CS460 Intro page

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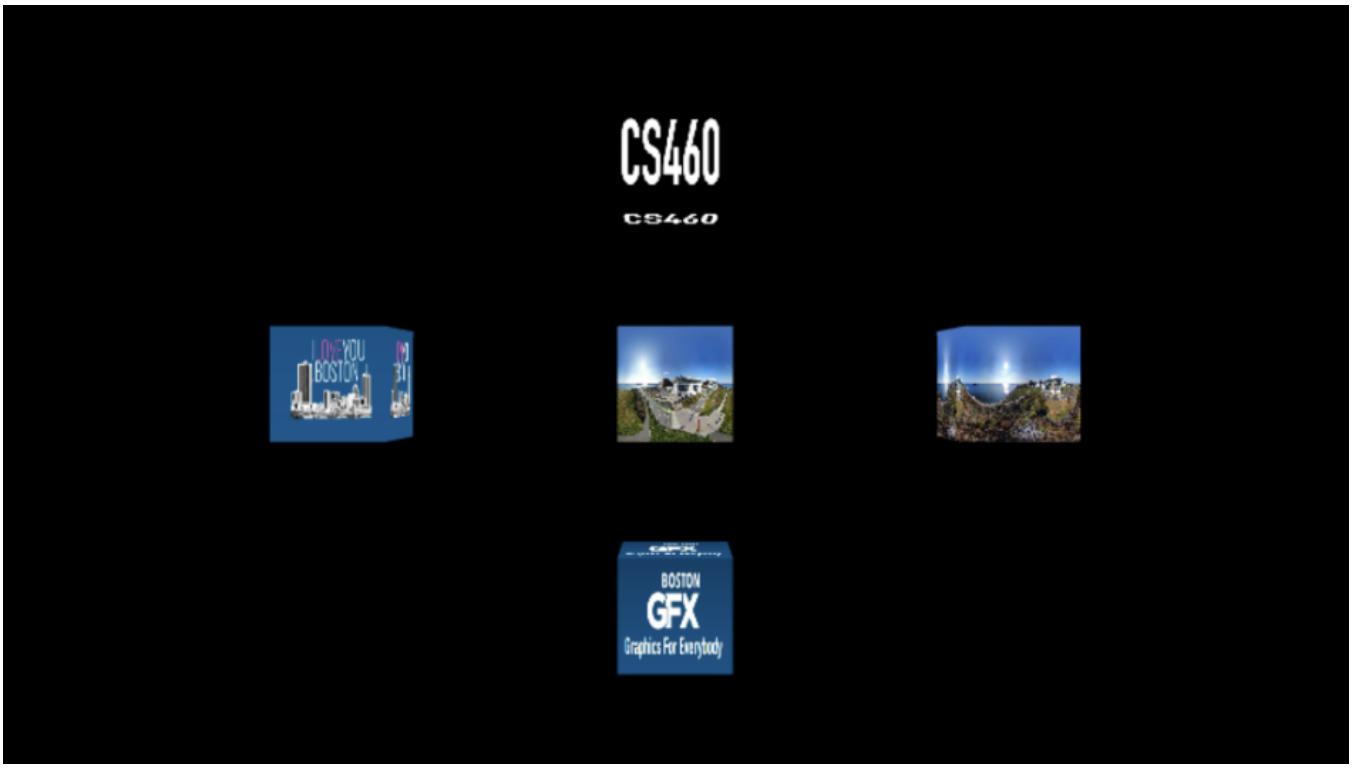

Figure 1: Add a nice wide figure here and replace this caption.

ABSTRACT

The introduction video of class let student know what are they going to learn today by fun and interesting view. This video can grab student's eyes and make they want to learn new topic. Using XTK, Three.js, HTML, and CSS we made a video of introduction of CS460. There are some challenges we faced but we made a video with IronMan Theme.

KEYWORDS

WebGL: Web graphic Library, XTK: X Toolkit, open source graphics library, OS Speech API: Operating System Speech Application Programming Interface

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1 INTRODUCTION

A good lecture needs a good introduction. This project implements a new CS460 computer graphics course introduction page. This is the page where the agenda of the day is presented by the professor. This page is important because it displays everything that the professor is going to cover in the class for that day with sounds, videos, and animations of different types.

2 RELATED WORK

The related work is XTK [3] and Three.js [2]. Our work extends professor's intro video code and integrates what we learned in the class. We have used songs and film clips from Iron Man to make the intro more interesting.

3 METHOD

Using CSS and HTML, we insert music, video and set standards of using those as background element. Also, HTML is used to write introduction words. The XTK is used to make cube for CS460 logo which starts this video. Three.js is used for IronMan scene.
In this project, we used one method in two different ways. The method is using HTML's canvas element. First way is to use the XTK library to render geometric objects into canvas and build some geometries with animations, like movement and rotation on x, y or z direction and add audio.

3.1 Implementation

When implementing any computer generated animations, 2D or 3D using HTML canvas and WebGL libraries, there is a procedure that is followed. Initialize the renderer, create the scene, set up the camera and lights and add all into scene and render to the canvas. This is exactly the way we are going to go by.
This the first part we are going to use the XTK libraries. This library is simpler than the most of other libraries we used. It takes few lines to create an object and render it to the page. Here is an example of a cube object with an image texture rendered to the page.

```
r = new X.renderer3D();
r.init();
// create a cube
cs460 = new X.cube();
// skin it..
cs460.texture.file = 'cs460.png';
r.add(cs460);
r.render();
```

After creating a cube object with an image texture, we set up a time interval of how long this object will show on the screen.

```
setTimeout(function()  cs460.visible = true; , 800);
setTimeout(rotate cs460, 2000);
setTimeout(zoom intocs460logo, 5000);
setTimeout(function()
pc.visible = true;
mesh.visible = true;
, 7000);
```

We have created two functions, rotate cs460 and zoom into cs460logo that will do rotation and zooming. In function rotate cs460 We hide the image for about a second and and call rotate function to rotate the cube for two second and zoom-in to move to next section of animation. We went through similar process creating the second part but using THREEJS library.
We uplaoded video and audio using javascript built in functionality.

```
var music = document.getElementById('music');
music.autoplay = true;
music.load();
```

```
console.log('THIS');
console.log('IS');
console.log('SOME');
console.log('CODE!');
```

3.2 Milestones

3.2.1 Milestone 1. The team brainstormed different designs on White board and Google and then choose the best cut.

3.2.2 Milestone 2. The team worked separately but connected through ZOOM and meeting In-person.

3.2.3 Milestone 3. After Fast Forward, team got better idea on the project. Also, checked each other's work and get helped.

3.2.4 Milestone 4. Made every scene and worked on connect all of the scene in one file.

3.3 Challenges

- Challenge 1: Some tricky business..
  The challenge we faced at first was the time interval setups. The class introduction takes about 35 seconds and we are expected to come up with solutions that takes about the same time because we think coming up longer solution would interfere with the time allocated for the lecture explanations. So deciding on which object animations to give more time and setting it was a challenge.
- Challenge 2: Handling canvas by JavaScript. It was new idea for me to write a code instead of using CSS.
- Challenge 3: The team had meeting every time after class but still run out of time before the submission(Fast Forward, Intermediate presentation).
- Challenge 4:Making Skybox to explain about in-class activity with real work experience but couldn't make it because of time limit.

4 RESULTS

The 35 seconds long of video was made to Computer Graphics class.The background music works and the videos and textual content is successfully displayed. The last scene, where Iron Man talking to jarvis will inspire students to learn about graphics designing

Figure 2: An example image.

5 CONCLUSIONS

In this project, we made video using JavaScript. The purpose of making the Computer Graphics introduction video is increase student's focus and make them enjoy class. The team implement it by

Table 1: Some example table

Device	Performance
iPhone	60 FPS
Android	60 FPS
Old Macbook	10 FPS

XTK and Three.js under Iron Man theme. In future work, we can increase the quality of background video and add more scene to explain about this class.

REFERENCES

[1] 2008. Iron Man.
[1] Ricardo Cabello et al. 2010. Three.js. URL: https://github. com/mrdoob/three.js (2010).
[2] Daniel Haehn, Nicolas Rannou, Banu Ahtam, P. Ellen Grant, and Rudolph Pienaar. 2012. Neuroimaging in the Browser using the X Toolkit. Frontiers in Neuroinformatics (2012).