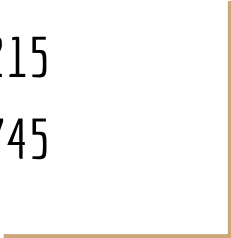# AR Customizable Kokuhaku Candle

Group 6

Zhang Chi   20493215
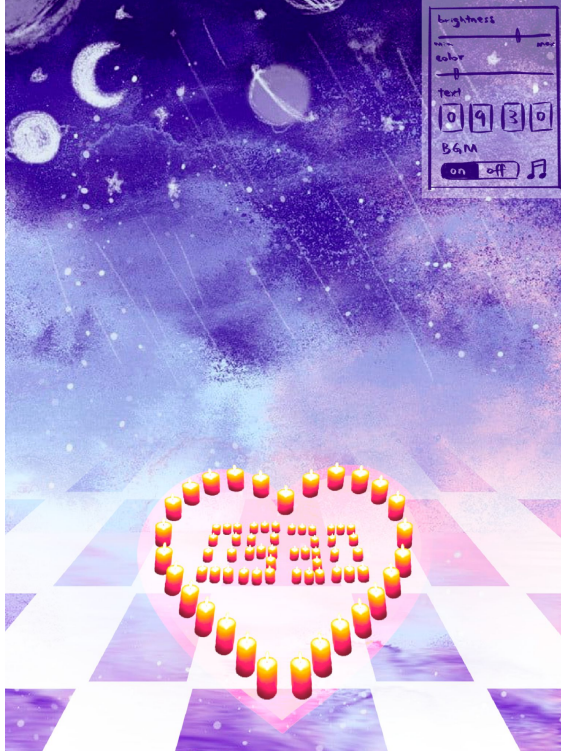
HE Yuxiang 20828745

Project Outline

- Build a 3D virtual Kokuhaku candle scene

- Construct realistic 3D candles and show their luminous effects vividly

- Provides a control panel to change candle color, flame brightness and text

- Alternative Augmented Reality background for immersive experience

Our vision and our implementation

What we have built...

- Single candle mesh with flames
- Multiple candles placed in controllable shape
- Starry sky cubic background
- flying fireflies
- AR version background
- Light rendering everywhere
- GUI and stats display

Technical challenges

- Startup framework
- Candle shape control logic
- Hard to debug
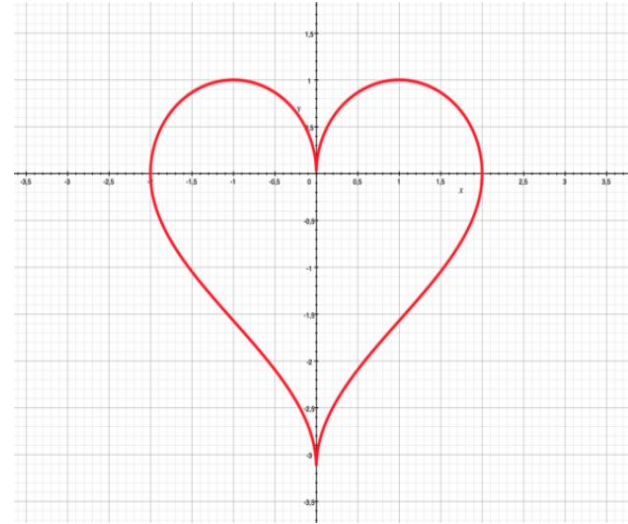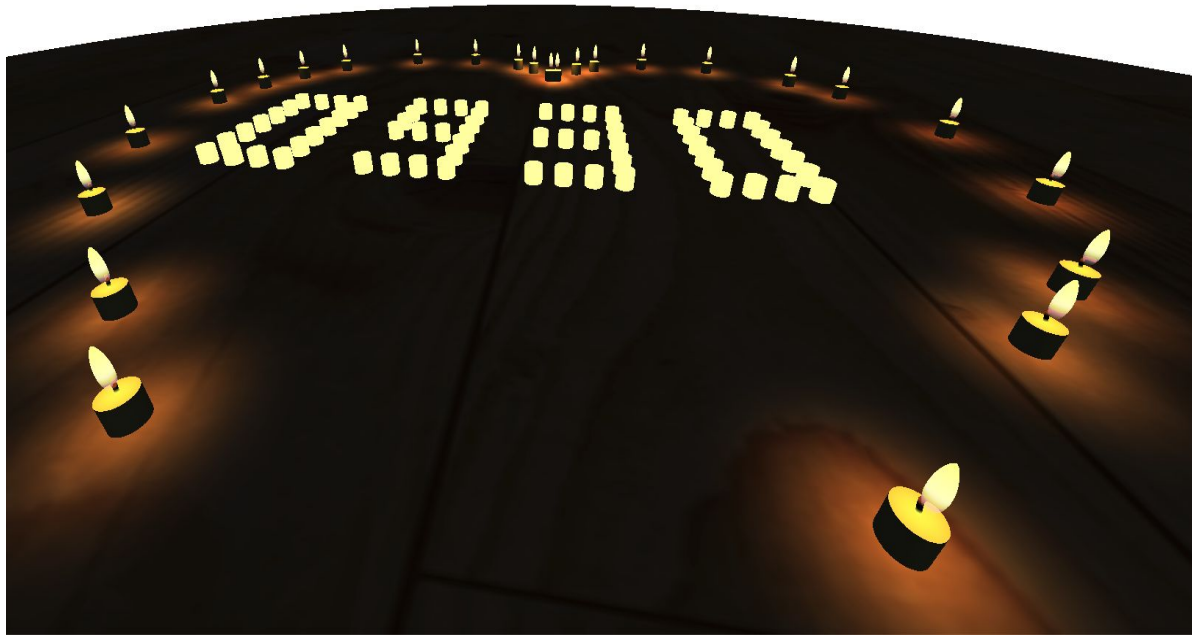- Desirable AR effect
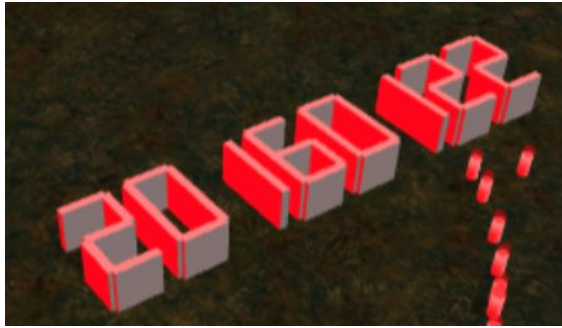
Startup Framework
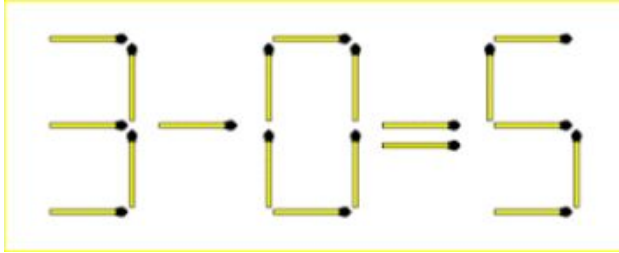

candle example found online

our implementation

The Peach Heart

Candle Shape Control Logic
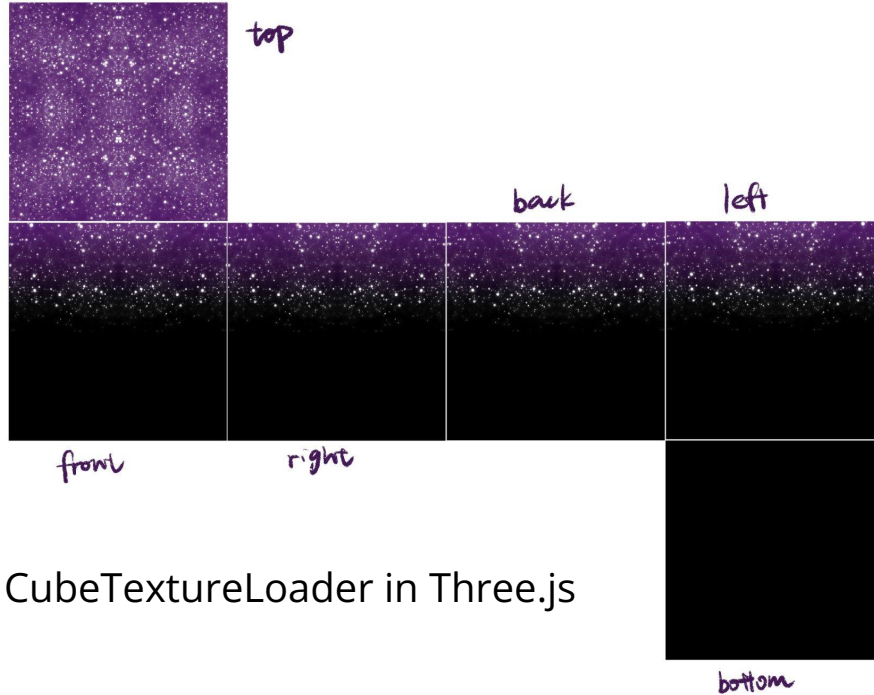

matchstick representation

our implementation

Fireflies

const xPos = 20 * Math.cos(time / 4 + index) + 10;

const yPos = 5 * Math.sin(time / 6 * index) + 15;

const zPos = 20 * Math.sin(time / 4 + index) + 10;

- Move in a circle on the xz plane with (10, 10) as the center and 20 as the radius
- Move up and down along the y axis

Cubic Virtual Scene Background

top

back   left

front   right

bottom

CubeTextureLoader in Three.js

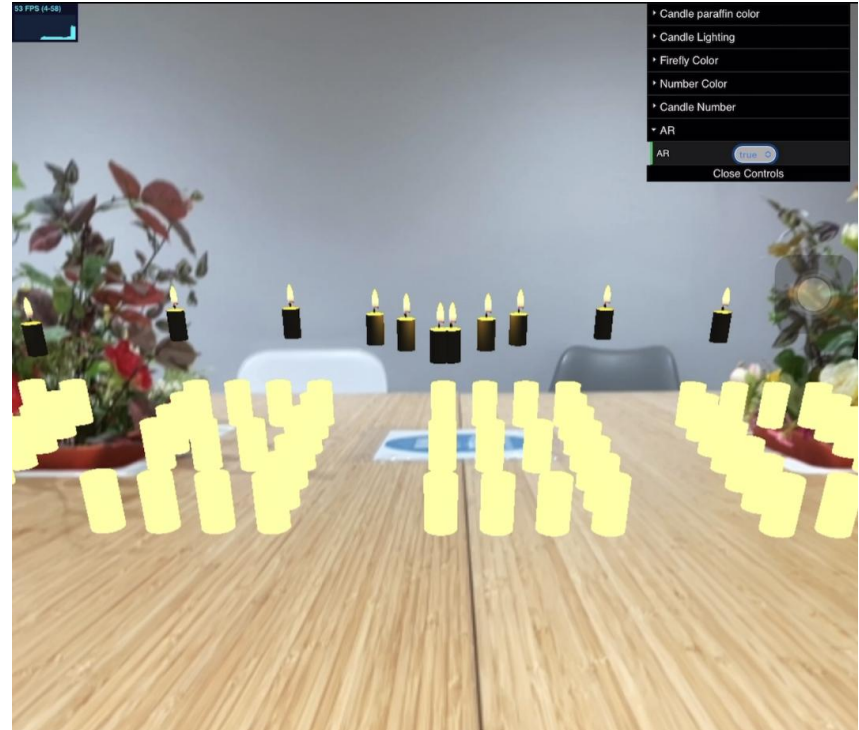# Augmented Reality Background
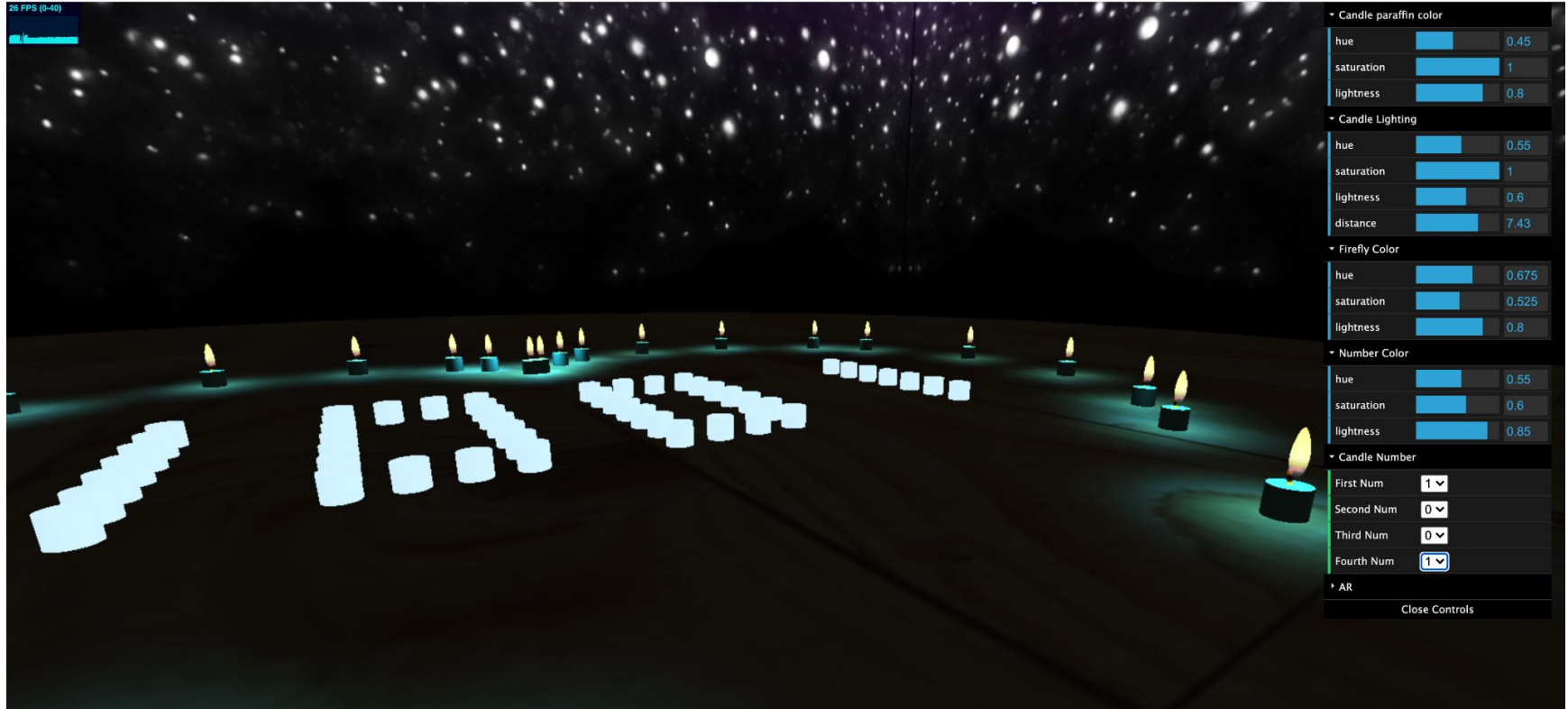
HTML - <video> tag

JavaScript - control LocalMediaStream

Three.js - transparent scene & table

CSS - z-index: -1

Control Panel

Demonstration

Some references

https://www.cnblogs.com/slxb/p/5150516.html

https://blog.csdn.net/qq_37338983/article/details/82562891

https://www.youtube.com/watch?v=YKzyhcyAijo&t=178s

Thank You