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Summer 2018 Interim Report #1

Project Background:

I am/have been working on a few different projects inside of the High Contrast Imaging Testbed Facility (HCIT). Although the Decadal Survey Coronagraph Testbed (DST) will likely be the main project that I will be working on later in my internship period, I have mostly been working on troubleshooting issues with instrument motors on other testbeds and am currently working on a fail-safe system for the turbo vacuum pump of a separate vacuum chamber. I am not too familiar with the other projects/testbeds, but I know the goal of the DST project is to test the technologies that will be used in the Wide-Field Infrared Survey Telescope (WFIRST) mission. The DST is a large scale model of the coronagraph that will be one of two flight instruments placed in the WFIRST space observatory. Currently, our group is running tests on the DST in the normal atmosphere, but it will soon be moved into a vacuum chamber for further testing.

Tasks Completed:

Since it is only week 3, I have not accomplished too much so far. Most of the first and second week consisted of waiting for scheduled trainings and administrative issues to clear in order to get access to the HCIT facility. Nevertheless, the tasks I have completed so far are as follows:

1. Helped Dr. Camilo Prada find and fix issues with a lyot stop motor of a testbed in the large vacuum chamber and locate/fix a light leakage issue afterwards.
2. Helped write a few methods in Python for a deformable mirror model created by Dr. Pin Chen.
3. Wrote a Python program to control a "smart" power strip, turning on and off certain outlets if certain criteria are met.
4. Learned how to read data from the turbo vacuum pump's pressure transducer and wrote a Python program that polls the transducer for data.
5. Installed the "smart" power strip onto a rack inside the HCIT facility.

Current Work and Issues:

Currently, I am working on the fail-safe system for the turbo pump of one of the vacuum chambers inside the HCIT facility. The power strip programming and installation was the first part of this task. Now I am trying to figure out how to read the rotor speed and temperature of the vacuum pump itself, and additionally how to connect the power strip to the internal network inside the High Bay so that the strip can be controlled remotely. Many problems that I have overcome so far are similar to the problems that I am facing now. Problems that I am currently facing include:

1. I need to learn some more about different types of connections and wires and what types of wires can be converted to others.
2. I need to find/order certain adapters and connectors because my laptop does not have an Ethernet port, forcing me to use adapters that will convert everything to USB.
3. I am unfamiliar with the commands and connections needed to configure the IP of the power strip to what I need.