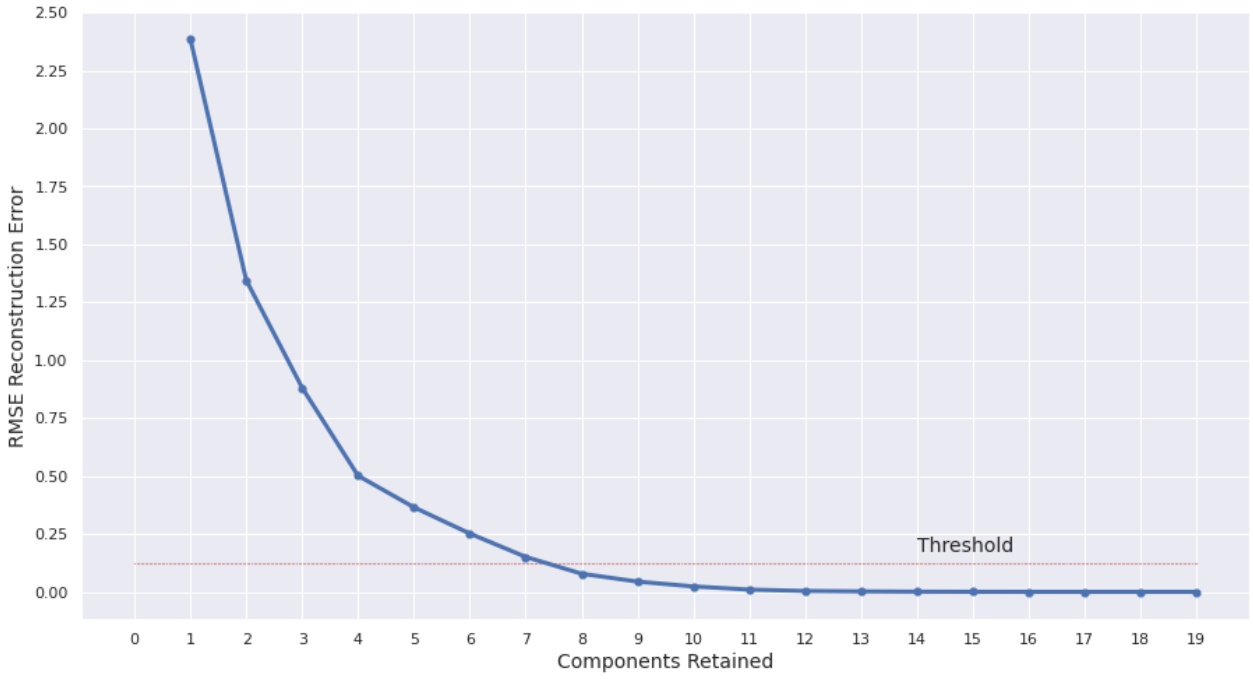
Predicting and Analysing the Remaining Useful Life of EV Batteries

Supplementary Information

I Principal Component Analysis (PCA) Reconstruction Error



Supplementary Fig. 1: Number of components retained vs. RMSE reconstruction error

II Evaluation results on cells 6, 7, 18

Model	RMSE	R2 Score
XGBoost	0.0778	0.9042
Random Forest	0.0806	0.8971
AdaBoost	0.0820	0.8934
LightGBM	0.0850	0.8855
Artificial Neural Network	0.0954	0.8558
CatBoost	0.1106	0.8063
SVR	0.1455	0.6646

Supplementary Table 1: Model results on Cell Number 6

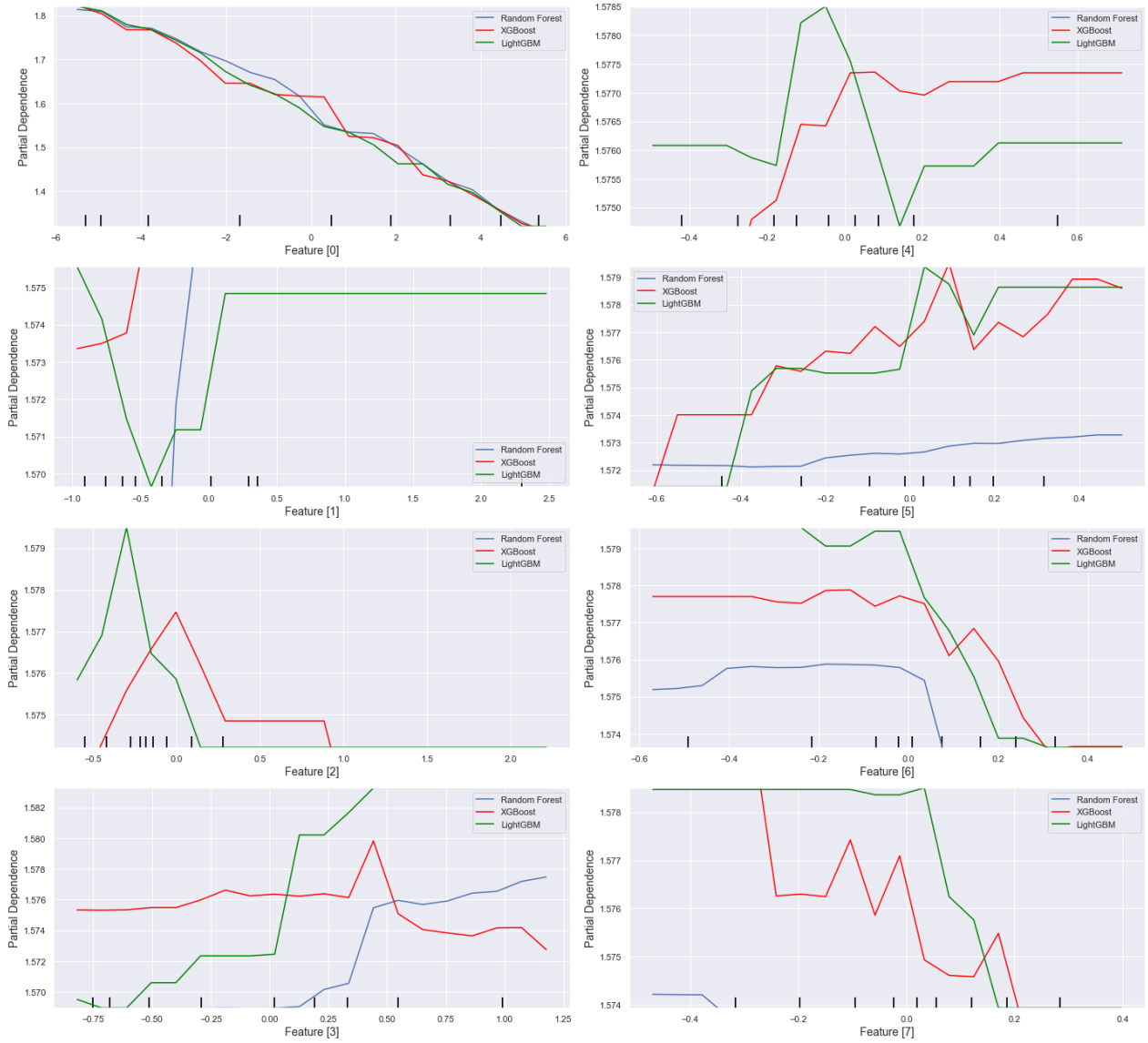
Model	RMSE	R2 Score
XGBoost	0.0222	0.9809
Random Forest	0.0235	0.9785
Artificial Neural Network	0.0263	0.9731
LightGBM	0.0272	0.9712
AdaBoost	0.0292	0.9668
CatBoost	0.0364	0.9485
Support Vector	0.0692	0.8140

Supplementary Table 2: Model results on Cell Number 7

Model	RMSE	R2 Score
LightGBM	0.0261	0.9713
Random Forest	0.0287	0.9655
XGBoost	0.0320	0.9571
AdaBoost	0.0328	0.9548
CatBoost	0.0391	0.9359
Artificial Neural Network	0.0444	0.9173
SVR	0.0685	0.8030

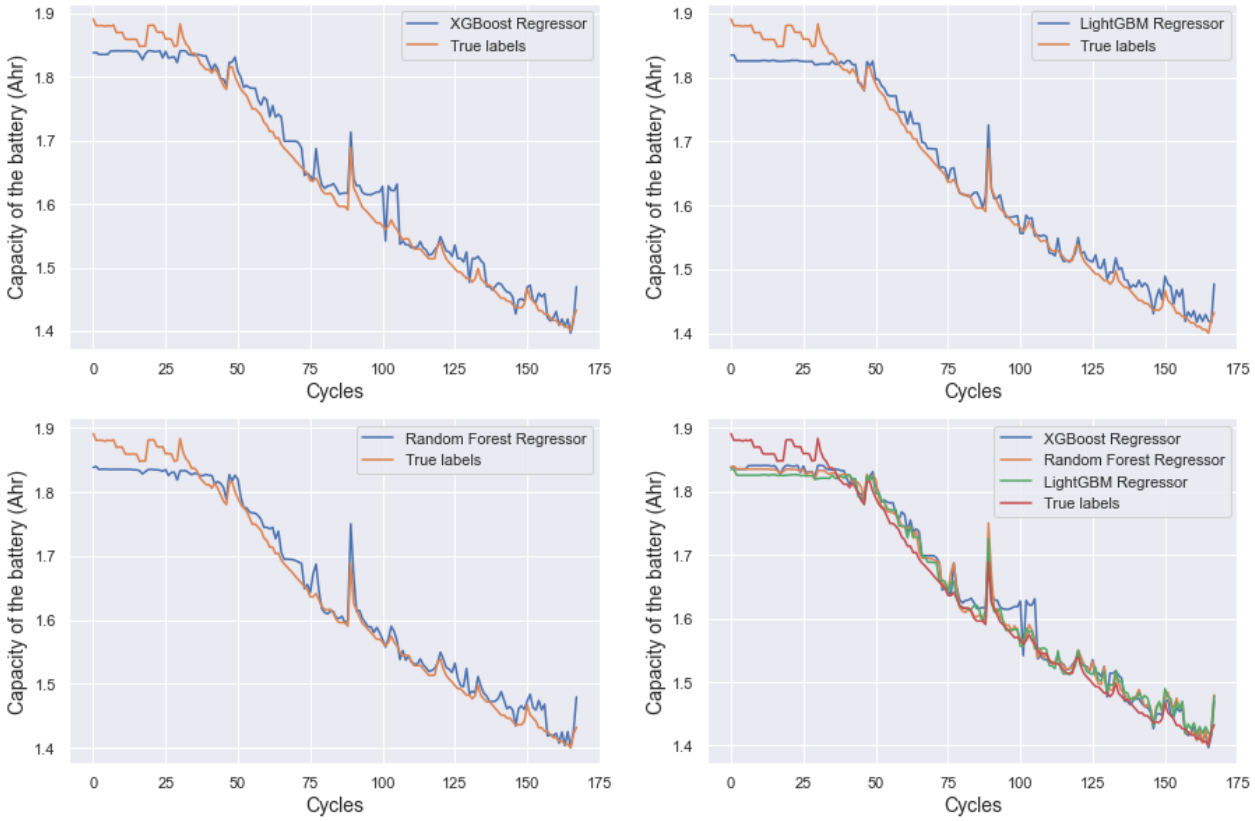
Supplementary Table 3: Model results on Cell Number 18

III Partial Dependance Plots for the Random Forest, XGBoost and LightGBM models



Supplementary Fig. 2: PDPs for the 8 features selected by Principal Component Analysis, plotted for the aforementioned models

IV Predictions vs. True labels for the Random Forest, XGBoost and LightGBM models



Supplementary Fig. 3: Predictions vs. True labels for the three models, run on data from cell number 7 (trained on data from cell number 5)