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Summary of what has occurred since the last log:

- The first draft of the research paper has been completed and submitted to my supervisor to be reviewed.

- All the lab members had a meeting to discuss the future of the simulation bench.

- For renovation purposes, the bench was moved, and in the process, some wiring happened to be disconnected and the infotainment system does not seem to be turning on anymore. I discussed with the supervisor the next steps to resolve this issue.

- **Naireet requested:**
    - If I could merge all the datasets produced by the data logging pipeline onto a single dataset by having them all function on the same sampling rate

    - If it would be possible to obtain task and job scheduling data from CARLA, such as arrival time, completion time, worst case time, etc. I'll have to look into this to see if this is possible.

- **Anukruthi requested:**
    - If I could produce some more datasets, specifically some collision data and if possible, while autopilot is enabled (Let's see if any collision occurs while the autonomous driving agent is active, but I highly doubt it. I can maybe force the agent into crashes by enabling autopilot at the last second whilst making a dangerous maneuver)

Today's Work:

- It seems that the gauge cluster is not responsive while the simulation is running, also most likely a result of the move. This is something I should bring up to the supervisor.

- I will begin by making a modified version of the testbed file called **testbed_modified.py** which will have ADB functions temporarily disabled to continue development on the system whilst the head unit is disconnected. I will also make a file called **testbed_modified_synchronous_recording.py** which will use an altered version of the data logging pipeline where all items are saved in a single dataset and all items are logged at the same sampling rate (in addition to having ADB functions disabled).

- An altered data logging pipeline was successfully made. The next step is to collect some data, both for Naireet and Anukruthi.

- I'll begin first by collecting some data for Anukruthi. I'll generate 8 more datasets, each being recorded on each of the different maps and weather/time of day conditions. A list

of the maps that come with CARLA can be found here: https://carla.readthedocs.io/en/latest/core_map/#carla-maps

- I had a bit of a brainwave, I could add weather and time of day data to the data logging pipeline. I will see if such environmental data is accessible through the CARLA api.
- It is obtainable through the CARLA api so I will add weather and time data in the data logging pipelines for both modified testbed files as it may be useful for simulation and testing.
- I also noticed that there were no controls added to turn the vehicle's lights on and off, nor were there any way to use the turn signals. This would be quite crucial for driving in darker times of day. I will look through the CARLA documentation to see how the light controls can be accessed. The following resources may be of help: https://carla.readthedocs.io/en/latest/core_actors/#vehicles
- By going through the documentation, I found a vehicle attribute in the carla library: carla.VehicleLightState. I will modify this attribute using keys to control certain light functions such as toggling the light level and enable the use of the turn signals.
- I was able to successfully add light controls into the simulator. However, another thing I noticed was that traffic vehicles do not have their lights turned on when they are spawned in, which would affect night time driving and simulation. I will look into how to change the light states of traffic vehicles. This source may be of help: https://carla.readthedocs.io/en/latest/adv_traffic_manager/
- After reviewing the documentation, I was able to make the necessary modifications to the traffic manager in the **generate_traffic.py** file so that all traffic vehicles that spawn in automatically have their lights on. However, some vehicles that do not have lights modeled into them will not have any lights to turn on (this is due to the individual car models themselves in the Unreal Engine level)
- Tomorrow I will begin recording the datasets that Anukruthi and Naireet requested.