

CS410 INTRO

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Figure 1: Intro snapshot.

ABSTRACT

Our intro uses two technologies; Three.js and ResponsiveVoice.js. Three.js is used for 3D graphics and animations. ResponsiveVoice.js is used for text-to-speech functionality. We combine the two frameworks to make a fun, cool opening slide for the CS410 Software Engineering course at UMass Boston in the upcoming spring semester.

KEYWORDS

Three.js, Visualization, ResponsiveVoice.js, Text-to-speech, JSON

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1 INTRODUCTION

We chose this project because of the idea that it would be a great, creative outlet for us. We thought it would be nice if the intro for CS410 showcased the work of students whom Daniel previously taught. Hopefully, our intro is exciting, memorable, and gets students excited for software engineering lectures and for the graphics course offered as well.

2 RELATED WORK

We tried to model our project after Daniel Haehn's intro for CS460 XTK CS460 Intro [1].

3 METHOD

For our purposes, we used Three.js to create all the visuals in the intro. The 3D texts were created using a font loader from Three.js,

and geometries were created with materials and meshes supplied by Three.js. The text-to-speech functionality takes input text from the URL using a URI decoder, provided by JavaScript.

3.1 Implementation

The 3D texts that appear are created using `THREE.FontLoader()`. At first, we were using a text-to-jpg website converter, until we found inspiration in a fellow classmate's project presentation using 3D fonts. With the JSON format of any text, the function is fairly easy to implement:

```
var font = loader.load(
  'Oswald-Regular-Regular.json',

  function ( font ) {
    text = new THREE.TextGeometry(
      "UMass Boston", { ... } );
  }
);
```

The `setTimeout` function was especially useful for timing text transitions:

```
setTimeout(function() {
  umass_mesh.rotateY( 4*Math.PI/5 );
}, 7300);
```

3.2 Milestones

3.2.1 Milestone 1. Exchange thoughts on which frameworks to use and what creative content to showcase. Brainstorm how to present our fast-forward.

3.2.2 Milestone 2. Create a tentative intro for the project presentation. Use Three.js because the animation possibilities are endless and the amount of graphical content is immense. Use ResponsiveVoice.js as it is the only text-to-speech technology that we found that is not limited to Google Chrome.

3.2.3 Milestone 3. Tweak and fine-tune the intro for smooth animations and good text-to-speech/text-to-display functionality. Clean up the code, adding comments as needed.

3.3 Challenges

- Challenge 1: Orienting the camera (or eye) as the graphics in the scene change in all x, y and z directions.
- Challenge 2: Creating a similar theme to Daniel's existing style (neon, colorful, hype music).
- Challenge 3: Timing the music to transitions in the text.

4 RESULTS

The intro is colorful, the transitions are smooth, and we managed to get the timing of the transitions to match with the music. Snippets of our intro can be seen in Figure 1 and Figure 2. The intro is a moving visual which randomizes colors on different runs. Overall, it is simple and effective, somewhat cinematic, and we are very satisfied with the results.

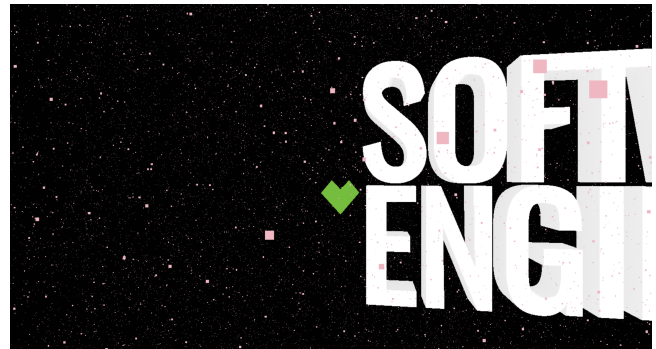


Figure 2: 3D text mid-transition.

5 CONCLUSIONS

We hope our intro is chosen to start the software engineering lectures at UMass Boston. We thoroughly enjoyed partnering up for the task, and ended up exchanging an abundance of concepts and ideas that were far too great for the time frame of this project. Nevertheless, we opted to create an intro with a memorable soundtrack and some pleasing visuals. It was difficult at first, but once we got the ball rolling it became easier.

We have learned a lot during this project. We learned how to work as a group, manage our time, and divvy up the tasks at hand in an efficient manner. We practiced reading API documentation when we wanted to utilize certain features of Three.js and ResponsiveVoice.js. This was overall a great learning experience in terms of communication with another teammate; it is vital in getting work done.

REFERENCES

- [1] Daniel Haehn. 2019. XTK CS460 Intro. (2019).