Arundo Coding Challenge

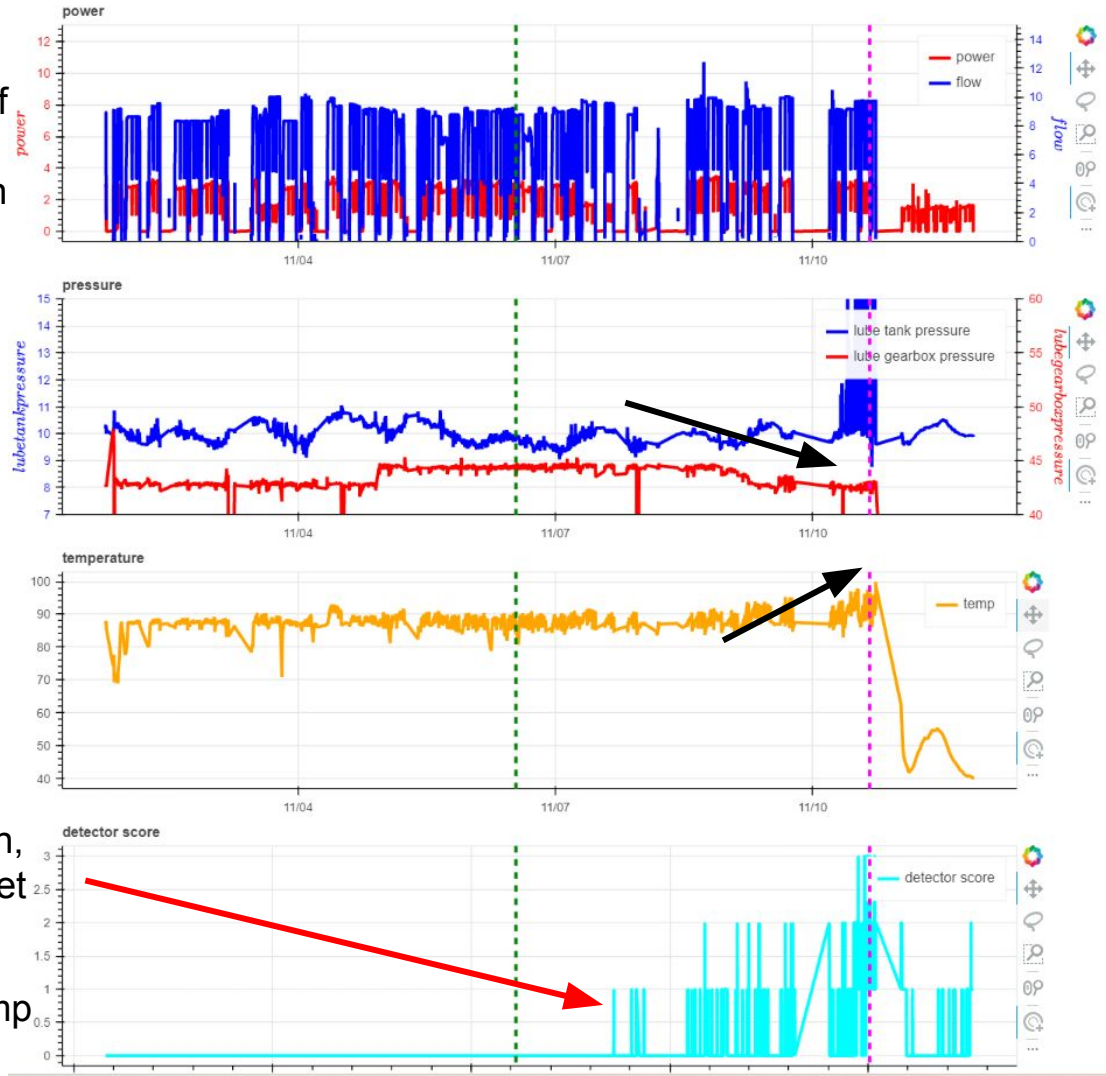
Skyler Saucedo 11/4/22

Sporadic power interruptions have deleteriously contributed to the pumping efficiency and flow of lubricant to the gears, adding strain to the system's capacity to dissipate heat and maintain pressure.

A slow, decrease in gearbox pressure suggests a potential mechanical failure may be imminent. There is less pressure at the gearbox than what is expected, and with this, less lubricant circulating through the system.

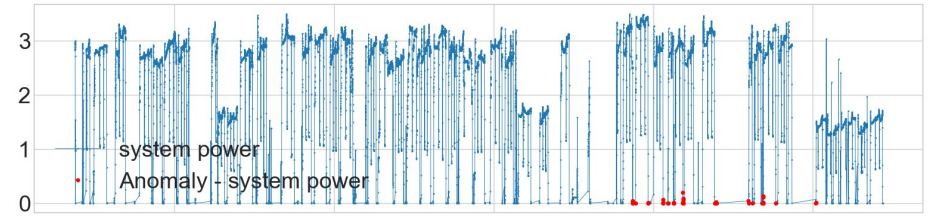
There is a gradual increase in the variance of the temperature during this time, hinting at the system's increased difficulty to lubricate the gears and maintain nominal behavior and a stable temperature.

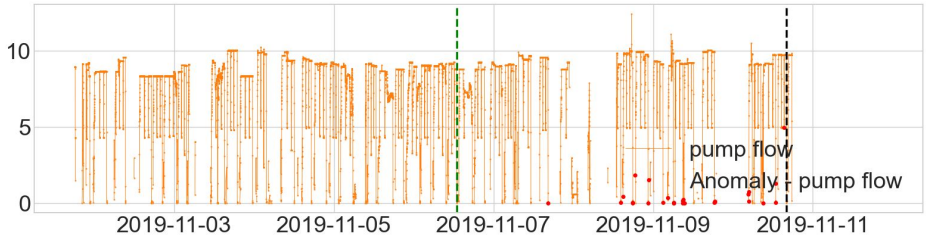
Detector senses anomalous behavior at 11/7 20h, with an increasing detector score during the onset of failure.

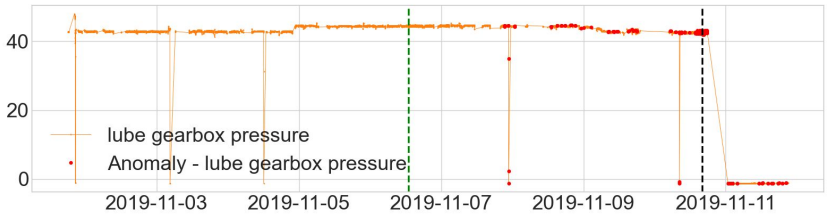


Clean data before this time stamp

Failure occurs here







Detector uses:

```
from adtk.detector import AutoregressionAD
```

For power and flow (cyclical ts) and pressure features.

With step sizes comparable to pump cycle periodicity.

Temperature anomalies rank above 98.1 percentile, and are determined by

```
from adtk.detector import QuantileAD
```

The final detector equally weighs and sums all anomalies observed at every time stamp. The result is the score as a timeseries (slide 2, plot 4.)