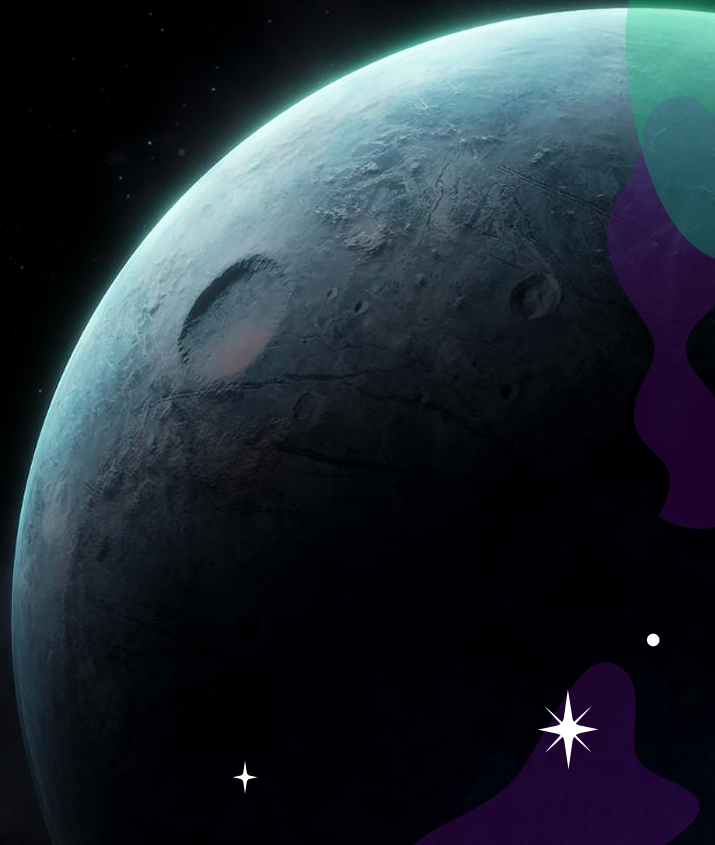


Illumination

PointLight located in the center of the sun

Simulation of day-night feature regarding the face towards the sun

Simulation of eclipses



User interaction

Mouse

Exploring the environment (rotating the solar system, zooming into the planets) thanks to OrbitControls

Clicking in the “Show/Hide Planet Orbits”checkbox to interact with the orbits

Clicking in a planet or a moon translates the user next to it

Keyboard

Stop the solar system motion when pressing the spacebar

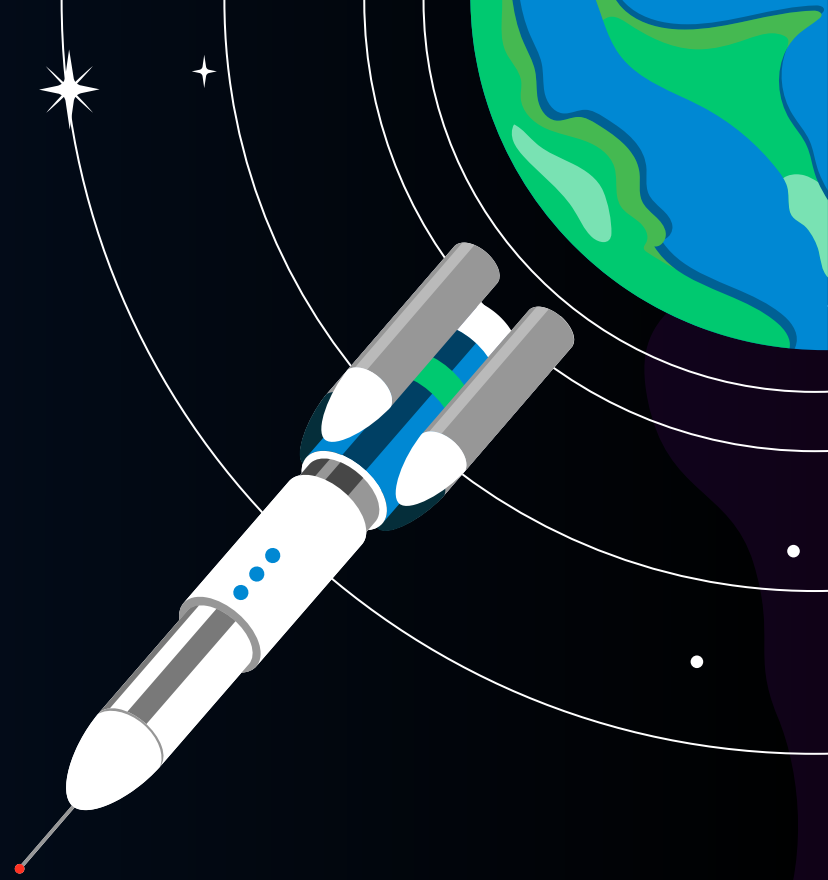
Development and difficulties faced

Code organized in a folder “js” with 2 classes (Planet and Moon) and a module (OrbitControls) and 2 independent files (scene.js and index.html)

Had some struggles doing the moons translations around the planets

Difficulties while developing the zoom-in functionality

Saturn ring is not perfect, due to illumination



References

Three.js documentation: https://threejs.org/docs/

Coding a 3D Solar System with JavaScript + Three.js: https://www.youtube.com/watch?v=KOSMzSyiEiA

And a lot of stackoverflow...

Hope you enjoyed!