Supplementary Information

Paper title: Data-Driven Approach for the Prediction of Mechanical Properties of Carbon Fiber Reinforced Composites

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Supporting figures and tables

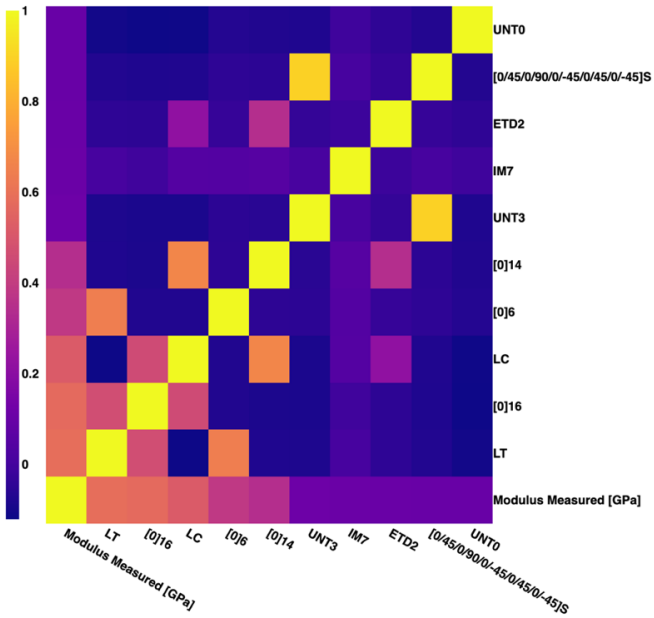

Figure S1: Correlation heatmap between the ten variables that correlate most with modulus.

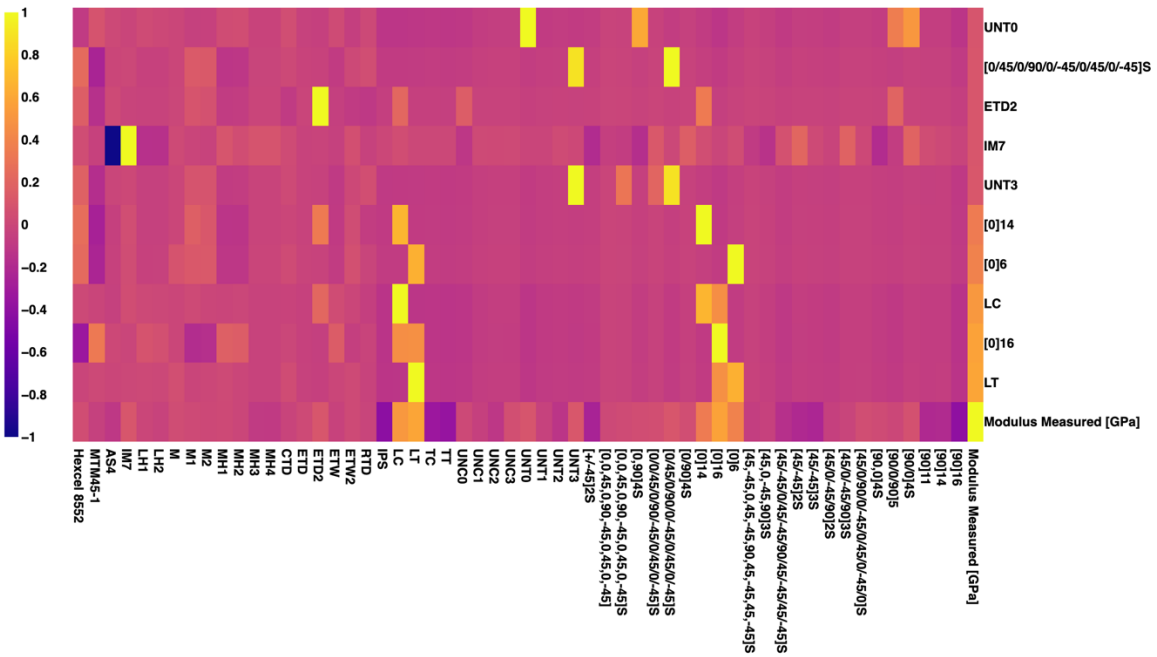

Figure S2: Correlation heatmap between the ten variables that correlate most with modulus and all the input variables. Only the ten most significant variables are chosen due to size limitations.

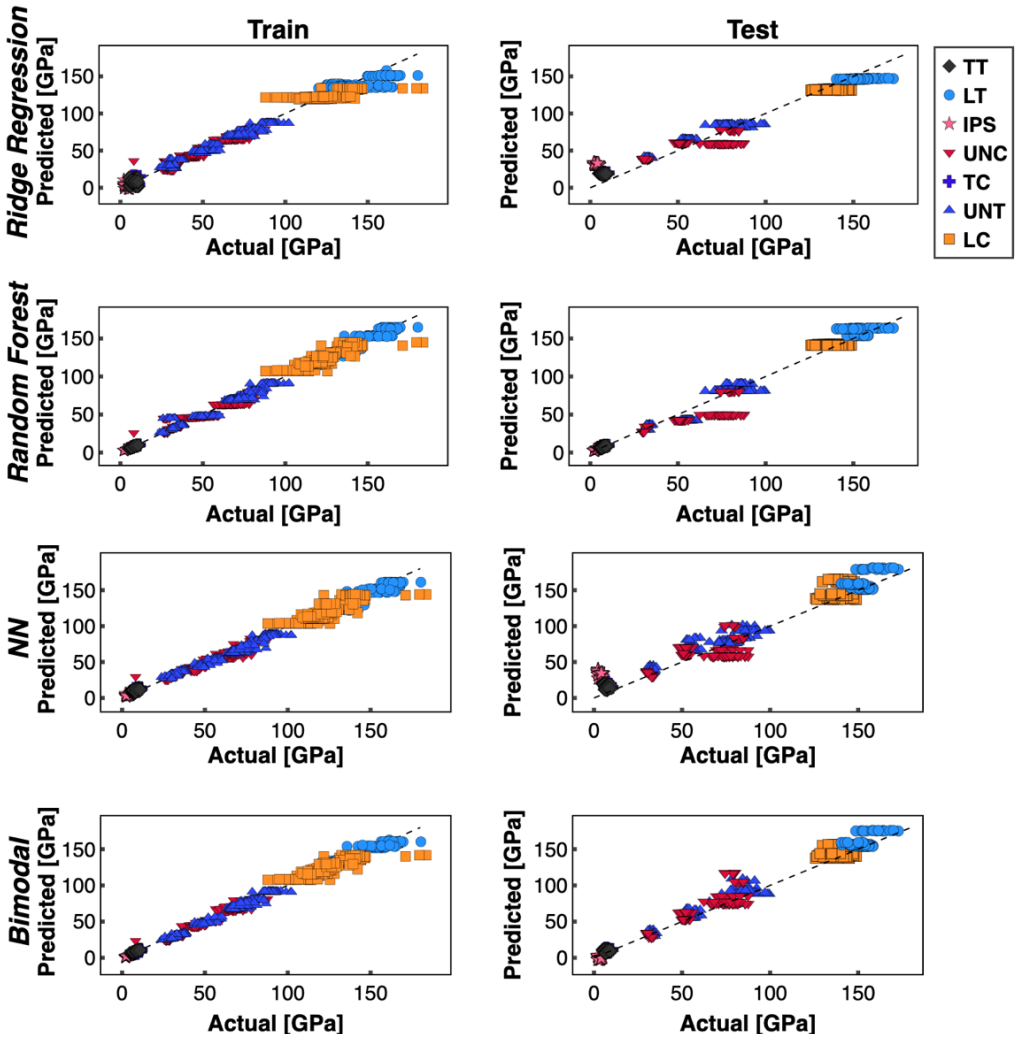

Figure S3: Training and testing results for all models. Modulus predicted by model is plotted against true modulus value across all models. For these data, the IM7 MTM45-1 material has been left for testing.

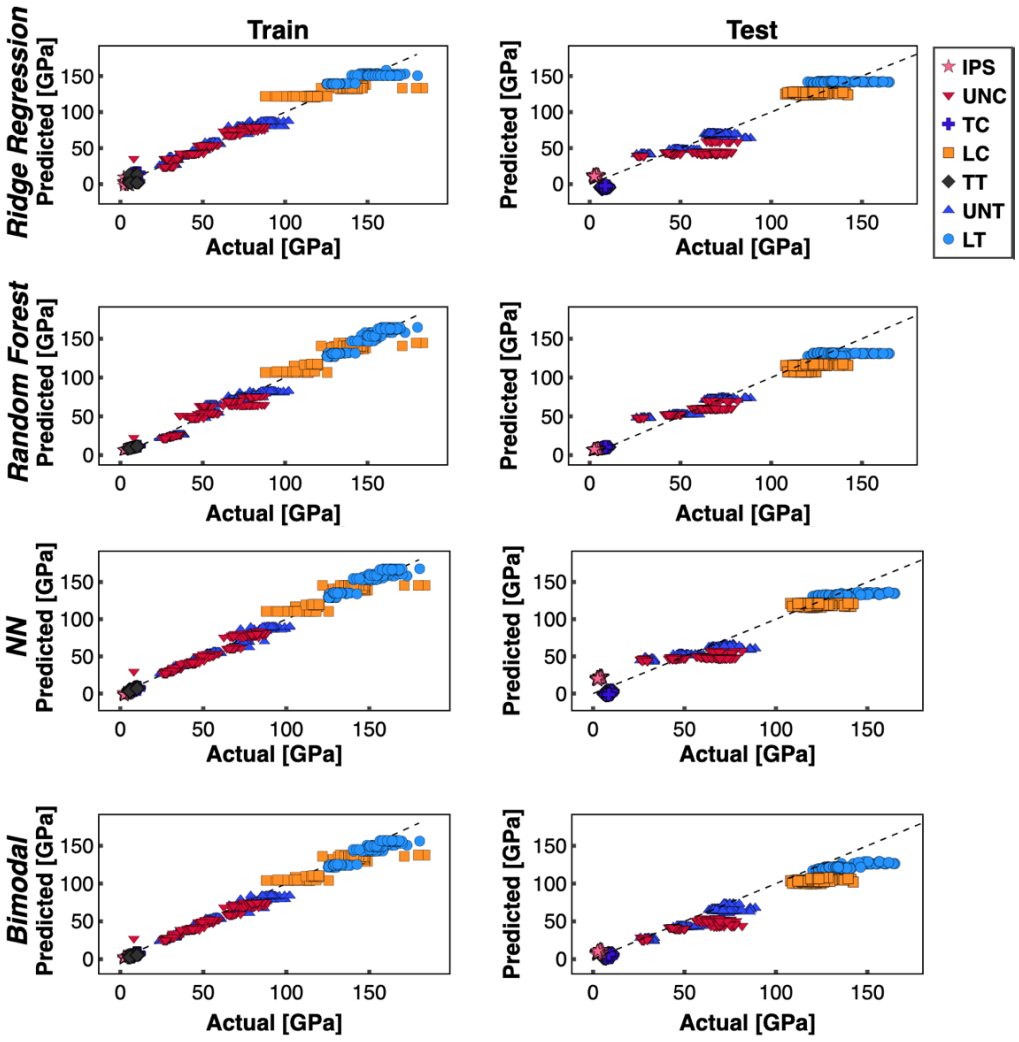

Figure S4: Training and testing results for all models. Modulus predicted by model is plotted against true modulus value across all models. For these data, the AS4 MTM45-1 material has been left for testing.

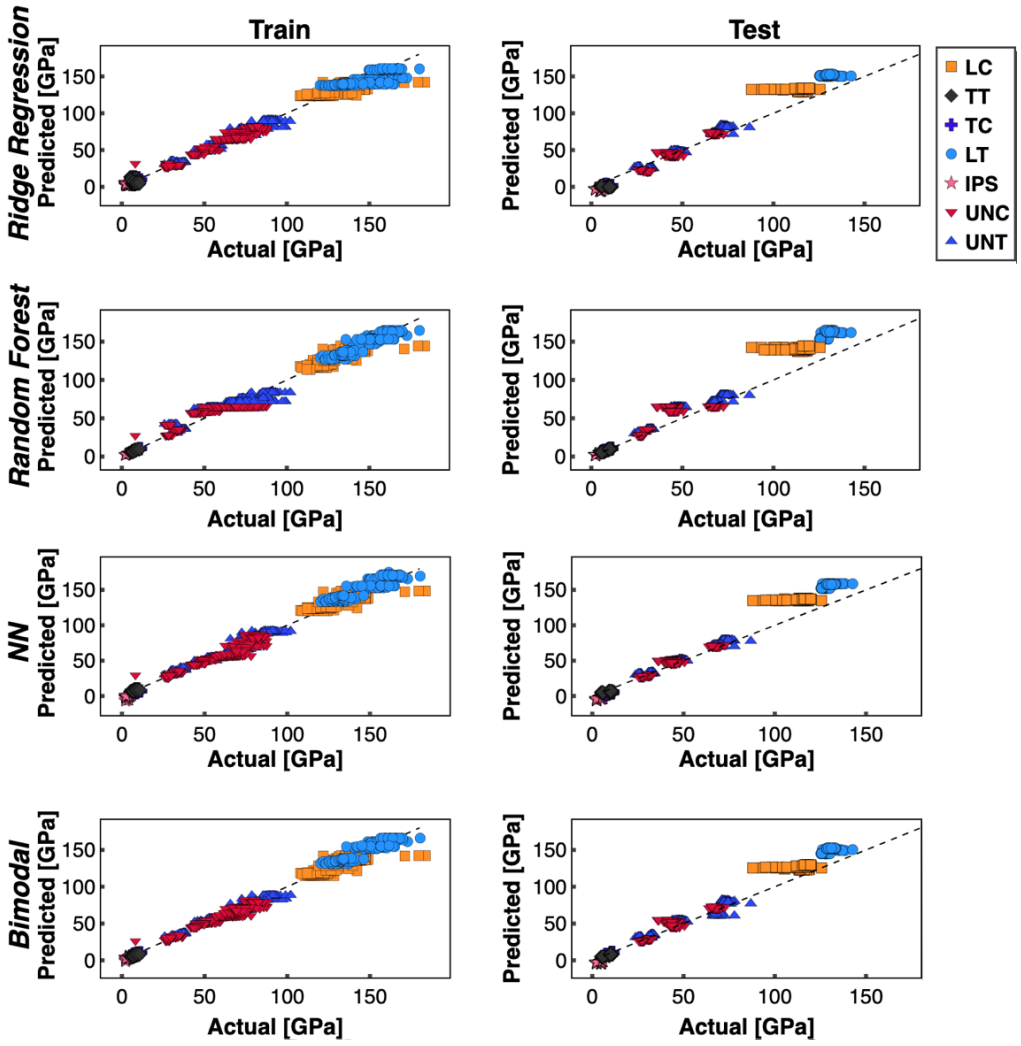

Figure S5: Training and testing results for all models. Modulus predicted by model is plotted against true modulus value across all models. For these data, the AS4 Hexcel 8552 material has been left for testing.

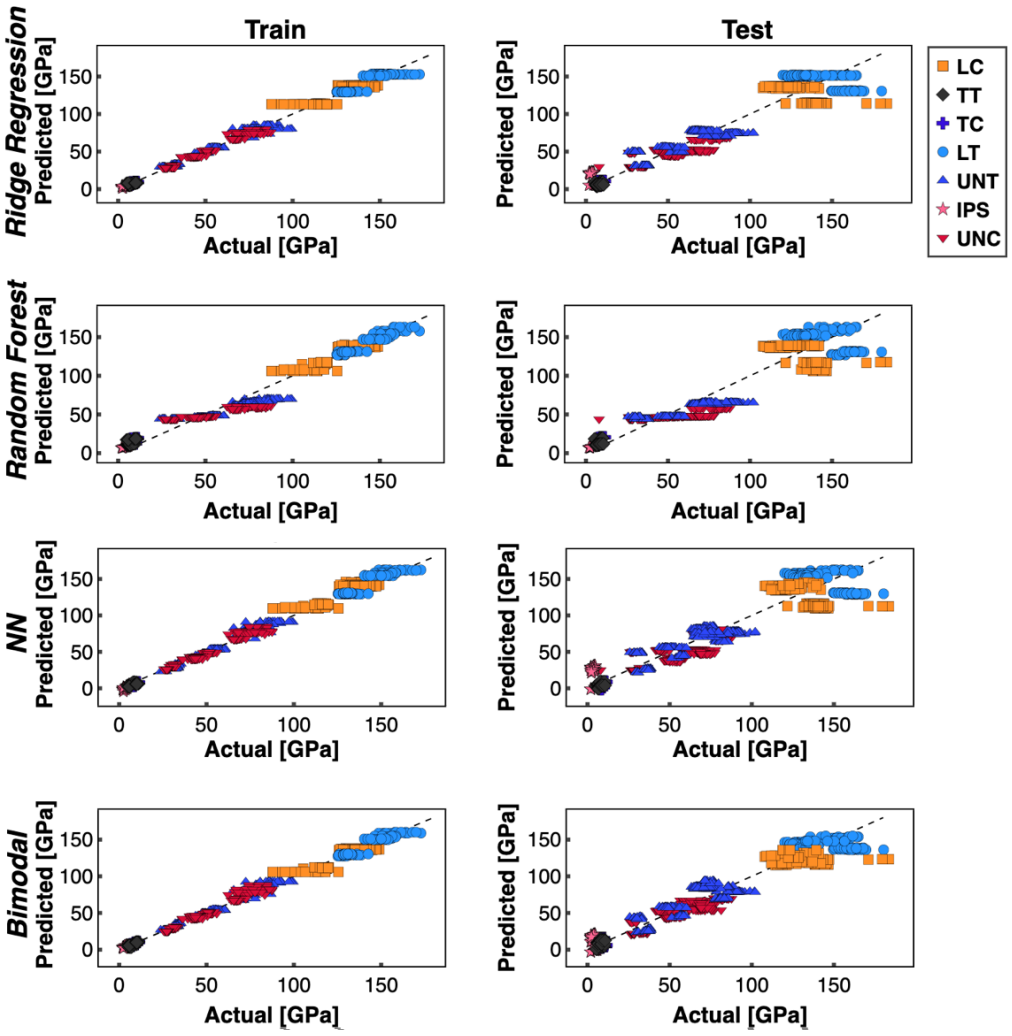

Figure S6: Training and testing results for all models. Modulus predicted by model is plotted against true modulus value across all models. For these data, the AS4 MTM45-1 and IM7 Hexcel 8552 materials have been left for testing.

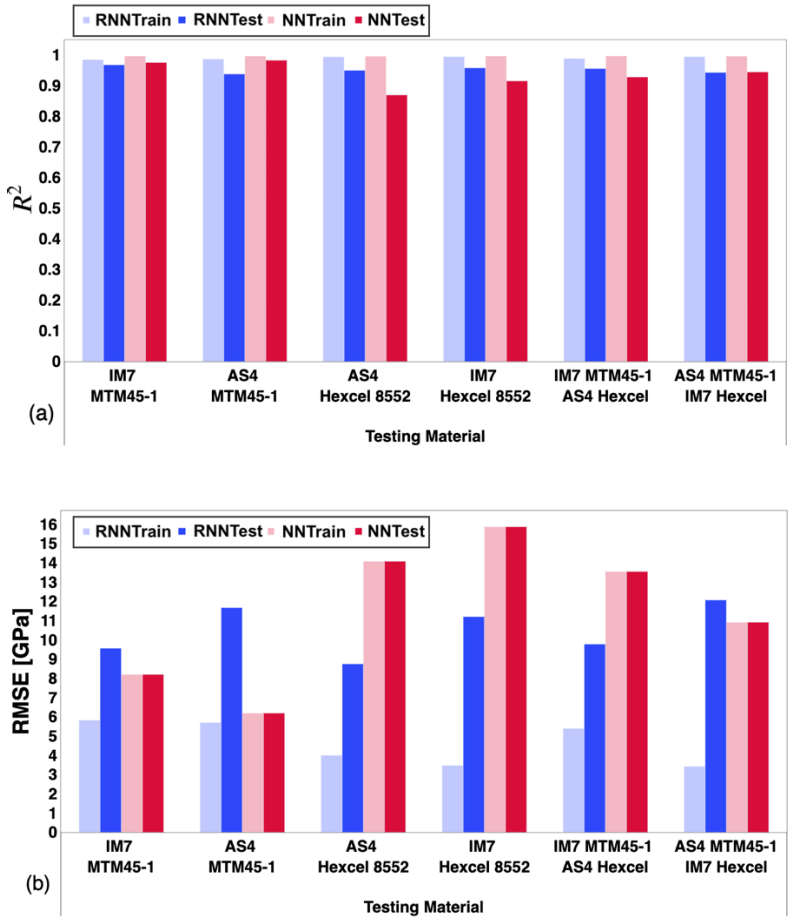

Figure S7: Performance of bimodal recurrent neural network and standard neural network models across different data splits. (a). R^2 values for each model across each data split. (b) RMSE values for each model across each data split.

Table S1: Hyperparameters used for ridge regression models

Split	Alpha
No Hexcel AS4	0.5
No Hexcel IM7	0.45
No MTM AS4	0.4
No MTM IM7	0.5
No MTM IM7/Hexcel AS4	0.5
No MTM AS4/Hexcel IM7	0.5

Table S2: Hyperparameters used for random forest models

Split	Depth	Number Of Trees
No Hexcel AS4	10	100
No Hexcel IM7	8	500
No MTM AS4	10	400
No MTM IM7	7	500
No MTM IM7/Hexcel AS4	10	500
No MTM AS4/Hexcel IM7	7	200

Table S3: Hyperparameters used for bimodal models

Split	Dropout1	Dropout2	Layer1	Layer2	LearningRate
No Hexcel AS4	0.1	0.05	100	80	0.002575
No Hexcel IM7	0.05	0.05	100	100	0.002575
No MTM AS4	0.05	0.15	80	80	0.002575
No MTM IM7	0.15	0.05	100	140	0.002575
No MTM IM7/Hexcel AS4	0.05	0.05	140	140	0.002575
No MTM AS4/Hexcel IM7	0.05	0.05	140	100	0.007525

Table S4: Hyperparameters used for bimodal models

Split	Dropout1	Dropout2	Layer1	Layer2	LearningRate	RNN
No Hexcel AS4	0.05	0.05	120	80	0.0034	2
No Hexcel IM7	0.05	0.05	100	120	0.0034	2
No MTM AS4	0.05	0.05	100	80	0.0034	3
No MTM IM7	0.05	0.05	100	100	0.0067	3
No MTM IM7/Hexcel AS4	0.05	0.05	100	120	0.0067	2
No MTM AS4/Hexcel IM7	0.05	0.05	120	120	0.0001	3