NORTHERN ARIZONA UNIVERSITY

College of Engineering, Forestry, and Natural Sciences

REMOTE TELESCOPE ACTIVITY MONITOR

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Abstract:

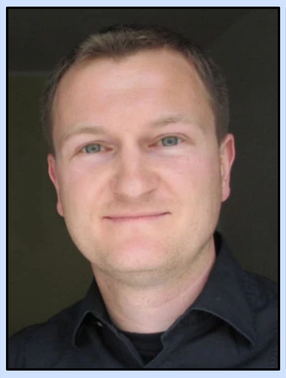
Team Skyward

We are Team Skyward and we are building an online dashboard for the FRoST Monitor. The FRoST monitor is a telescope dome that is 3 miles south of the Northern Arizona campus. The FRoST monitor dashboard will display vital telescope and weather information quickly and easily. Weather information gathered will include data such as current temperature, dew point temperature, wind, and the latest image from the all-sky-cam. All of this data is supplementary to help our clients use the Frost telescope to photograph and study Near Earth Objects.

FRoST Monitor Project

Operating a telescope from afar can be a difficult task. Even simply checking on the telescope's status can be taxing if the operators have physically visit the telescope just to see whether it's functioning properly or not. For this reason, we have developed a web dashboard which is capable of storing and displaying information related to a telescope's function and the nearby weather. This is all for the convenience of the researchers and telescope operators, as they no longer have to spend long periods of time traveling to and from their telescope in order to know what is going on. This web dashboard communicates with the telescope's own machines as well as local weather stations to gather and display relevant information on any modern web-capable device.

Project Sponsors:



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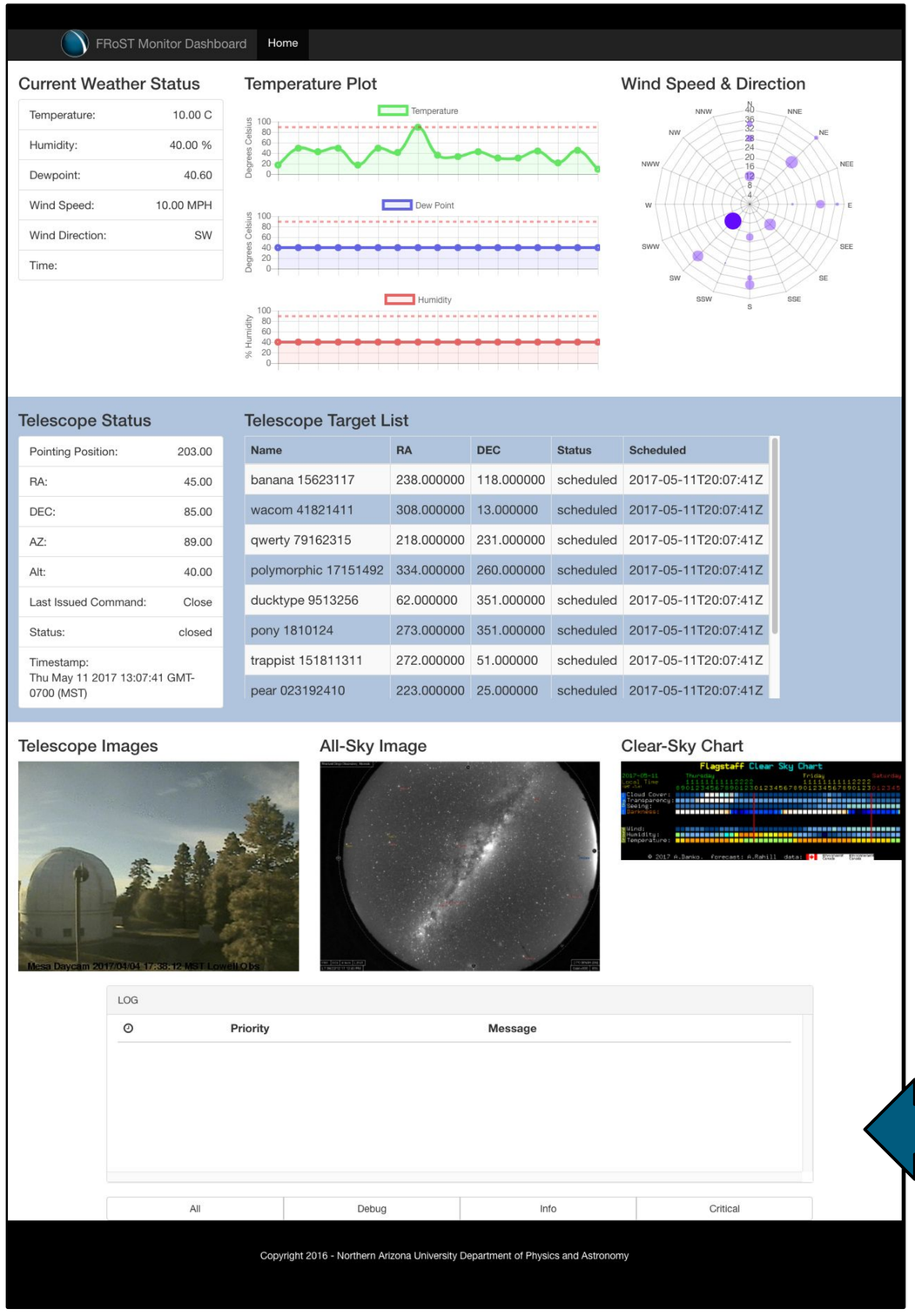
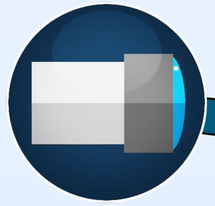
Flagstaff Robotic Survey Telescope (FRoST) Monitor:



Flow of Data:



FRoST Status & Weather Information

First, readings from the telescope and local weather are taken by the various instruments located around FRoST. This information is collected hundreds of times throughout the day.

Lowell Observatory

After the readings are taken, the data is sent to the Lowell Observatory and from there, they are accessible by the next step of the data flow, the Gathering Script. This is just a quick stop for the data, as they were previously inaccessible from any machine outside of the Lowell's own VPN.

Data Gathering Script

Now the data can be grabbed through a SSL tunnel from the machine running the Gathering Script. The data is then pushed to the project database where is is accepted by the REST Framework.

Django REST Framework

The REST API accepts the incoming data and serializes it by matching up the JSON file with the models of the data points that are in the Django project. This data is then placed in the Django database. REST also queries the data from the database.

Django Web Application

The Django project is what allows users to see the data in the form of a dynamic web page. When a user accesses the web site, they see the Django Template, which uses a mixture of HTML, CSS, and JavaScript, which allows for a dynamic display of the most recent weather and telescope data gathered from FRoST and Lowell. This web page can be seen on the left.