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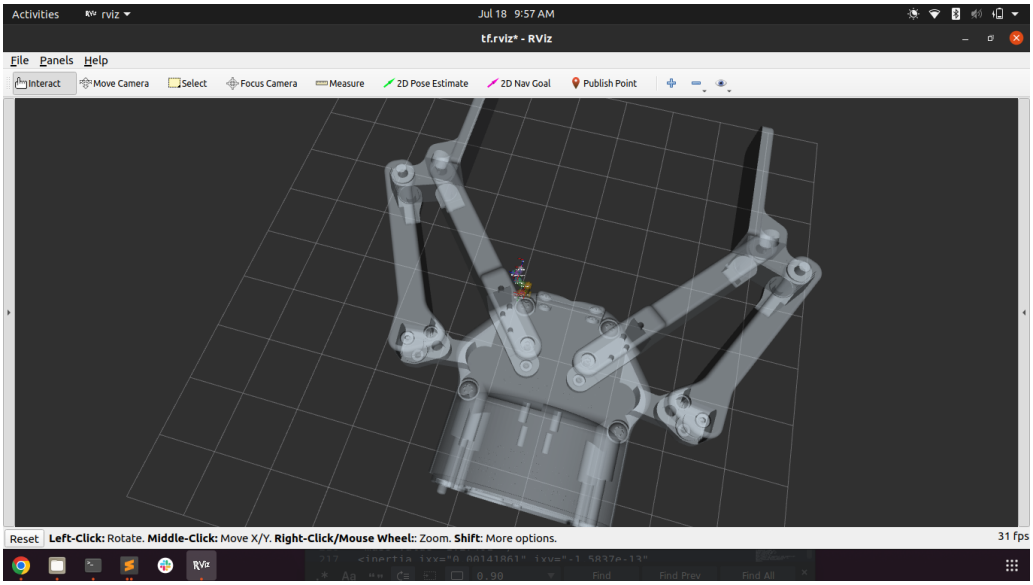
Start date: 11 July 2022
Weekly Assignment (heading): URDF editing

AIM: To attach end-effector to robotic URDF without using Onshape
Components used: ROS and RViz, same components.

Day: 1-3
Third attempt:
Another issues with previous approach last week is that I got an robotic URDF, not the xacro files, but the tutorial that told me on how to add end-effector was using xacro files for both end effector and the robot, so I asked for the robotic URDF and asked if I could add any end effector to the robot, not just Robotiq. Mr. Dhanush said yes, so that is exactly what I did.
After many hours of searching, I found a decent end-effector from Fetch-robotics. Although this end-effector wasn't on sale, I didn't care, because I wanted to see if the xacro files of the robot were working with this end-effector, and it turns out they didn't. The problem is that the end-effector isn't scaled properly, and thus it looks gargantuan compared to our robot. And there is no way to scale a xacro end-effector with robotic xacro, after all there needs to be a common reference frame for it to be the case.

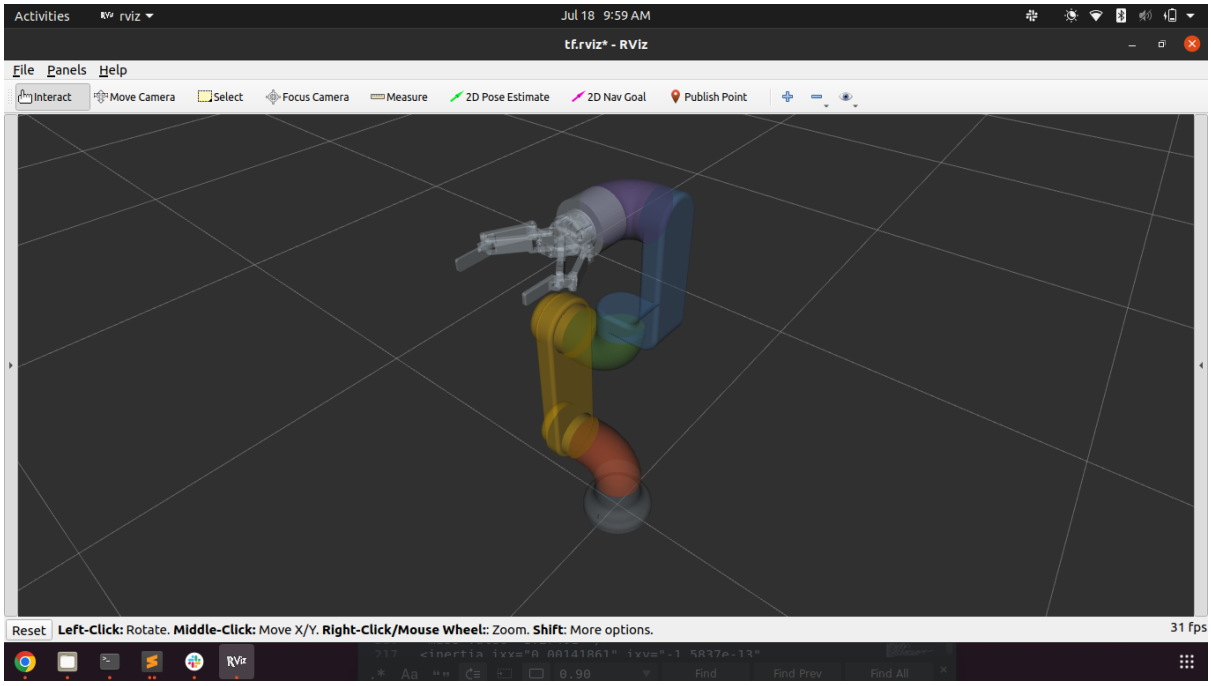


Day: 4-6

Fourth attempt: I would attach the end-effector directly to the robot by changing the URDF **directly.** Never is this a recommended approach, since we risk harming the URDF of the robot. Its like trying to fix an app on the phone by altering the OS itself.

But since I was out of options, I tried it so, and it worked, somewhat.

The main issue here is that the I added the end-effector STL mesh directly to the URDF, but on this mesh there were no joints for the finger motion of the URDF, just meshes for open and closed end-effector. Thus, I cannot make the end-effector fingers work as I wanted. So in order to make it work, I had to add two cuboids to it, at the tip of its fingers. The cuboids would come together and go apart, simulating a opening and closing action. A pretty terrible way of making a URDF, but nothing else seems to be working at this point.



Conclusions:

Directly altering the robotic URDF never works, always try to make it work on a 3D simulation software.