

2022/06/03

- Will continue getting the remaining test cases working with the updated Carla bench. Afterwards, I will also begin constructing test cases for the additional features I implemented.
- **Tests now working with new Carla bench** (each one required some rework, some little, some a lot):

Test Case	Pass	Fail
ADB_app_running_test	✓	
ADB_API_Test		✓
Accel_Test	✓	

- The reason **ADB_API_Test** had failed is because there is no existing test in the file. There is only a method invocation of a brake test and no further documentation to describe what the purpose of the test is. As such, this test was **deleted**.
- Now that all relevant pre existing test cases have been modified to work properly with the updated Carla bench, the next step is to make tests for the new features I have added. I will make tests for features I have added in the chronological order I introduced them to the Carla bench.
- **Serial_Connection_Test (Test id = 20)** (20 is an arbitrary number that differs from preexisting test ids)
 - The purpose of this test is to ensure that the Arduino board is correctly connected to the PC by checking for its presence in the list of connected devices.
 - This is being done by checking the list of all connected serial devices, and checking if the prefixes within the list contains the addresses of the 2 arduino boards we have connected. Those addresses are **/dev/ttyACM0** and **/dev/ttyACM1**.
 - Used the **all()** function in the following statement: **all(address in ports for address in known_addresses)**. This will check that the known addresses for the Arduino boards exist in the list of all connected serial devices. This is paired with an **assertTrue** statement.
 - For some reason, whenever I run the test, it says **Ran 0 Tests**. Looking into why the test is not running.

- Found that the naming convention of the test class and the test method matters. The test class must start with **Test**, such as **TestSerialConnection**, and the test methods must begin with **test_**, such as **test_addresses**.
- The test now runs successfully.
- **Serial_Transmission_Test (Test id = 21)**
 - The purpose of this test is to ensure that the Carla bench is successfully transmitting data to the Arduino board.
 - The **get_speed** function was modified to take a flag (**globalArduinoTestFlag**) in order to determine whether the function was in testing mode. The reason this function was modified in particular was because this is the only portion of the entire code that communicates with the Arduino board. This required me to go into all the previous tests that used **get_speed** and modify their method calls.
 - The **parse_events** function was also modified to detect whether the simulator was launched with the test id 21, and if so, raise the **globalArduinoTestFlag**. This will ensure the **get_speed** function sends specific test data to the arduino board, which it will also wait for a specific reply from the board. As such, the program on the Arduino board will also need to be modified.
 - Was able to get the flags working properly on the simulator side.
 - Was able to send the specific test data to the Arduino, have the Arduino parse it as a different code, and send an acknowledgement to the simulator side, where the simulator side successfully returns True.
 - Made a test file utilizing the new functionality added into the Carla simulator and the Arduino program.
- **Made a critical realization:**
 - Since I modified the manner in which the pygame closes when I was getting the previous tests working with the new Carla bench, previously spawned actors (vehicles) don't get destroyed. As such, each time the user runs the simulator, the performance deteriorates significantly further and further. This can be solved by rerunning the server, however, I will modify the way the pygame closes again.
 - If the **testingFlag** is active, it does not destroy the actors, such that the **get_speed** function returns the data it needs. I will go into the tests themselves, and destroy the worlds externally in each test.
 - Was able to modify a test to destroy the world externally successfully, added that functionality to every test that launches the Carla simulator.
- **Elements to make tests for:**
 - Handbrake
 - Manual shifting (might be redundant so might skip)

- The newly added ADB functions controlled through the wheel (many)
- Test the CAN messages
- Possibly test the CAN attacks? (may not be possible as that's an entirely different executable)