

Interactive Graphics - Project report

Space Disco

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1 Introduction

Space Disco is a project that simulates a club/disco in the space. The model of the club is realistic and we add some models of characters. We put in there some of our favorite cartoon characters and some humanoid models. We have the stage where the DJ plays the music with the console and the dance floor where characters dance. Obviously we introduced also music that is selectable and starts when the characters dance.

In the next chapters we will go through all technical aspects of the project, such as external libraries and assets which were used, as well all important components used.

2 Environment

This project is built with the use of *Three.js* library, which handles most of the graphics and models. This project also features *Tween.js* to handle all animations for our characters.

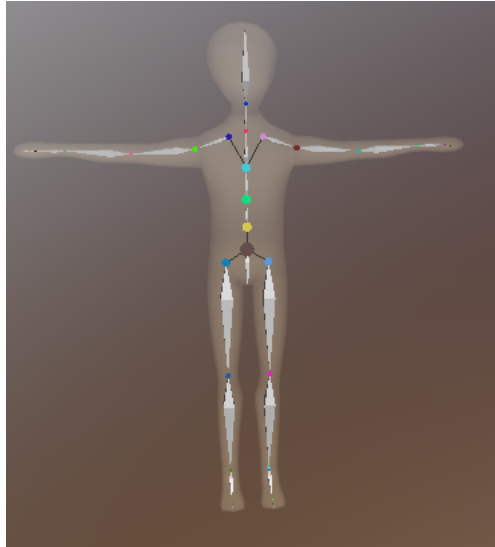
3 Assets

3.1 models

The project graphics is composed with a set of models:

- Disco/club
- Dj board
- Goku character
- Zoro character
- Humanoid

Humanoid characters are the one that dance together with cartoon characters except one single humanoid (that has different animation with the respect to others humanoid) that is the DJ. All takes place in the disco which model is a low vertices one to allow this project run on every computer even if it has very low technical specifications. There are also two cubes on which the



two cartoons character are place upon, on which we applied bump textures. There is also another geometric object (sphere) that is the moon that gravitates above the disco. Models we used for characters are all hierarchic, every character is composed by many nodes that allow to model complete animations on every part of the body. Below you can see the hierarchical model for the humanoid character:

3.2 music

This is a disco so we could not use music, thus other assets we used is obviously mp3 tracks to let our characters dance along with the music.

3.3 textures

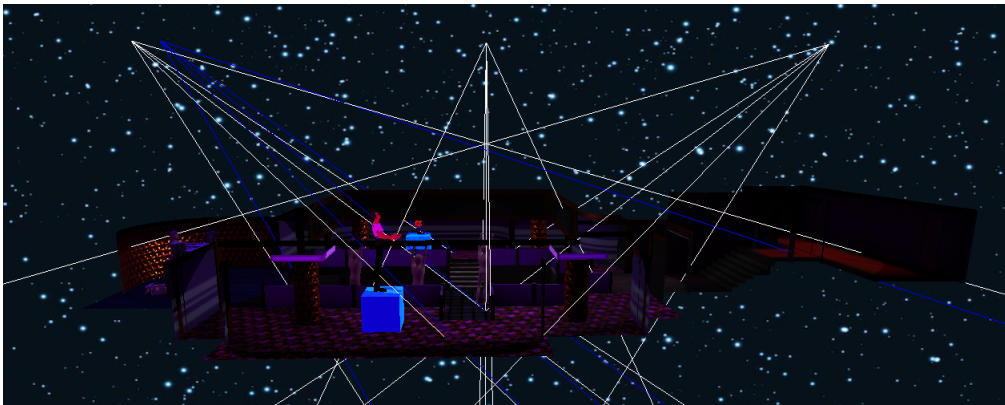
For the project we also used textures. The first one we used is the starry sky for the background, and we also implemented a bump texture for cubes in the dance floor.

4 lights

For lighting up our disco we used two kind of lights:

- Ambient light
- Spotlight

The ambient light for the fact that is a disco is set to a low level of shininess and we also used 3 different spotlights: one is centered on the dj position (the one that emits blue light), and the three others in the dance floor . Below you can see the spotlights action:



5 User interaction

This project provides also small user interactions. A user can turn on and off lights, there is a single button that turns on/off all spotlights. The user can also choose between different songs to play in the disco, there is a third button that once pressed will start or stop the animations.

The user can also move the view position with the right button, zoom the perspective or move the camera with the left button.

6 animation

For animating our models and object we made use of *tween.js* library, we defined eleven instances of it to make our animation as smooth as possible. Basically we made use of interpolation functions provided by the library to interpolate points in the space and obtain smooth animations.

The only object different from imported models we animated is a moon that gravitates above our disco and this is basically a yellow sphere.

6.1 characters

Characters are all models imported and downloaded from *sketchfab*:

6.1.1 humanoid

These are the main characters that populate the disco. They were used to make the crowd dancing and also the DJ. Thus we implemented two different animations from the same model, one for dancing one for moving the DJ.

6.1.2 cartoon characters

These are two of our favorite cartoon character and we did two different dance animation for both of them. They dance upon a cube on which is applied a bump texture

7 Mobile support

This project works also on mobile browsers. The interaction is simple, you can tap the screen to change light and songs. You can with one finger change the camera view and with two fingers change the view position.

8 Credits

In this section we provide all links for the model we downloaded and then imported.

- <https://sketchfab.com/3d-models/zoro-one-piece-027b4e362ec74da995ae87f34998b2ed>

- <https://sketchfab.com/3d-models/simple-human-d1ed83b3907541bca445d040f716fc27>
- <https://sketchfab.com/3d-models/son-goku-117fe1c12ffe44f698fe5d68f94a61ad>
- <https://sketchfab.com/3d-models/dj5000-00615da2444f437da7efa342c05be7ff>
- <https://sketchfab.com/3d-models/nightclub-a6f7bef664274cb498963177c48e7e96>