

Model Analysis

2/27/23

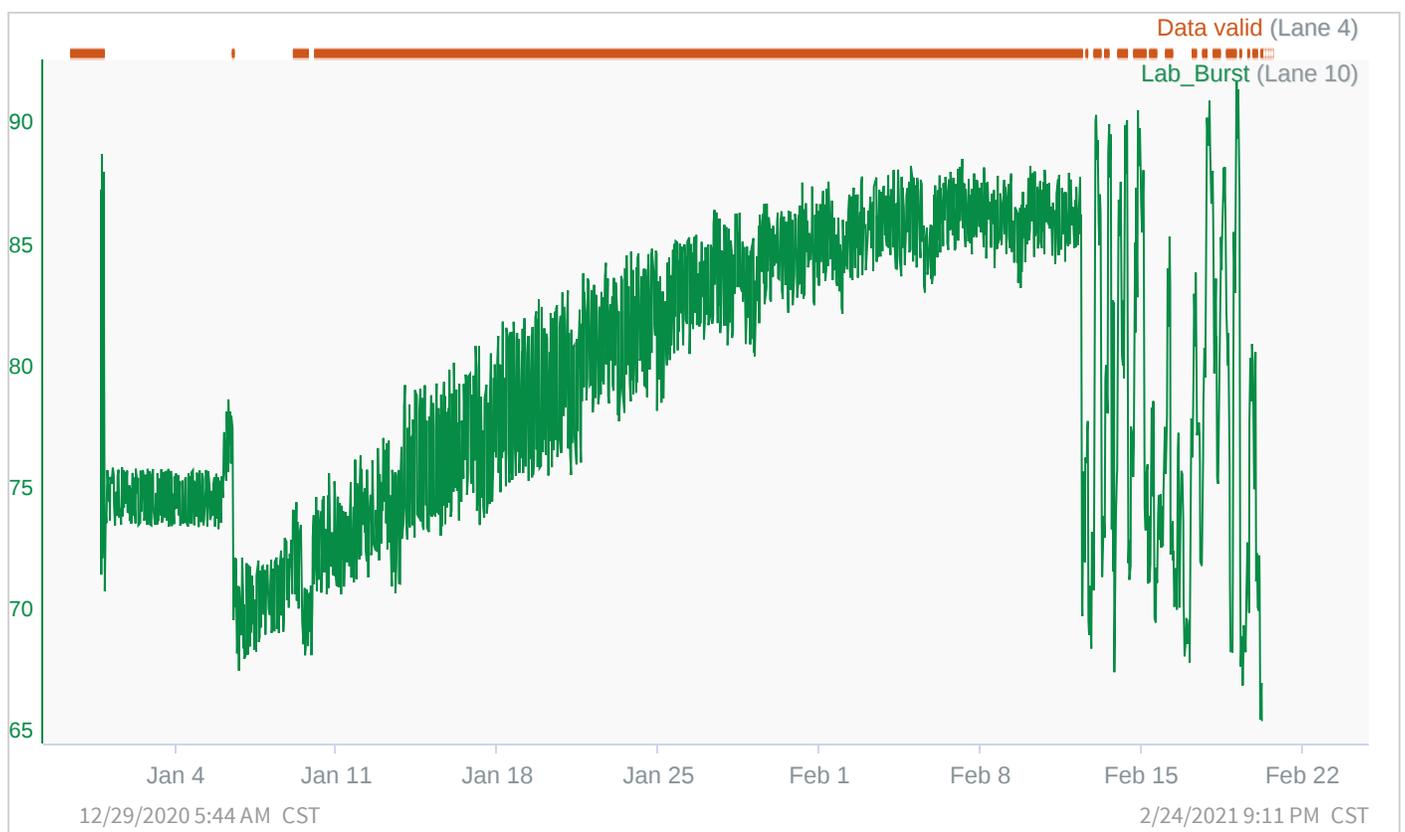
The model for this lab property is analyzed in the following sections:

1. Data pre-processing: The original data used in the configuration of the model
2. Model fit: The ability of the model to accurately predict the lab property
3. Gain analysis: Confirmation that the model gains are consistent with first principle understanding

Data pre-processing

The original data used in the model is shown below with the model inputs (_DYN tags) and the lab values when the process is running (_Running tag).

The date range can be changed by going to the Properties tab on the left and editing the "Date Range - Training" range.



Statistics for the data used in the model is shown below:

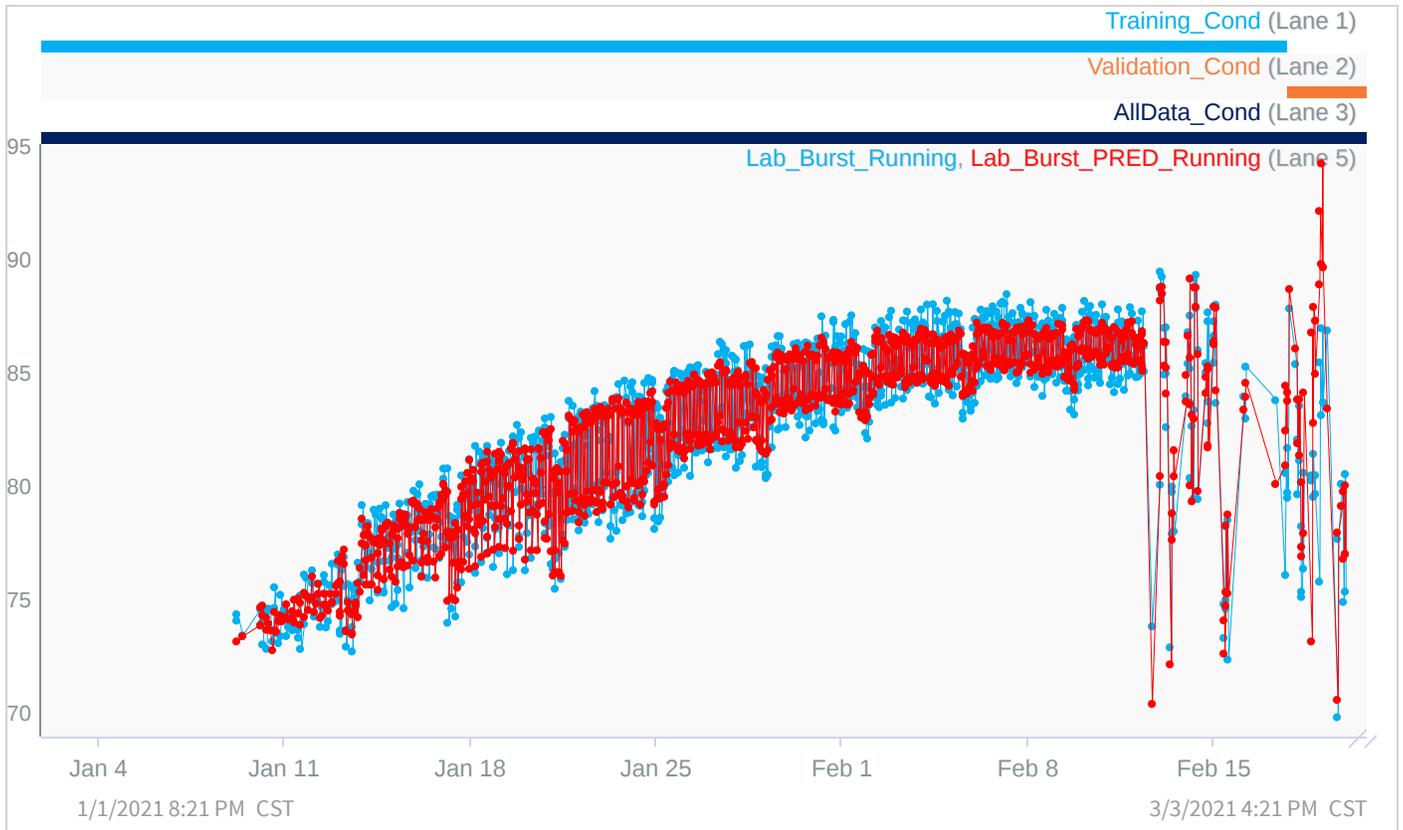
Name	Avg	Max	Min	S.D.	Count
Lab_Burst_Running	81.701	89.389	69.728	4.0821	2,137
Lab_Burst_PRED_Running	81.72	94.166	70.314	4.0994	2,137
Lab_Burst_PRED	83.01	96.612	68.327	3.4247	574,738
Lab_Burst	79.466	91.565	65.269	5.7135	3,556

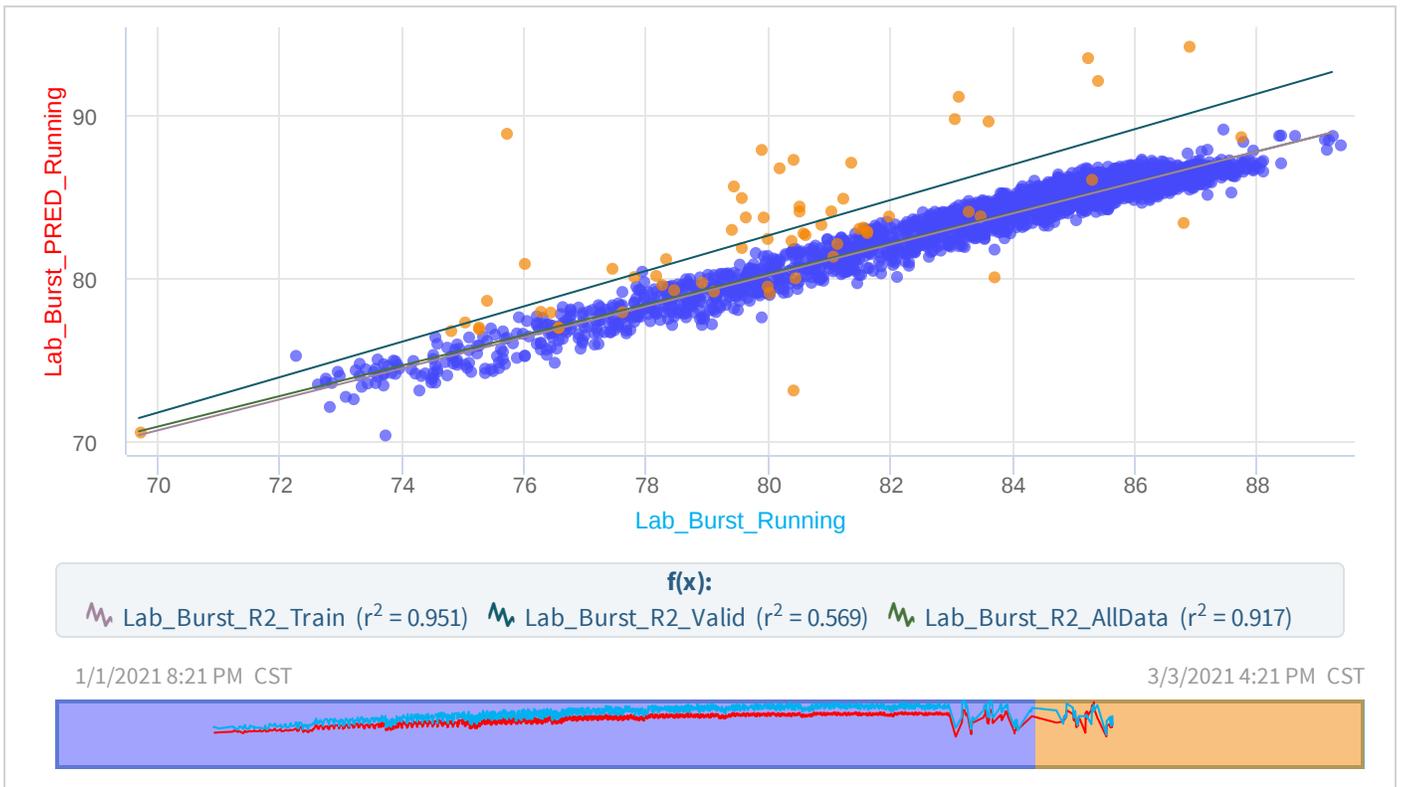
Model fit

The model fit to the data is shown, along with the r^2

Training data is blue

Validation data is orange





Detailed statistics for the model are in the table below:

Legend

Variable	Name
\$a	QCS_Moisture_DYN
\$b	QCS_BasisWeight_DYN
\$c	PulpEye_BlendCrill_DYN
\$d	PulpEye_Kappa_DYN
\$e	MV_SWPct_DYN
\$f	PulpEye_BlendFreeness_DYN
\$g	PulpEye_BlendShiveCount_DYN
\$h	MV_PressLoad_DYN
\$i	PulpEye_DirtCount_DYN
\$j	PulpEye_BlendFiberLength_DYN
\$k	MV_OCCPct_DYN

Coefficients

Name	Coefficient	Std. Error	P-Value
\$a	0.4784	0.2925	0.1022
\$b	0.5157	0.0287	3e-67
\$c	0.0588	0.0092	2e-10
\$d	0.2282	0.034	2e-11
\$e	0.1802	0.0454	7.6e-5
\$f	0.0048	0.0016	0.0026
\$g	-0.16	0.0874	0.0664
\$h	0.1343	0.0205	7e-11
\$i	-0.184	0.1104	0.0951
\$j	0.421	0.2574	0.1021
\$k	-0.22	0.2469	0.3722
\$a^2	-0.099	0.0186	1.1e-7
\$b^2	-0.005	0.0005	9e-24
\$c^2	-8e-5	2.4e-5	0.0006
\$d^2	-0.019	0.0016	1e-29
\$e^2	-0.002	0.001	0.1232
\$f^2	-5e-6	1.0e-6	5.4e-7
\$g^2	0.0024	0.0021	0.2555
\$h^2	-7e-5	1.2e-5	1.5e-9
\$i^2	0.0003	0.0028	0.9053
\$j^2	-0.006	0.0084	0.4773
\$k^2	0.0024	0.0023	0.299

Statistics

Name	Value
intercept	4.7232
interceptStandardError	10.144
adjustedRSquared	0.9503
regressionSumSquares	23427
errorSumSquares	1211.7
suggestedPValueCutoff	0.005
rSquared	0.9508

Gain analysis

We look at the gains in the model, and comment on the result.

This plot is automatically generated by the PM_SIM_Predictions.ipynb DataLab script

X AXIS: Input range from 0% to 100%

Y AXIS: Predicted value of Lab measurement in its engineering units

