Hooking Up Phantom Omni to Laptop

1. Plug Phantom Omni into outlet and hook up to Node Duo
2. Hook up laptop to Node Duo using Thunderbolt cable (looks like USB-C)
3. Ensure Node Duo is plugged into outlet and light is blue on the front of the module

Steps to start the AMBF Simulator

1. Launch roscore
    a.
    b. From terminal, run `roscore`
2. In a different terminal, change directory into `~/ambf/bin/lin-x86_64`
    a. `./ambf_simulator --launch_file ~/volumetric_drilling/launch.yaml -l 0,2,4,5 (0,2,4,5,6 for VR)`
3. Ensure that Phantom Omni is recognized and is being used to drill (instead of keyboard)
    a. If this does not happen, run command `sudo chmod a+rw /dev/fw*`
    b. Try step 2 again

Steps to run data collection

1. In a different terminal, source the setup bash file
    a. source `~/volumetric_drilling/build/devel/setup.bash`
2. Run python data collection script from `~/volumetric_drilling/scripts`
    a. `python3 data_record.py`

Ensuring that HTC VIVE can be set up with an external monitor

1. In a terminal, change directory into `/usr/share/X11/xorg.conf.d`
2. Run `sudo mv 99-HMD.conf.bak 99-HMD.conf`
3. Run `reboot` (this will ensure that the configuration file is run during startup)
4. When done using external monitor, enter terminal again and navigate to `/usr/share/X11/xorg/conf.d`
5. Run `sudo mv 99-HMD.conf 99-HMD.conf.bak`
6. Run `reboot`

Important: If configuration file is not moved to conf.bak, then if accidentally rebooted, the laptop will appear to be frozen in the boot screen since it loaded the configuration file without have an external monitor to be connected to. In this case, either hook laptop up to an external monitor or hit Ctrl+Alt+F6 to enter a terminal in bootup and follow steps 4-6.

Steps to use VR

3. In a different terminal, set VR parameters
    a. `rosparam set /ambf/env/cameras/stereoLR/stereo_eye_separation 0.013`
4. Plug in thunderbolt and USB for headset, adjust monitor settings in laptop settings
    a. When running simulator, need primary display to be headset.