ICG Project

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The goal of this project is to use Three.js to create an interactive 3D environment where users may direct a robot to gather and place objects in a certain spot. The project must fulfill a number of requirements in order to accomplish this, including 3D modeling of the robot and objects, texturing, adding animations to the scene, incorporating user input to control robot movement, detecting collisions between the robot and objects, adding proper lighting, creating buttons for starting a new game, displaying instructions, and resetting camera positions. The project must also feature a ground plane connected to a 10x10 grid, production of targets for items, and robot control in addition to a timer that will measure the length of the game.

The project must also incorporate lighting that makes use of Three.js's lighting system, such as ambient light and directing light, as well as a light source carried by the robot, particularly for levels played in the dark. Future requirements also include giving the objects textures, creating dark levels, restricting the user's mobility area, showing a modal for robot control scripting, and giving the objects motions. This are the requirements already implemented :

- 3D modeling of the robot and objects

- Application of textures to the robot and objects

- Addition of animations like rotation and movement to the scene

- Implementation of human input to direct the robot's movement

- Detection of collisions between the robot and objects

- Addition of proper lighting to the scene using Three.js's spotlight and point light objects

- Inclusion of a light source carried by the robot

- Creation of buttons for starting a new game, displaying instructions, and resetting camera position

- Implementation of a timer to keep track of game duration

- Creation of a scene with PerspectiveCamera and OrbitControls addon

- Inclusion of ambientLight and directionalLight

- Creation of a ground plane and association with a 10x10 matrix

- Generation of targets for objects on the grid

• Implementation of robot control, including movement, grabbing, releasing, and placing objects on the ground

• Addition of shadows to the objects in the scene

This are the Requirements that are still in progress:

• Addition of textures to the objects

• Inclusion of GLTF objects

• Limitation of the user's movement space

• Addition of a button to display a modal for scripting robot control

• Implementation of levels without light

• Addition of a spotlight to the robot to show what is in front of it

• Addition of animations to the objects

Visit this website at "https://tiagomostardinha.github.io/icg-project/src/" to access and test the project.

In summary, the project's purpose is to develop an interactive 3D environment where users may direct a robot to gather and position objects, and the requirements and future goals give it the characteristics it needs to succeed.