ECE 573 Project Requirements
Dynamic ROS World Generation

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1 URL

`https://github.com/rscobie/ECE_573_FINAL_PROJECT`

2 B Requirements

- The user shall have control over the following variables: starting coordinate or preset location from a list, number of chunks to load around car, car movement speed.
- The program shall generate the environment with a minimum real-world dimension of 1000x1000m at a time.
- The program shall base its environments on real-world data.
- The generated world shall include world-accurate terrain heights.
- The generated world shall include roads with world-accurate positions, connections, and lengths.
- The generated world shall include buildings with world-accurate footprints and heights.
- The program shall fulfill all other requirements in city block, neighborhood, and freeway environments.
- The program shall generate a world around the reference point such that the vehicle's sensors won't detect the unloaded world.
- The program shall start the simulation from a reference coordinate.
- During the simulation the vehicle shall stay on the roads limits.
- The speed of the vehicle shall be constant.
- The simulation shall be generated on gazebo.

3 A Requirements

- The car shall navigate between two GPS coordinates, following the roads where possible.
- dynamic speed will change based on the environment.
- The quality of generating the world around the car will improve.
- The program will Generate obstacles along/on the road, such as people, cars, streetlights, etc.
- The program shall generate scenic environment. (water, trees, building aesthetics, cacti, etc.)
- Generated world shall have common traffic control such as stop lights, crosswalks, and stop signs.
- The user shall control the car's movement with a keyboard.