NTUST: 2023 Advanced Computer Graphics

Midterm Project: Write a program to read obj/glb and Text (.xyz) files, then do an specific animation (a moving car on a lane) by openGL / webGL

Statement

Before started to write my code,I neeed to know What this homework data formate is provided,like a 3D scene of MarioKart-race in glb” format,Car info in obj/mtl,,and a race-route data in .xyz..

The code first loads the necessary 3D models and track data. I use loaders such as GLTFLoader, MTLLoader, and OBJLoader to load the 3D models, and a custom fileLoader to load the track data.

After loading the data, the code initializes a Three.js scene and sets up an orthographic camera. It also loads a 3D race track model ('MarioKartStadium') and a 3D car model ('TaxiCar').

The animateFrame\_car function is called, which forms the main animation loop using requestAnimationFrame. Within this loop, the car's position is updated based on the predefined points, and the car is smoothly animated along the track.

I also manipulates the car's position and rotation using vector operations and quaternion transformations. It calculates the direction between consecutive points and uses it to update the car's position and rotation.

The pipeline of this code essentially follows a sequence of data loading, scene setup, animation, manipulation, transformation, rendering, and potentially event handling. By orchestrating these steps, the code creates an interactive 3D scene where a 3D car model moves along a predefined track within a 3D environment.