

```
>> Battery
>> RandomForest
```

```
tree =
```

```
RegressionTree
    PredictorNames: {'m_vol' 'm_cur' 'l_vol' 'l_cur' 'temp' 'time'}
    ResponseName: 'Y'
    CategoricalPredictors: []
    ResponseTransform: 'none'
    NumObservations: 118
```

```
Properties, Methods
```

```
Tree_re_sub_error =
```

```
9.6327e-05
```

```
Tree_root_mean_squared_error =
```

```
0.0235
```

```
|=====✓
=====|
| Iter | Eval | Objective: | Objective | BestSoFar | BestSoFar | ✓
NumLearningC-| LearnRate | MaxNumSplits |
| | result | log(1+loss) | runtime | (observed) | (estim.) | cycles✓
| | | | | | |
|=====✓
=====|
| 1 | Best | 1.026 | 1.8573 | 1.026 | 1.026 | ✓
11 | 0.01522 | 93 |
| 2 | Best | 0.94754 | 4.338 | 0.94754 | 0.95173 | ✓
138 | 0.0016776 | 2 |
| 3 | Accept | 1.0931 | 0.56392 | 0.94754 | 0.95294 | ✓
11 | 0.0106 | 3 |
| 4 | Best | 0.00014533 | 2.6823 | 0.00014533 | 0.00040007 | ✓
86 | 0.075652 | 14 |
| 5 | Best | 0.00013536 | 2.617 | 0.00013536 | 0.00010403 | ✓
84 | 0.13689 | 114 |
| 6 | Accept | 0.00038769 | 1.9188 | 0.00013536 | -0.0002825 | ✓
69 | 0.7756 | 10 |
| 7 | Accept | 0.0011253 | 1.0037 | 0.00013536 | -0.00050087 | ✓
39 | 0.9819 | 2 |
| 8 | Accept | 0.0014671 | 0.45921 | 0.00013536 | 0.00051456 | ✓
10 | 0.90282 | 1 |
| 9 | Accept | 0.0011038 | 0.44334 | 0.00013536 | 0.0010084 | ✓
11 | 0.342 | 1 |
| 10 | Accept | 0.19574 | 0.46733 | 0.00013536 | -0.00041295 | ✓
12 | 0.097753 | 1 |
| 11 | Accept | 0.00032083 | 13.583 | 0.00013536 | -0.00015518 | ✓
```

```

498 |      0.12292 |      1 |
| 12 | Accept | 0.00082558 |      0.88755 | 0.00013536 | -0.00013718 | ✓
19 |      0.52504 |      1 |
| 13 | Best | 0.00013071 |      18.003 | 0.00013071 | -0.00018328 | ✓
491 |      0.059343 |     111 |
| 14 | Accept | 0.00048361 |      1.703 | 0.00013071 | -0.00035928 | ✓
49 |      0.32767 |      1 |
| 15 | Accept | 0.00027978 |      5.5647 | 0.00013071 | -0.015147 | ✓
218 |      0.08451 |      1 |
| 16 | Accept | 0.001268 |      0.3637 | 0.00013071 | -9.5212e-05 | ✓
10 |      0.57655 |      1 |
| 17 | Accept | 0.00016854 |      0.88946 | 0.00013071 | -0.00051038 | ✓
26 |      0.3538 |     111 |
| 18 | Accept | 0.00027365 |      6.0374 | 0.00013071 | -0.00053783 | ✓
235 |      0.90494 |      1 |
| 19 | Accept | 0.00016935 |      0.99549 | 0.00013071 | -0.00079676 | ✓
33 |      0.205 |     14 |
| 20 | Accept | 0.00060083 |      5.6435 | 0.00013071 | -0.00076418 | ✓
213 |      0.45087 |      1 |
|=====✓
=====|
| Iter | Eval | Objective: | Objective | BestSoFar | BestSoFar | ✓
NumLearningC-| LearnRate | MaxNumSplits |
|      | result | log(1+loss) | runtime | (observed) | (estim.) | cycles✓
|      |      |      |      |      |      |
|=====✓
=====|
| 21 | Accept | 0.00031755 |      12.704 | 0.00013071 | -0.00013877 | ✓
497 |      0.6097 |      1 |
| 22 | Accept | 0.00013135 |      9.6621 | 0.00013071 | -0.00080134 | ✓
367 |      0.085984 |     108 |
| 23 | Accept | 0.00015329 |      2.4118 | 0.00013071 | -0.0019264 | ✓
90 |      0.096103 |     59 |
| 24 | Accept | 0.0010667 |      0.5844 | 0.00013071 | -0.0018497 | ✓
15 |      0.99968 |      1 |
| 25 | Accept | 0.00017743 |      1.66 | 0.00013071 | -0.0021198 | ✓
53 |      0.22264 |     43 |
| 26 | Accept | 0.00021873 |      0.69825 | 0.00013071 | -0.0021146 | ✓
21 |      0.28738 |      6 |
| 27 | Accept | 0.00056584 |      0.66618 | 0.00013071 | -0.0021412 | ✓
20 |      0.77135 |      6 |
| 28 | Accept | 0.00014137 |      4.0211 | 0.00013071 | -0.0023907 | ✓
154 |      0.071207 |     107 |
| 29 | Accept | 0.0011334 |      0.45579 | 0.00013071 | -0.0023794 | ✓
12 |      0.42335 |      1 |
| 30 | Accept | 0.00053349 |      2.763 | 0.00013071 | -0.0023635 | ✓
100 |      0.99973 |     43 |

```

Optimization completed.

MaxObjectiveEvaluations of 30 reached.

Total function evaluations: 30

Total elapsed time: 121.7897 seconds

Total objective function evaluation time: 105.6486

Best observed feasible point:

NumLearningCycles	LearnRate	MaxNumSplits
491	0.059343	111

Observed objective function value = 0.00013071

Estimated objective function value = 0.00029531

Function evaluation time = 18.0035

Best estimated feasible point (according to models):

NumLearningCycles	LearnRate	MaxNumSplits
90	0.096103	59

Estimated objective function value = -0.0023635

Estimated function evaluation time = 2.6037

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