# Dennis in lights

***Computer Graphics Project 6: Stage Lighting***

**20171678 이찬희**

## Target Users

People who want to simulate stage lighting before the actual installation.

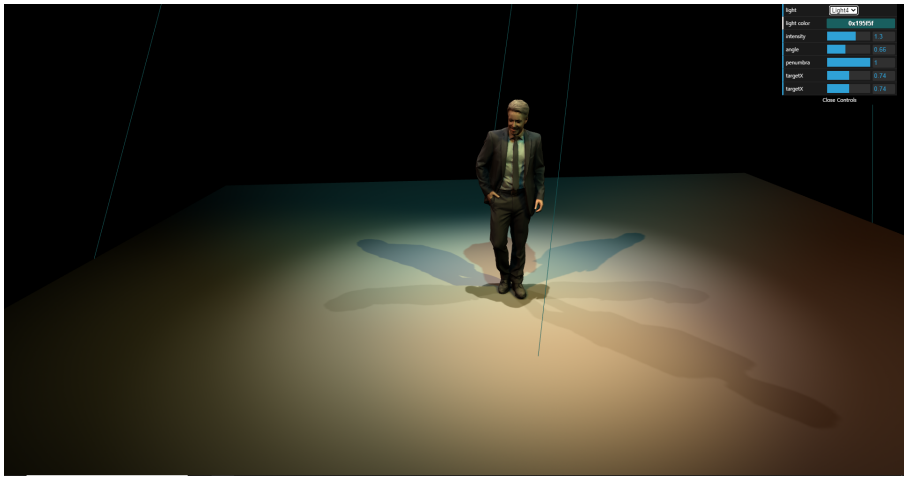
## Features

- There is a virtual concert hall of size 100 * 100 * 50 with nine virtual lights evenly spaced from the ceiling.
- Each light can be adjusted in detail through the gui in the upper right corner.
- There is a human model in the middle, so you can experiment with him in advance to see if he is well illuminated and how shadows form.

## Concept and Idea

While performing at the school's theatrical society, it was to set up lights and angle what always required the most time in preparation for the actual performance at the concert hall. I thought that if there was a program that could specifically plan for lighting, it would reduce the time it takes here.T o create an environment similar to the lighting system in a small theater, all lights were set to spot lights on virtual ceilings. When lighting is being installed, a person called a "bit-dung-ee" is standing on the stage, and a similar function was made through the human model stangding at the center of the plane.

## Screen Shots



# Algorithm & Code

## Init Lights

```
let lights = Array(9);
for (let i = 0; i < 3; i++) {
    for (let j = 0; j < 3; j++) {
        let light = new THREE.SpotLight(0xFFFFFF);
        light.castShadow = true;
        light.shadow.mapSize.width = 1024;
        light.shadow.mapSize.height = 1024;
        light.position.set(i * 30 - 30, j * 30 - 30, 50);
        light.angle = Math.PI / 6;
        light.decay = 2;
        light.intensity = 0.15;
        light.penumbra = 1;
        lights[i * 3 + j] = light;
        scene.add(light);
    }
}
```

Nine lights are initialized to a specified value and stored in an array.

## Switch Light

```
gui.add(params, 'light', {
    'Light1': 0,
    'Light2': 1,
    'Light3': 2,
    'Light4': 3,
    'Light5': 4,
    'Light6': 5,
    'Light7': 6,
    'Light8': 7,
    'Light9': 8
}).onChange(function (val) {
    spotLight = lights[val];
    params['light color'] = spotLight.color.getHex();
    params['intensity'] = spotLight.intensity;
    params['angle'] = spotLight.angle;
    params['penumbra'] = spotLight.penumbra;
    params['targetX'] = spotLight.target.position.x;
    params['targetY'] = spotLight.target.position.y;
```

```
    deleteGUI();
    addGUI();
    scene.remove(spotLightHelper)
    spotLightHelper = new THREE.SpotLightHelper(lights[val]);
    scene.add(spotLightHelper)
    requestAnimationFrame(draw);
});
```

When light is switched, variable 'spotLight' wich contains the selected light is changed within the value. All the parameters of GUI are resetted into the parameters of newly selected light, and the GUI and SpotLightHelper are recreated.

## What to supplement

- To move the position of the human model.
- To allow users to determine the number and location of lights.
- To allow multiple objects to be placed on the stage other than the human model.

## Link to the project

Dennis in Lights

https://editor.p5js.org/chan2ie/present/nke2md7p0