AAKR

Auto Associative Kernel Regression is being considered for the time series algorithm. I has already been researched and proven to do well with characterizing and gnerating prdictions based off of a number of factors. The implementation of this algorithm is shown below for future reference.

In [1]:
```
import pandas as pd
!pip install aakr
```

```
Requirement already satisfied: aakr in c:\users\admin\miniconda3\lib\site-packages (0.0.1a0)
Requirement already satisfied: scikit-learn>=0.23.2 in c:\users\admin\miniconda3\lib\site-packages (from aakr) (0.24.2)
Requirement already satisfied: numpy>=1.19.4 in c:\users\admin\miniconda3\lib\site-packages (from aakr) (1.20.2)
Requirement already satisfied: pandas>=1.1.5 in c:\users\admin\miniconda3\lib\site-packages (from aakr) (1.2.4)
Requirement already satisfied: python-dateutil>=2.7.3 in c:\users\admin\miniconda3\lib\site-packages (from pandas>=1.1.5->aakr) (2.8.1)
Requirement already satisfied: numpy>=1.19.4 in c:\users\admin\miniconda3\lib\site-packages (from aakr) (1.20.2)
Requirement already satisfied: pytz>=2017.3 in c:\users\admin\miniconda3\lib\site-packages (from pandas>=1.1.5->aakr) (2021.1)
Requirement already satisfied: six>=1.5 in c:\users\admin\miniconda3\lib\site-packages (from python-dateutil>=2.7.3->pandas>=1.1.5->aakr) (1.15.0)
Requirement already satisfied: joblib>=0.11 in c:\users\admin\miniconda3\lib\site-packages (from scikit-learn>=0.23.2->aakr) (1.0.1)
Requirement already satisfied: scipy>=0.19.1 in c:\users\admin\miniconda3\lib\site-packages (from scikit-learn>=0.23.2->aakr) (1.6.2)
Requirement already satisfied: threadpoolctl>=2.0.0 in c:\users\admin\miniconda3\lib\site-packages (from scikit-learn>=0.23.2->aakr) (2.1.0)
Requirement already satisfied: numpy>=1.19.4 in c:\users\admin\miniconda3\lib\site-packages (from aakr) (1.20.2)
Requirement already satisfied: numpy>=1.19.4 in c:\users\admin\miniconda3\lib\site-packages (from aakr) (1.20.2)
```

In [2]:
```
from aakr import AAKR
from sklearn.datasets import load_linnerud
```

In [3]:
```
# Load dataset (20 samples, 3 features)
X = load_linnerud().data

# Use first 15 as examples of normal conditions
X_nc = X[:15]

# New observations to get normal condition for
X_obs = X[15:]
```

In [4]:
```
# Create AAKR and fit first 15 observations
aakr = AAKR()
aakr.fit(X_nc)
```

Out[4]:
```
AAKR()
```

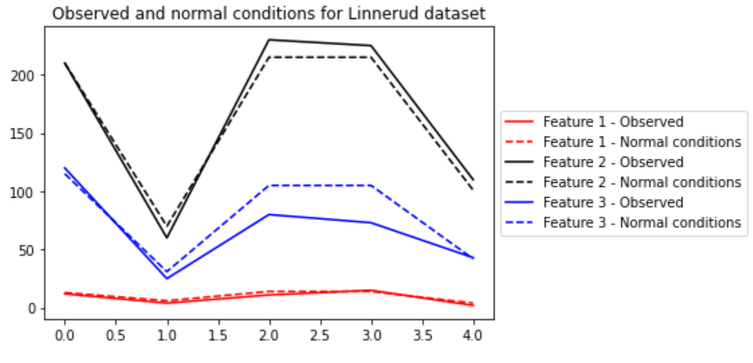
In [5]:
```
# Normal conditions for the last 5 observations
X_obs_nc = aakr.transform(X_obs)
```

In [6]:
```
# Plot results
import matplotlib.pyplot as plt

colors = 'rkb'
for i in range(X.shape[1]):
    plt.plot(X_obs[:, i], color=colors[i], linestyle='-',
             label=f'Feature {i + 1} - Observed')
    plt.plot(X_obs_nc[:, i], color=colors[i], linestyle='--',
             label=f'Feature {i + 1} - Normal conditions')

plt.title('Observed and normal conditions for Linnerud dataset')
plt.legend(loc='center left', bbox_to_anchor=(1, 0.5))
```

Out[6]:
```
<matplotlib.legend.Legend at 0x26524034a00>
```



In [ ]:
```
```