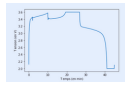
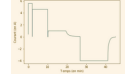


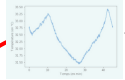
charge phase (c) discharge phase (d)



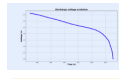
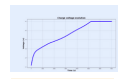
current(I)



voltage(V)



temperature(T)



MIT battery dataset

Data Preprocessing

Min-Max normalization

Data splitting:
X step input window,
Y step output window

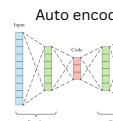
Prepared data

Model Generating

CNN-LSTM model

SOH values

E-LSTM model



Dense encoder

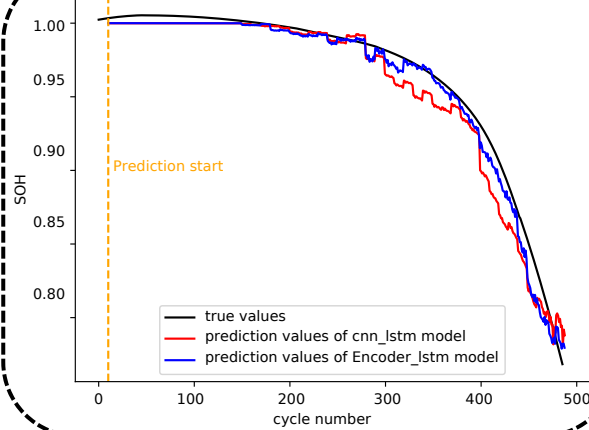
CNN encoder

Encoder part

LSTM model

SOH values

10-step input window, 10-step ahead prediction



Results

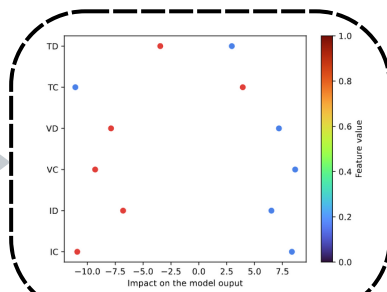
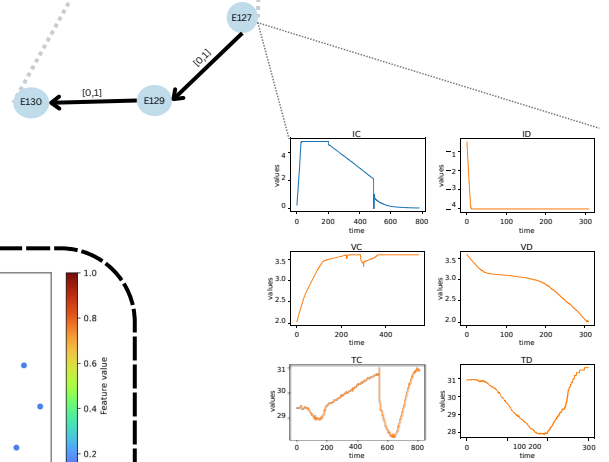
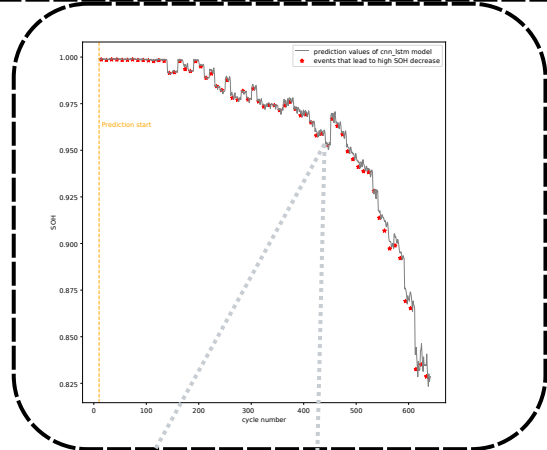
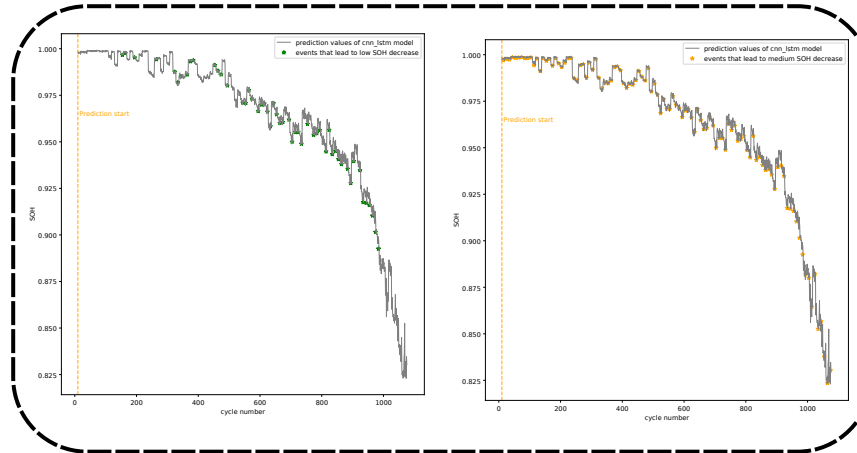
Mining patterns

Frequent items for low degradation

Frequent items for medium degradation

Frequent items for high degradation

Detect abnormal decrease



Explicability