Medieval Fantasy

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Introduction to Computer Graphics – 2023/2024 – Project 1

Main Idea

- Create an medieval environment and allow the user to explore it and fight against enemies withing the setting.

- It will use three.js and some Blender modules.

- The demo is available at joaogasparp.github.io and the code at https://github.com/joaogasparp/joaogasparp.github.io

```javascript
// ================= SCENE =================

const world = new CANNON.World({ gravity: new CANNON.Vec3(0, -9.82, 0) });
let scene = new THREE.Scene();
let renderer = new THREE.WebGLRenderer();
renderer.setSize(window.innerWidth, window.innerHeight);
renderer.shadowMap.enabled = true;
document.body.appendChild(renderer.domElement);

let camera = new THREE.PerspectiveCamera(
  75,
  window.innerWidth / window.innerHeight,
  0.1,
  10000
);
camera.position.z = 5000;
const controls = new PointerLockControls(camera, renderer.domElement);
scene.add(controls.getObject());

const ambientLight = new THREE.AmbientLight(0xffffff, 0.1);
scene.add(ambientLight);

const sky = new THREE.Mesh(
  new THREE.SphereGeometry(1000, 32, 32),
  new THREE.MeshBasicMaterial({
    color: 0x000c19,
    side: THREE.DoubleSide,
  })
);
scene.add(sky);

scene.fog = new THREE.FogExp2(0xDFE9F3, 0.017);

function createScene() {
  const directional1Light = new THREE.DirectionalLight(0xffffff, 0.4);
  directional1Light.castShadow = true;
  directional1Light.position.set(25, 50, 25);
  scene.add(directional1Light);

  const sun1Geometry = new THREE.SphereGeometry(10, 50, 50);
  const sun1Material = new THREE.MeshPhongMaterial({
```

What is Done

– The environment contains models reminiscente of a medieval era.

– The user can freely move around the map.

Models and Illumination

– There are various models, made both using three.js (by me) and Blender, such as:
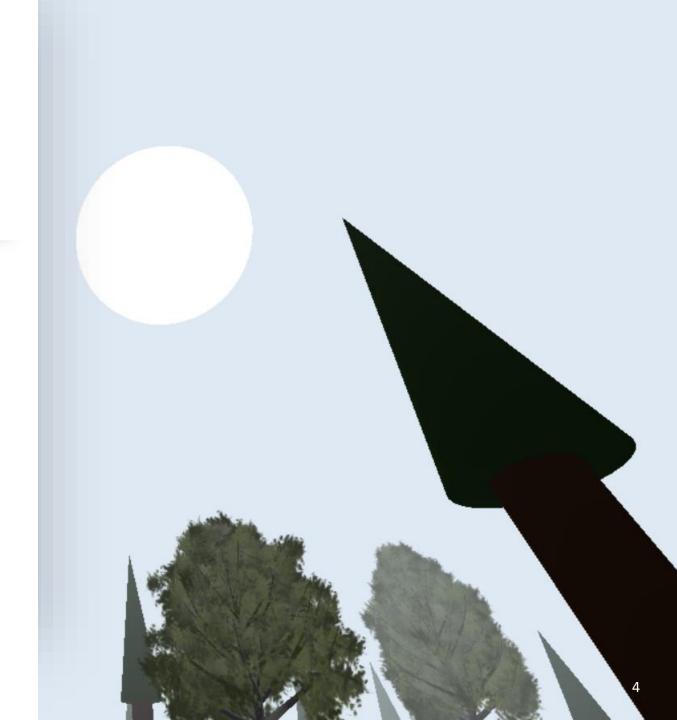 – Fog   (three.js)
  – Sun   (three.js)
  – Trees   (three.js and blender)
  – Grass   (Blender)
  – House   (Blender)

– Regarding illumination, there is an Ambient Light and a Directional Light.

User Interaction and Problems while working

- The user can use "WASD" and the space bar to move freely around the map.

- Issues with performance, adding collisions, and shadows.

Next Steps

- Add shadows and collisions to the models.

- Add enemies and a way to fight them.

References

- Sketchfab. (n.d.-b). Sketchfab.
  https://sketchfab.com/search?features=downloadable&type=models

- "Make a Grass in 45 Seconds-Blender 2024." Www.youtube.com,
  www.youtube.com/watch?v=xX72ZuCOVVE&ab_channel=BlenderTips
  . Accessed 10 Apr. 2024.

- Fog – three.js docs. https://threejs.org/docs/#api/en/scenes/Fog

- Loading 3D models – three.js docs.
  https://threejs.org/docs/#manual/en/introduction/Loading-3D-
  models