

Bridging the Sim2real Gap for Long-Term Battery Discharge Predictions with Time Series Transformer

AMLD22



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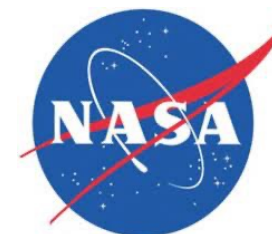


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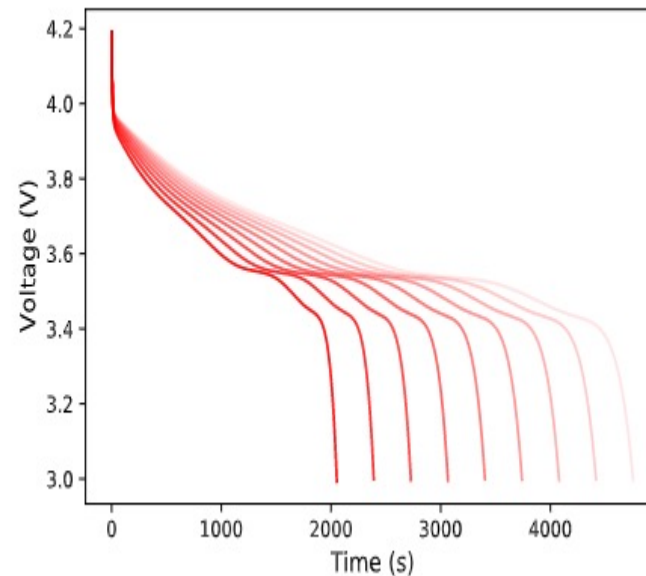
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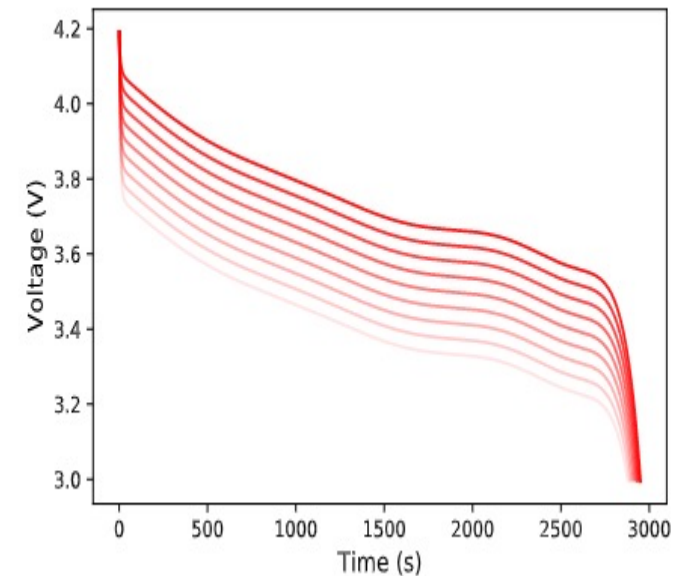
Li-Ion Batteries: EOD prediction and Ageing inference

GOAL: Given an input current load profile, predict the evolution of the voltage discharge curve.

Voltage Discharge varies significantly depending on the degradation level!

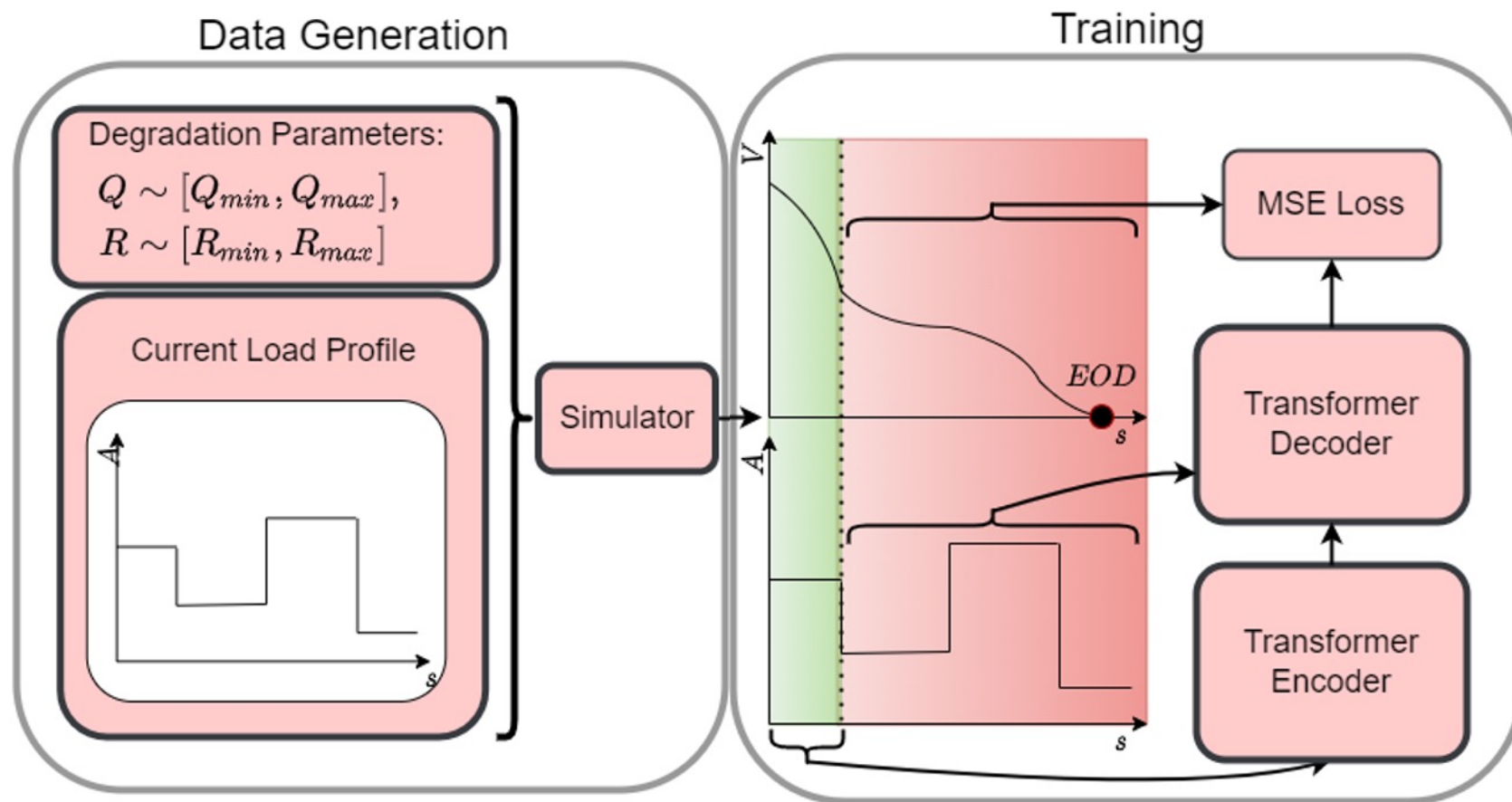


Varying Maximum Capacity Q



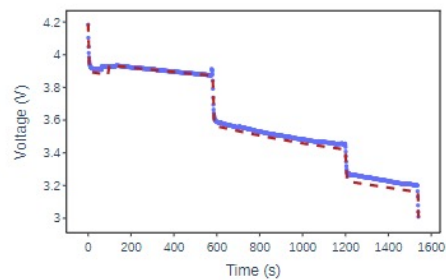
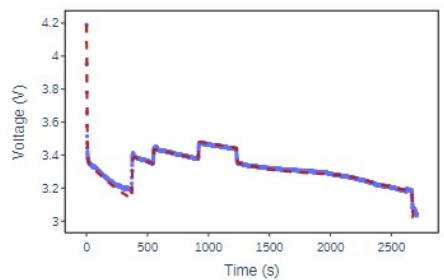
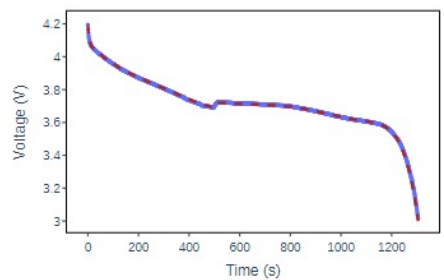
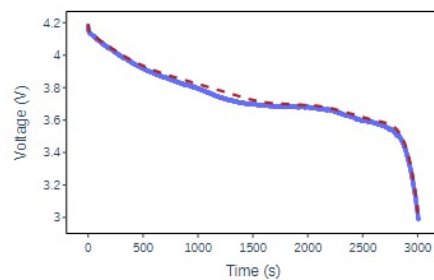
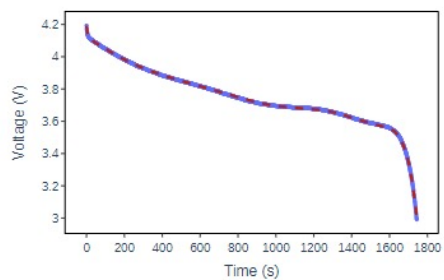
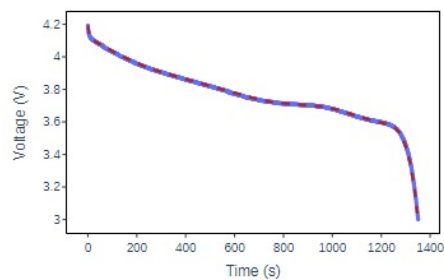
Varying Internal Resistance R

Method

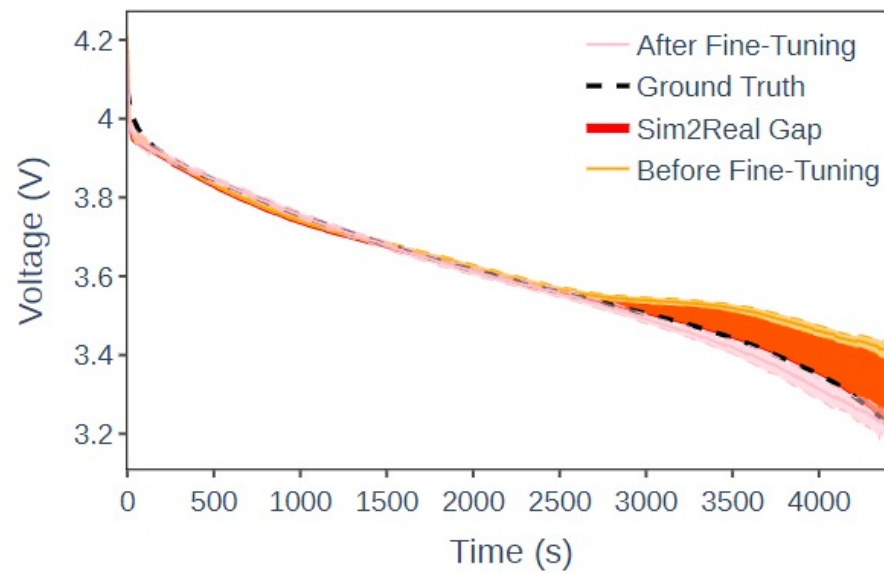


Results

Simulated Data



Real Data



Conclusions

- New method to *simultaneously* infer the degradation level and the end of discharge point of Li-Ion batteries.
- Transformer model adapted to process long time-series.
- Via fine-tuning, our model generalizes well to real battery data.
- General framework, possibly transferable to other application domains.