Supplementary Materials

Lithium-ion battery health prognosis via electrochemical impedance spectroscopy using CNN-BiLSTM model

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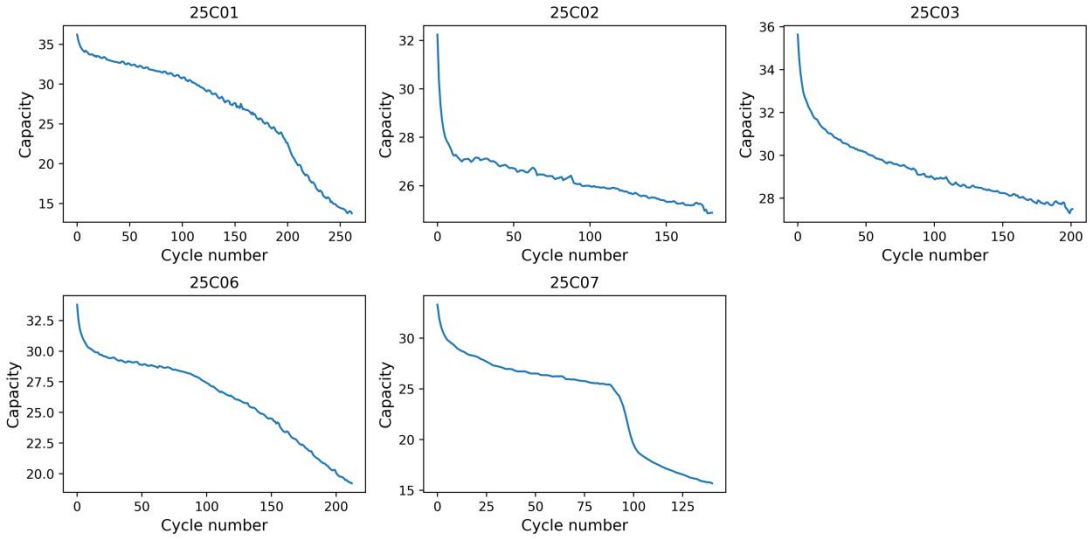
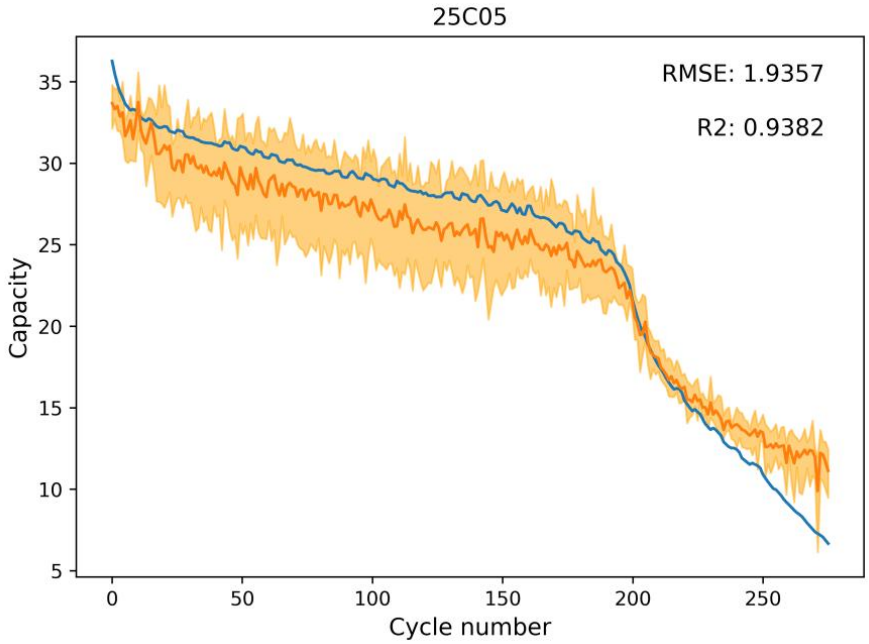


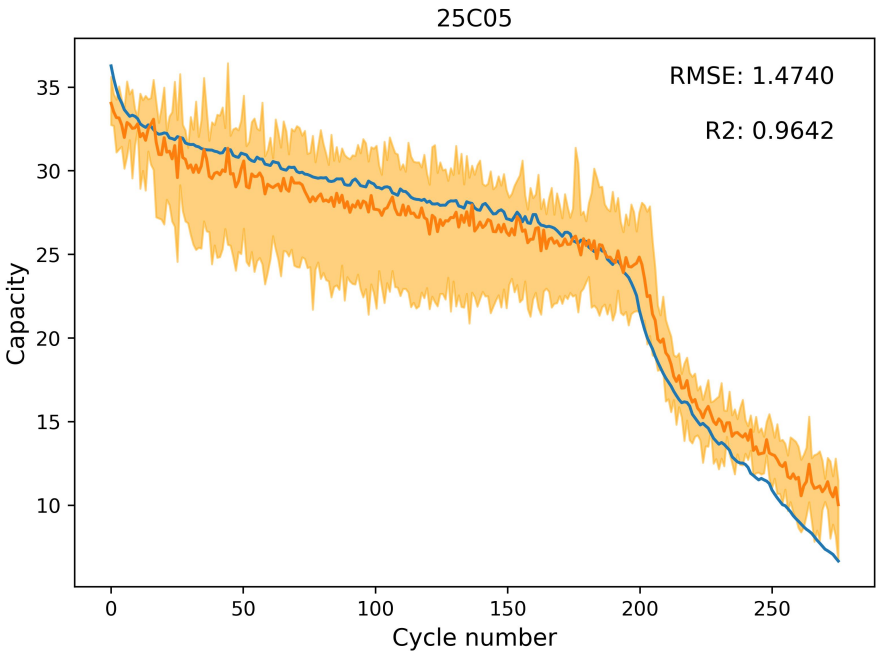
Supplementary Figure 1. The capacity fade curves of the training data at 25 ℃.

As marked, the Cells 25C01, 25C02, 25C03, 25C06, and 25C07 are used for training.

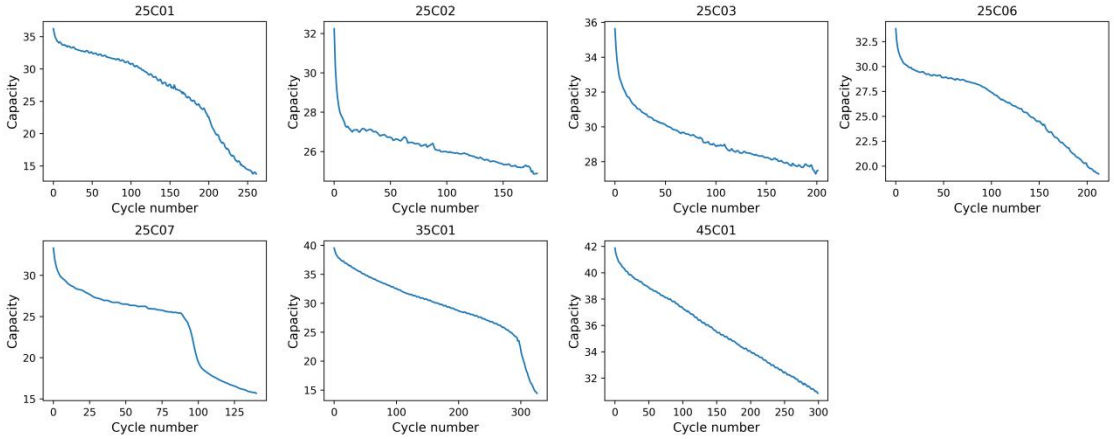


Supplementary Figure 2. The results of capacity estimation for the test cell at 25 ℃.

Cell 25C05 is used for testing.

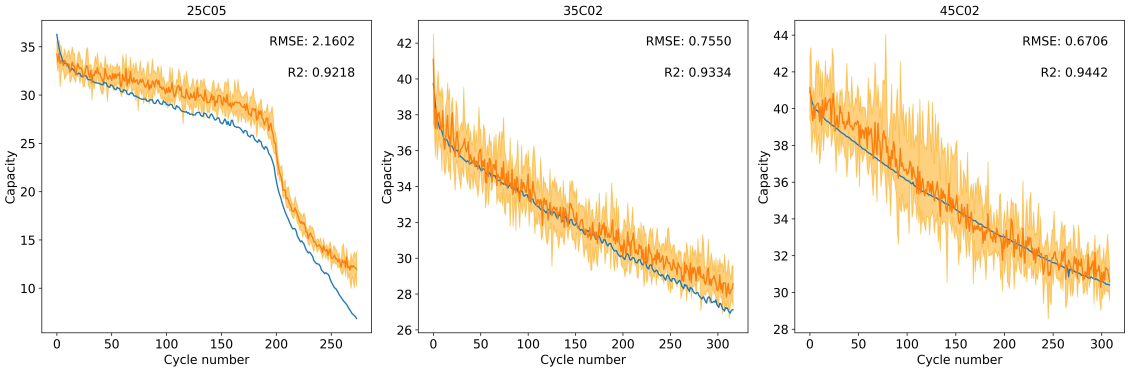


Supplementary Figure 3. The results of the capacity estimation for cell 25C05, where cells 25C01, 25C02, 25C03 and 25C06 are used for training, with cell 25C07 removed. The SOH estimation model is retrained by excluding the only one cell with the knee point (i.e., 25C07), and the result shows that the model can still accurately predict the capacity drop of 25C025 at around 190 cycles. This demonstrates the robustness of our model to predict such knee points even without prior knowledge of similar degradation patterns.



Supplementary Figure 4. The capacity fade curves of the training data at multi-temperatures (i.e., 25, 35, and 45 ℃).

Cells 25C01, 25C02, 25C03, 25C06, 25C07, 35C01 and 45C01 are used for training.



Supplementary Figure 5. The results of capacity estimation for the test cell at 25, 35, and 45 ℃.

Cell 25C05, 35C02 and 45C02 are used for testing.