Pixel-Art Scenes

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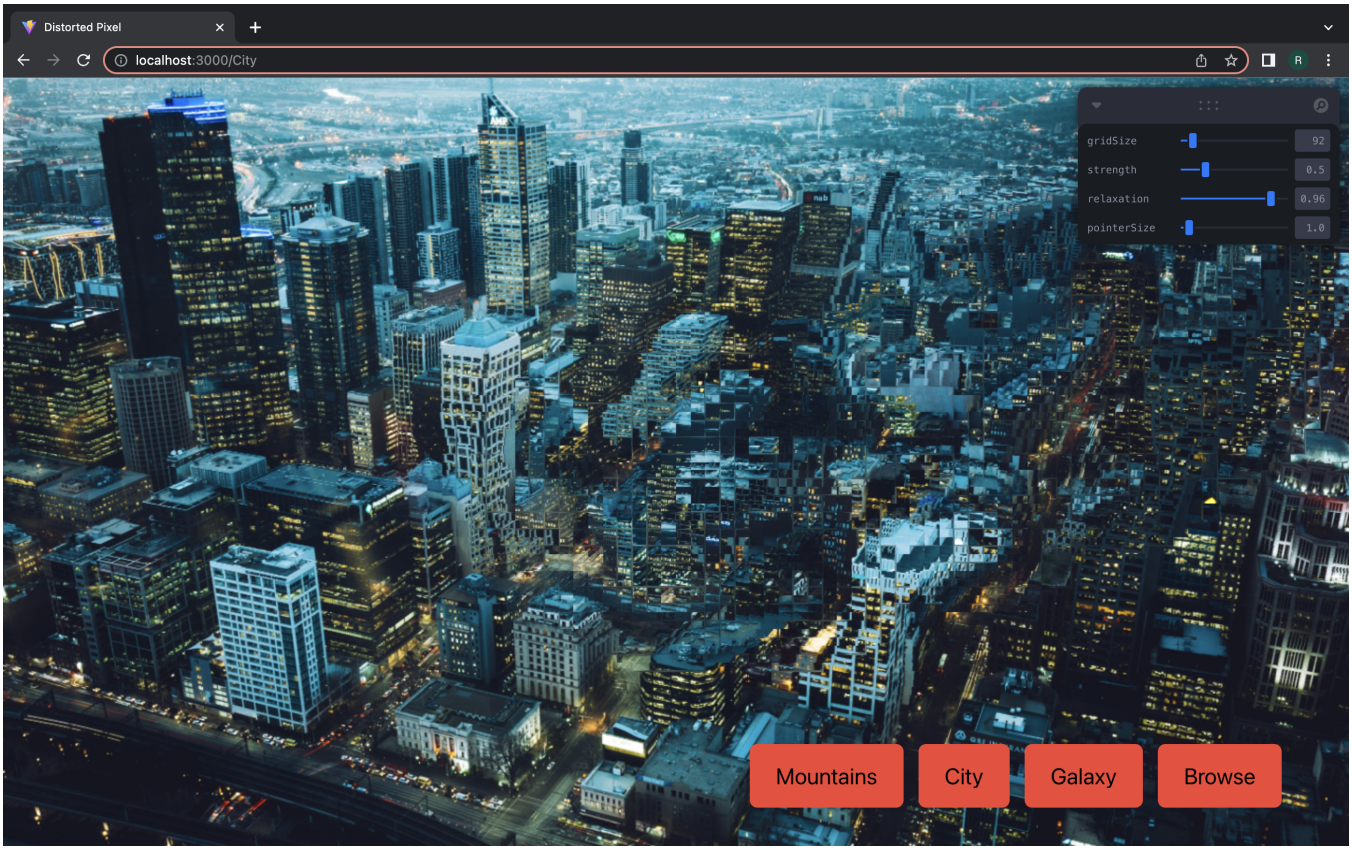

Figure 1: Our project UI front page!

ABSTRACT

The project topic that we chose is Pixel-Art Scenes. The Project has a few sample pictures and also allows the user to browse a picture, upload and pixelate it. We have also added a cursor drag effect that shows the pixelation with the movement of the cursor.

KEYWORDS

Three.js, node.js, CSS, HTML, React

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1 INTRODUCTION

The first video game that the both of us played was Prince and Doom where the video game was entirely pixelated and ever since we have always wanted to recreate something like those video games. Hence we wanted to work on this Pixel-Art Scenes project.

2 RELATED WORK

1.Three.js Github Repository
2.Three.js Online Documentation

3 METHOD

As soon as we load the project our preloaded image of a Mountain range is displayed as a sample, where the user can change all the parameters available in our UI to get the effect they desire on cursor movement. The cursor parameters we have are a)gridsize- This can be used to increase or decrease the size of the individual pixels in the image. b)strength- This is used to increase or decrease the strength of the pixelation. c)relaxation- This parameter is used to decide the time taken for the pixaltion to revert back to its original state. d)Pointer size- This parameter is used to increase the area of pixelation around the cursor. We also have 2 more preloaded image samples which can be accessed by clicking on the buttons in the UI. The 4th button available in the UI called "Browse" allows the user to browse for and upload an image for their choice to pixelate!

3.1 Implementation

Below are code snips from the Project:

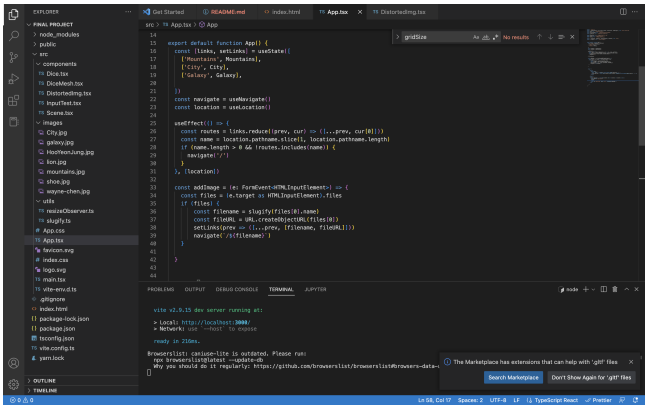

Figure 2: Code snip of the UI implementation

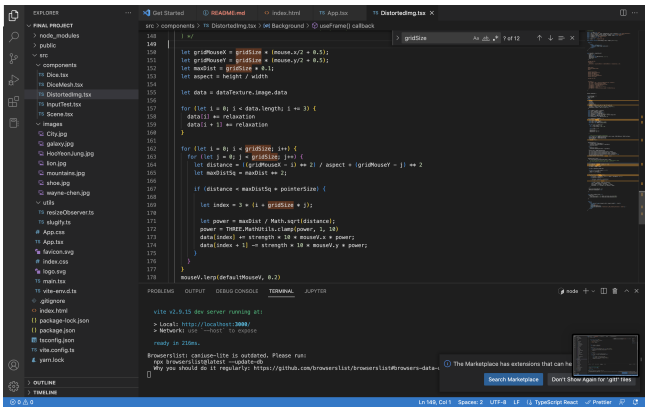

Figure 3: Code snip of the Cursor parameters implementation

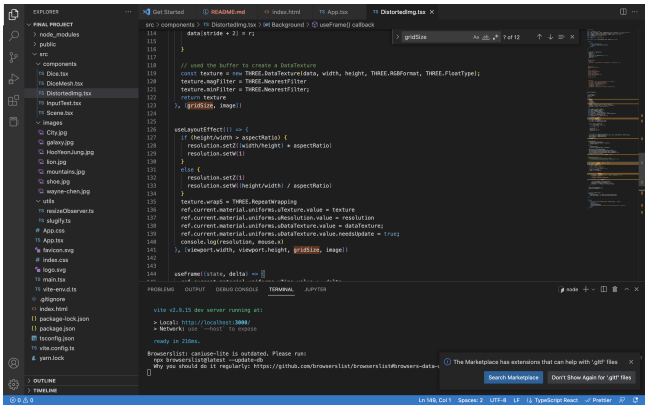

Figure 4: Code snip of the DataTexture implementation

3.2 Milestones

3.2.1 Milestone 1. Developing the pixelation effect: The first milestone in the development phase was to develop the code for the pixelation to occur. Our initial project idea was to just pixelate images uploaded to the application but as we progressed we added more features.

3.2.2 Milestone 2. Developing the Front end UI: The second phase of the development was to add the User Interface for the project. This was important, as a good interactive UI makes or breaks an application.

3.2.3 Milestone 3. Adding the pixelation effect to the cursor movement: The third and final phase was to add the pixelation effect to the cursor. This wasn't our initial idea but after completing the project we wanted to add a new feature. This was the most difficult and time consuming phase and we were happy with the end result.

3.3 Challenges

- Challenge: The biggest challenge we faced in the project was adding the pixelation effect on cursor movement with the different parameters to change the pixelation effect. This was entirely new for us as we had not developed anything like that before. The initial plan did not include the cursor effect but we wanted to try our hands on something exciting and new.

4 RESULTS

Below are the screenshots of the application's results:

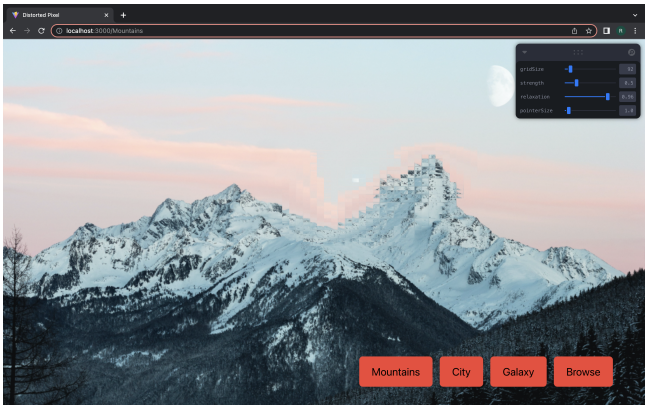

Figure 5: Mountains sample image

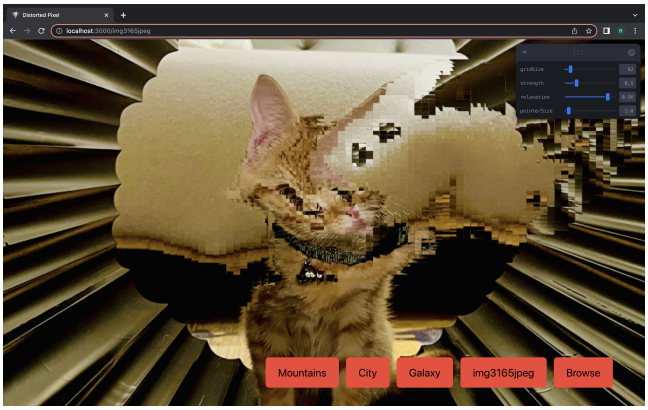

Figure 6: Picture of our pet cat with pixelation effect

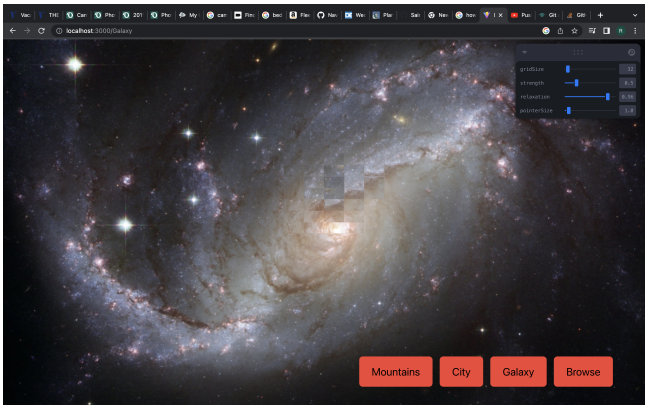

Figure 7: Galaxy sample image

5 CONCLUSIONS

To sum up, we set out to develop a project to pixelate images but we managed to add our own twist to the project and achieve it! Developing the projecting was a very fun and rewarding process. We learnt all the necessary tools to develop the project in class and this was by far the most fun we have had in any project development. We'd like to thank the Professor and course staff for making this course the good experience it was.

REFERENCES

1.https://threejs.org/
2.https://github.com/mrdoob/three.js/