WebGL Nyan Cat

Roberto Caetani
Roberto.Caetani001@umb.edu
University of Massachusetts Boston

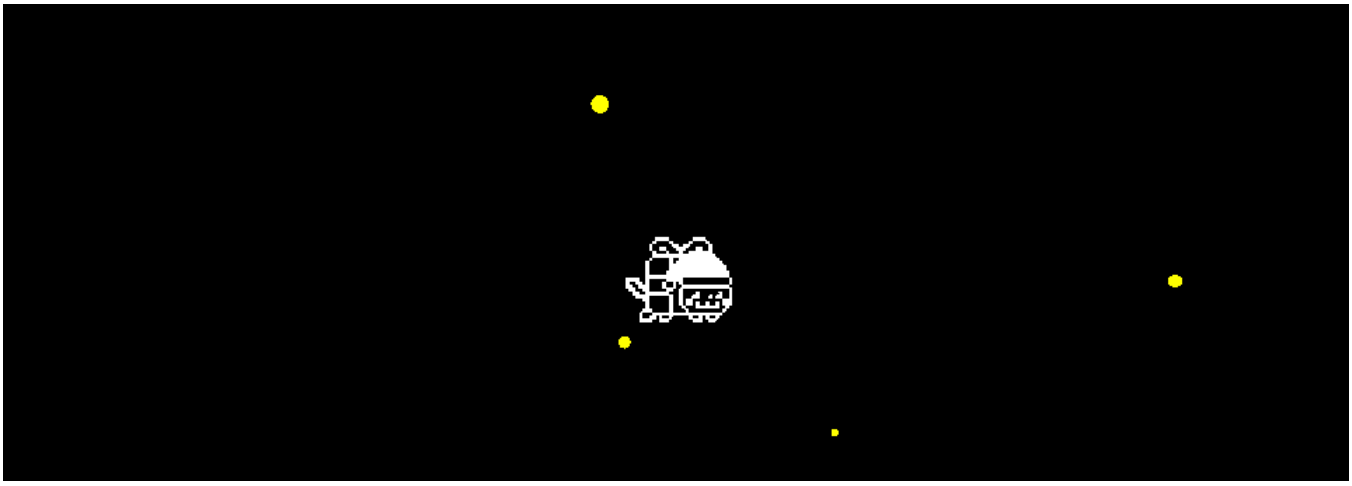

Figure 1: Nyan Cat soaring past the stars.

ABSTRACT

This project is based off of Chris Wachtman's WebGL Nyan Cat. It features the iconic internet cat in a space-like environment. The user can modify the color of the lights in the scene as well as the color and texture of the cat. The background stars are animated and music is incorporated into the project.

KEYWORDS

WebGL, ThreeJS, Animation, Music and Audio

ACM Reference Format:
Roberto Caetani. 2019. WebGL Nyan Cat. In *CS460: Computer Graphics at UMass Boston, Fall 2019*. Boston, MA, USA, 2 pages. https://CS460.org

1 INTRODUCTION

When I first started making YouTube videos, my very first video was a piano cover of Nyan Cat, so the silly character itself has a lot of value for me. Beyond that, however, this project also explores animation and environmental variables.

2 RELATED WORK

Assignment 9[1] from UMB CS420.

CS460, Fall 2019, Boston, MA

ACM ISBN 1337.
https://CS460.org

3 METHOD

3.1 Implementation

This project was created using ThreeJS. The nyan cat model was created using a .png file, which was then converted into a .ply file. Then, the model was uploaded through PLYloader. The material's color was set to white so that it could be easily seen in the black background, though the user can later change the color to any they see fit.

The dat.gui was implemented to facilitate the color changes, as well as other adjustable options.

```
var materialColorFolder = gui.addFolder('Material Color');
materialColorFolder.addColor(controller, 'color').onChange(functi
    mesh1.material.color.setHex(value)});
materialColorFolder.open();
```

For the background stars, seven stars were created using the SphereGeometry. Every time the animate() function is called, the stars are translated in the x-axis. They are then pushed back to the right side of the screen after a set number of frames.

Lastly, the music was implemented through AudioListener.

```
var listener = new THREE.AudioListener();
camera.add(listener);
var sound = new THREE.Audio(listener);
var audioLoader = new THREE.AudioLoader();
audioLoader.load('nyancat.ogg', function(buffer) {
    sound.setBuffer(buffer);
    sound.setLoop(true);
    sound.setVolume(0.1);
    sound.play();
```

```
});
```

3.2 Milestones

3.2.1 Milestone 1. The scene was set with the nyan cat model and the stars as the background.

3.2.2 Milestone 2. Dat.gui was implemeneted. Controls for the color of the lights and material were added.

3.2.3 Milestone 3. Animation for the stars was added.

3.2.4 Milestone 4. Music was incorporated using AudioListener.

3.3 Challenges

- Challenge 1: Coloring the nyan cat model was difficult since I imported a model using PLYloader. This feature ended up being scrapped in favor for being able to modify the model's color on demand.
- Challenge 2: Animating the stars proved difficult. At first I put all the meshes into an array, but the translate function did not work for the elements of the array. Instead, I made the geometries of the meshes global, and translated them directly in the animateStars() function.

4 RESULTS

Here, we can see the camera has been angled upwards through trackball controls. The nyan cat model's material color has been changed through the dat.gui's respective control. Lastly, the stars have moved from their initial position.

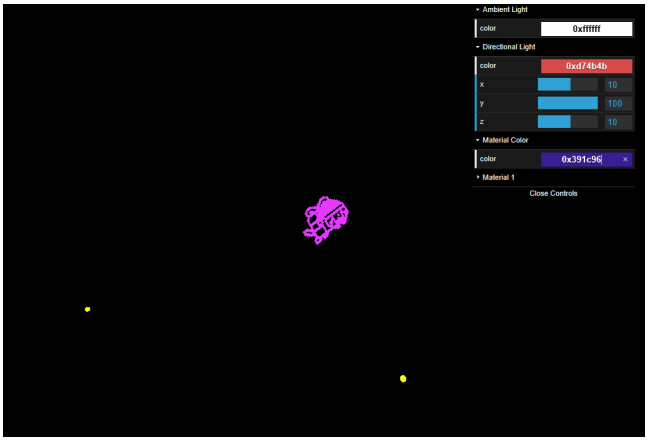

Figure 2: The final product.

5 CONCLUSIONS

Overall, this project was a lot of fun to work with! It was definitely harder than I originally thought it would be. The animation is something that seemed simple to do, but without pre-made models with the animation already built in, doing it from scratch was far too time consuming. In the end, I had to use the tools I already knew how to use to create this project.

A lot of my struggles came from moving the objects. If I had not run into these obstacles, I might have had more time to figure out how to animate a 3D object using multiple 3D objects, and switching between them like frames in a 2D setting. Despite this, however, I think I have learned a lot from taking on this project.

REFERENCES

[1] Daniel Hanh. 2019. Assignment 9. (2019).