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# Intro to Citrination Data View

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## Models

Learn more about Model Reports and Machine Learning in our Citrination Knowledge Base.

Property Fatigue strength

Property Fatigue strength



### Model Settings

Table representation of the machine learning algorithm and hyperparameters from the most recent machine learning training session. The Lolo estimator is Citrine's open source machine-learning library.

#### Algorithm: Ensemble of non-linear estimators

Number of estimators	145
Minimum samples per leaf	1
Maximum tree depth	30
Uses jackknife method of uncertainty estimation	true
Leaf model	Mean

**Number of cross-validation folds: 3**

## Important Features

A list of features used to train the model ranked by importance scores. Importance scores sum to 1 and are representative of a given feature's contribution to the model's performance. Learn about the features that are used as inputs to machine learning models on the Citration Platform.

<b>Property Fatigue strength</b>	
Property Normalizing temperature	70%
mean of Packing density for formula	4%
mean of Non-dimensional band gap for formula	4%
mean of Elemental melting temperature for formula	4%
mean of DFT energy density for formula	3%
mean of Elemental work function for formula	2%
mean of Elemental atomic volume for formula	2%
mean of Elemental electron density for formula	2%
mean of Shear Modulus Melting Temp Product for formula	1%
mean of Trouton's Ratio for formula	1%
mean of Liquid ratio for formula	1%
mean of Elemental crystal structure (space group) for formula	1%
mean of Number of unfilled s valence electrons for formula	1%
mean of Elastic Poisson Ratio for formula	1%
mean of Zunger Pseudopotential radius ratio for formula	1%
mean of Non-dimensional liquid range for formula	1%
mean of Number of p valence electrons for formula	1%
mean of Modulii sum for formula	0%
mean of DFT volume ratio for formula	0%
mean of Non-dimensional work function for formula	0%

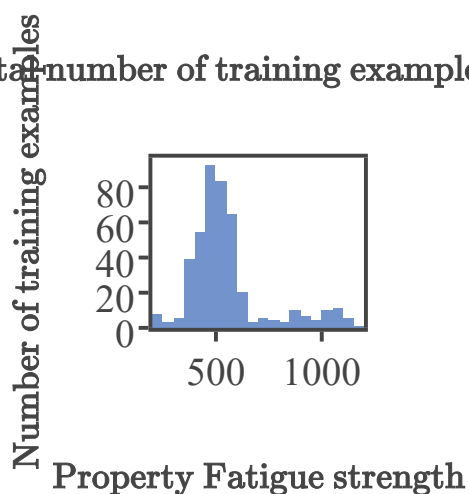
## Property Fatigue strength

mean of Number of s valence electrons for formula	0%
mean of Radius of s orbitals for formula	0%
mean of Miracle Ratio for formula	0%
mean of Interatomic distance for formula	0%
mean of Ratio of Electron Affinity to Electronegativity for formula	0%
mean of Elemental bulk modulus for formula	0%
mean of Liquid range for formula	0%
mean of Number of unfilled p valence electrons for formula	0%
mean of Total number of valence electrons for formula	0%
mean of Conduction ionization energy for formula	0%
Maximum atomic fraction for formula	0%
Property Through hardening time	0%
Maximum radius difference for formula	0%
Property Through hardening temperature	0%

## Training Data

A description of the training data used to train the model. Displayed below are the number of training examples and a distribution of values for the given property.

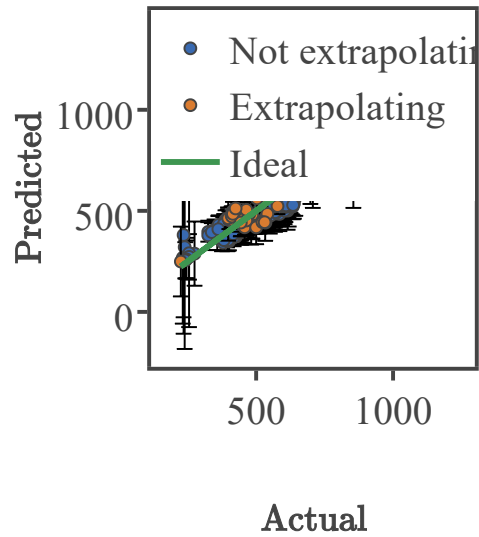
Total number of training examples: 437



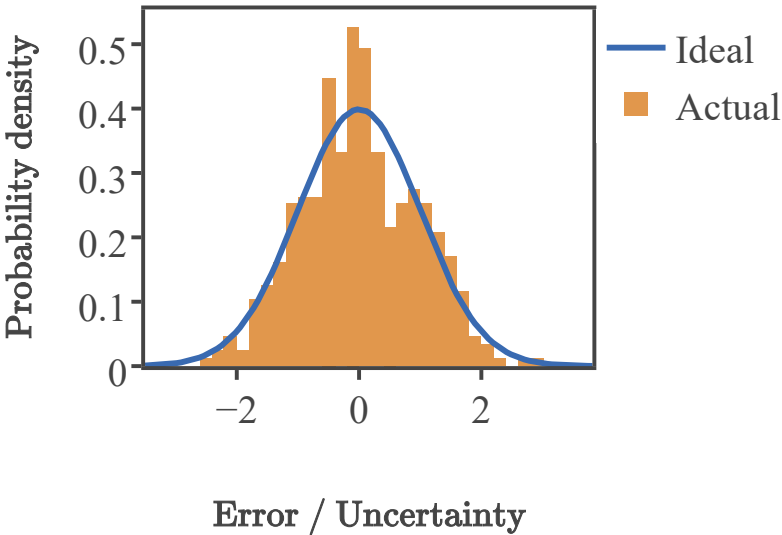
Performance

Error Metric	Value
Non-dimensional model error (NDME) (0.0 for a perfect model)	0.291
Standard error in the estimate of NDME (0.0 for a perfect estimate)	0.0177
Root mean squared error (RMSE) (0.0 for a perfect model)	54.2
Standard Error in the estimate of RMSE (0.0 for a perfect estimate)	3.30
Uncertainty calibration: fraction of actual values within the prediction error bars (0.68 is perfectly calibrated)	0.680
Uncertainty calibration: root mean square of standardized errors (RMSSE) (1.0 is perfectly calibrated)	0.950

Property Fatigue strength



Distribution of Standard Residuals



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