SHELL COMPRESSOR ANALYTICS

TEAM 30

OUR QUESTIONS

Can we identify anomalies and predict how the system will act?

Can we identify features that are closely related?

Can we make a digital twin?

OUR APPROACH

➔ **LEARN**

Gain a better understanding of ML techniques

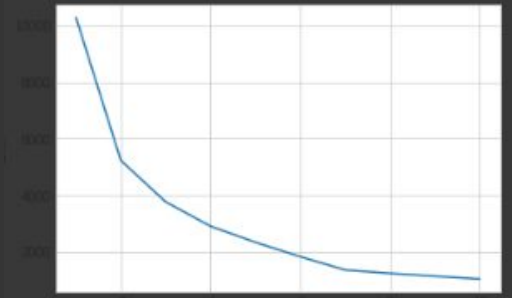
➔ **BREADTH**

Explore different aspects of the data, looking at anomalies and relationships between columns

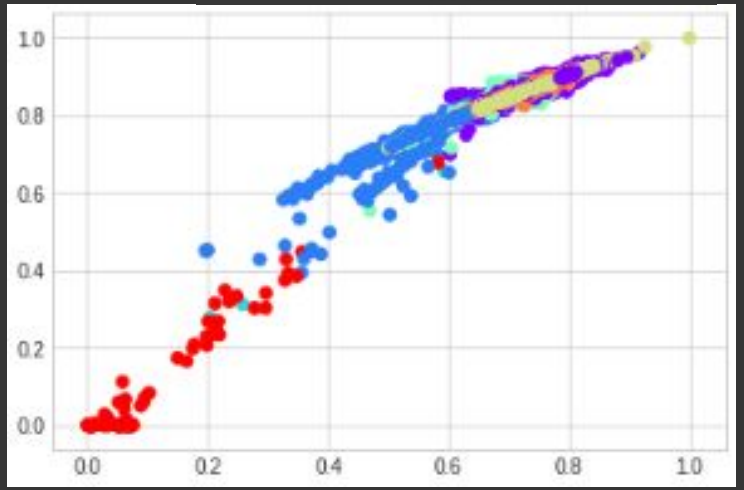
➔ **SIMPLIFY**

Create outputs that can be interpreted easily and used in other applications

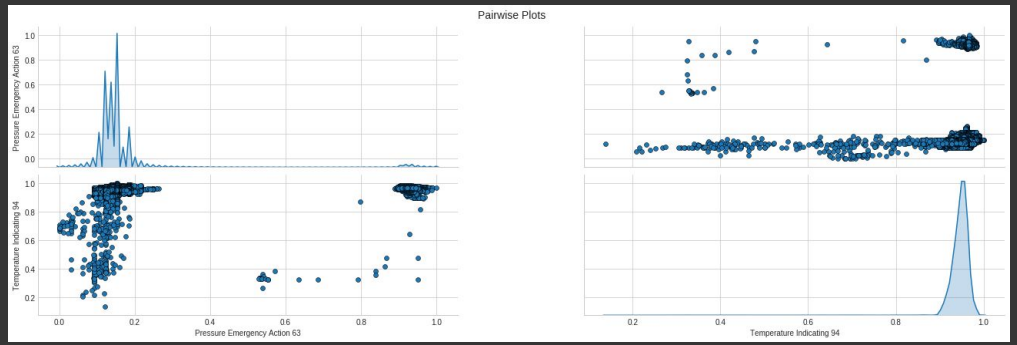
K Means Clustering



Use the elbow method to determine optimal clusters.

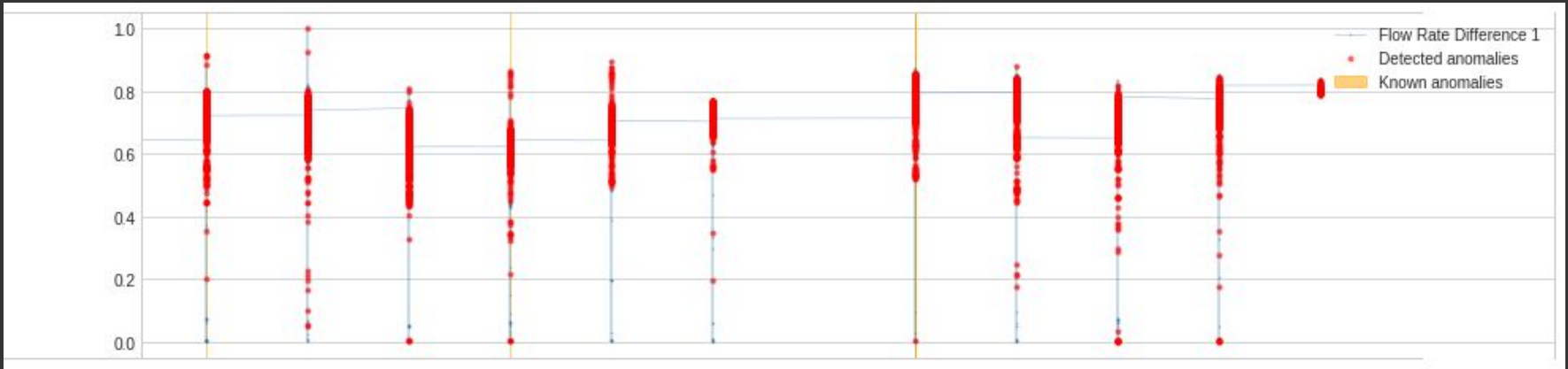


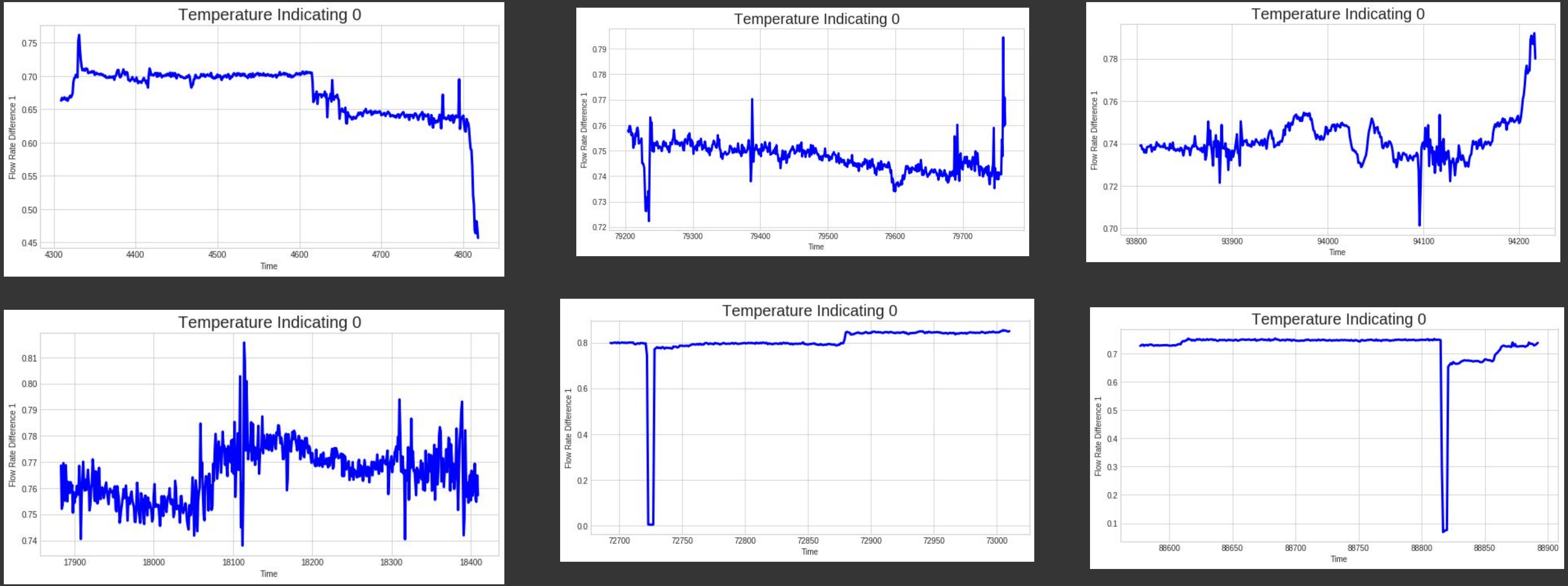
To determine relationship between features e.g. Temperature and Pressure as shown below:



ANOMALY DETECTION WITH ADTK

Using the open source library, we implemented a Local Outlier Detector Model that accurately detects when a sensor suddenly begins to malfunction. It also matches up with the points we knew had anomalies





A selection of Data Visualisation which can be used by engineers for better understanding of what exactly is happening at that sensor at that time

Generative Model-SMOTE

Synthetic Minority Oversampling Technique. Generates new instances from existing minority cases supplied as input

Result very similar so can be studied to better understand the anomalies saving millions