# Sarit_GoldPrice

## ❓ Assistance

| Routine | Description |
|---|---|
| importFiles | Import file(s) into $H_2O$ |
| importSqlTable | Import SQL table into $H_2O$ |
| getFrames | Get a list of frames in $H_2O$ |
| splitFrame | Split a frame into two or more frames |
| mergeFrames | Merge two frames into one |
| getModels | Get a list of models in $H_2O$ |
| getGrids | Get a list of grid search results in $H_2O$ |
| getPredictions | Get a list of predictions in $H_2O$ |
| getJobs | Get a list of jobs running in $H_2O$ |
| runAutoML | Automatically train and tune many models |
| buildModel | Build a model |
| importModel | Import a saved model |
| predict | Make a prediction |

## 📑 Import Files

Search:        .\B.csv                                                    🔍

Search Results:  (All files added)

Selected Files:  1 file selected: Clear All

✖ .\B.csv

Actions:      ☁ Import

## ☁ 1 / 1 files imported.
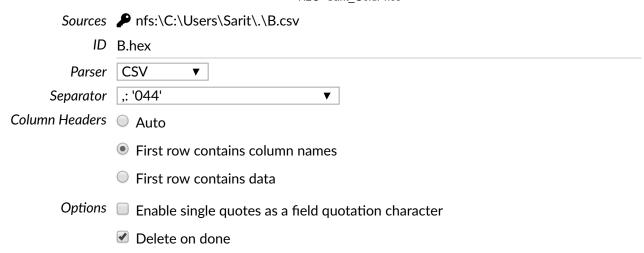
Files    🔑 C:\Users\Sarit\.\B.csv

Actions    ⚙ Parse these files...

## ⚙ Setup Parse

PARSE CONFIGURATION

| | | | |
|---|---|---|---|
| *Sources* | 🔑 nfs:\C:\Users\Sarit\.\B.csv | | |
| *ID* | B.hex | | |
| *Parser* | CSV ▼ | | |
| *Separator* | ,: '044' ▼ | | |
| *Column Headers* | ⚪ Auto | | |
| | 🔘 First row contains column names | | |
| | ⚪ First row contains data | | |
| *Options* | ☐ Enable single quotes as a field quotation character | | |
| | ☑ Delete on done | | |

### EDIT COLUMN NAMES AND TYPES

Search by column name...

| # | Column | Type | | | |
|---|---|---|---|---|---|
| 1 | GoldPrice | Numeric ▼ | 282.7 | 281.1 | 281.4 |
| 2 | ma_20 | Numeric ▼ | 0.0 | 0.0 | 0.0 |
| 3 | ma_100 | Numeric ▼ | 0.0 | 0.0 | 0.0 |
| 4 | std_20 | Numeric ▼ | 0.0 | 0.0 | 0.0 |
| 5 | std_100 | Numeric ▼ | 0.0 | 0.0 | 0.0 |
| 6 | rsi | Numeric ▼ | 0.0 | 0.0 | 0.0 |
| 7 | Rolling Mea | Numeric ▼ | 0.0 | 0.0 | 0.0 |
| 8 | Bollinger H | Numeric ▼ | 0.0 | 0.0 | 0.0 |
| 9 | Bollinger L | Numeric ▼ | 0.0 | 0.0 | 0.0 |
| 10 | 26_ema | Numeric ▼ | 282.7 | 281.86923076923074 | 281.70064070! |
| 11 | 12_ema | Numeric ▼ | 282.7 | 281.83333333333337 | 281.66420323: |
| 12 | macd | Numeric ▼ | 0.0 | -0.03589743589736827 | -0.036437476₄ |
| 13 | CCI | Numeric ▼ | 2396.2335080366793 | 2396.2335080366793 | 2396.2335080: |
| 14 | Index | Numeric ▼ | 1411.75 | 1413.5 | 1404.0 |
| 15 | CrudeOilPri | Numeric ▼ | 25.55 | 24.91 | 24.78 |

( ← Previous page )  ( → Next page )

( ☰ Parse )

# ☷ Job

| | |
|---|---|
| *Run Time* | 00:00:01.31 |
| *Remaining Time* | 00:00:00.0 |
| *Type* | Frame |
| *Key* | 🔍 B.hex |

| | |
|---|---|
| *Description* | Parse |
| *Status* | DONE |
| *Progress* | 100% |
| | Done. |
| *Actions* | 🔍 View |
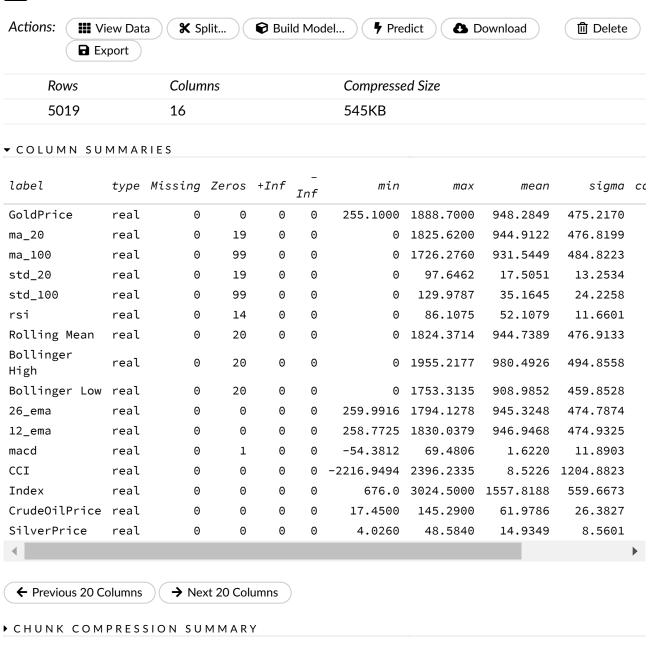
# ⊞ B.hex

*Actions:* ▦ View Data   ✂ Split...   ◈ Build Model...   ⚡ Predict   ☁ Download   🗑 Delete   🖫 Export

| *Rows* | *Columns* | *Compressed Size* |
|---|---|---|
| 5019 | 16 | 545KB |

▾ COLUMN SUMMARIES

| label | type | Missing | Zeros | +Inf | _Inf | min | max | mean | sigma | cc |
|---|---|---|---|---|---|---|---|---|---|---|
| GoldPrice | real | 0 | 0 | 0 | 0 | 255.1000 | 1888.7000 | 948.2849 | 475.2170 | |
| ma_20 | real | 0 | 19 | 0 | 0 | 0 | 1825.6200 | 944.9122 | 476.8199 | |
| ma_100 | real | 0 | 99 | 0 | 0 | 0 | 1726.2760 | 931.5449 | 484.8223 | |
| std_20 | real | 0 | 19 | 0 | 0 | 0 | 97.6462 | 17.5051 | 13.2534 | |
| std_100 | real | 0 | 99 | 0 | 0 | 0 | 129.9787 | 35.1645 | 24.2258 | |
| rsi | real | 0 | 14 | 0 | 0 | 0 | 86.1075 | 52.1079 | 11.6601 | |
| Rolling Mean | real | 0 | 20 | 0 | 0 | 0 | 1824.3714 | 944.7389 | 476.9133 | |
| Bollinger High | real | 0 | 20 | 0 | 0 | 0 | 1955.2177 | 980.4926 | 494.8558 | |
| Bollinger Low | real | 0 | 20 | 0 | 0 | 0 | 1753.3135 | 908.9852 | 459.8528 | |
| 26_ema | real | 0 | 0 | 0 | 0 | 259.9916 | 1794.1278 | 945.3248 | 474.7874 | |
| 12_ema | real | 0 | 0 | 0 | 0 | 258.7725 | 1830.0379 | 946.9468 | 474.9325 | |
| macd | real | 0 | 1 | 0 | 0 | -54.3812 | 69.4806 | 1.6220 | 11.8903 | |
| CCI | real | 0 | 0 | 0 | 0 | -2216.9494 | 2396.2335 | 8.5226 | 1204.8823 | |
| Index | real | 0 | 0 | 0 | 0 | 676.0 | 3024.5000 | 1557.8188 | 559.6673 | |
| CrudeOilPrice | real | 0 | 0 | 0 | 0 | 17.4500 | 145.2900 | 61.9786 | 26.3827 | |
| SilverPrice | real | 0 | 0 | 0 | 0 | 4.0260 | 48.5840 | 14.9349 | 8.5601 | |

← Previous 20 Columns    → Next 20 Columns

▸ CHUNK COMPRESSION SUMMARY

▸ FRAME DISTRIBUTION SUMMARY

# ✂ Split Frame

*Frame:*   B.hex   ▾

*Splits:*     *Ratio*                              *Key*

             0.75                              frame_0.750                              ✖

             0.250                             frame_0.250
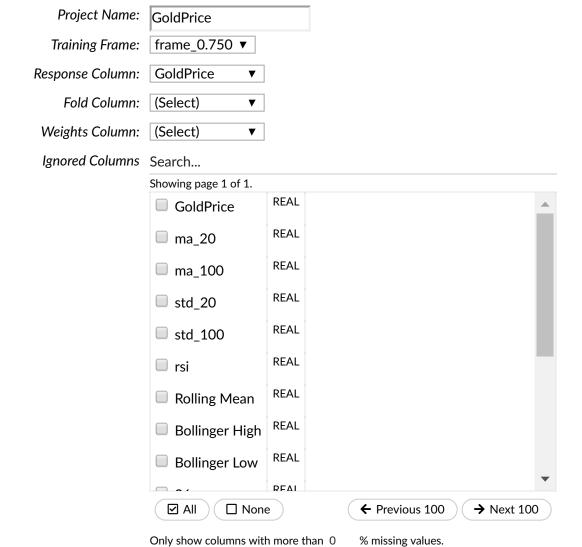
             Add a new split

*Seed:*      535441

( ✖ Create )

# ⊞ Split Frames

| Type | Key | Ratio |
|---|---|---|
| ⊞ | frame_0.750 | 0.75 |
| ⊞ | frame_0.250 | 0.25 |

# ⊹ Run AutoML

|  |  |
|---|---|
| *Project Name:* | GoldPrice |
| *Training Frame:* | frame_0.750 ▼ |
| *Response Column:* | GoldPrice ▼ |
| *Fold Column:* | (Select) ▼ |
| *Weights Column:* | (Select) ▼ |
| *Ignored Columns* | Search... |

Showing page 1 of 1.

| ☐ GoldPrice | REAL |
|---|---|
| ☐ ma_20 | REAL |
| ☐ ma_100 | REAL |
| ☐ std_20 | REAL |
| ☐ std_100 | REAL |
| ☐ rsi | REAL |
| ☐ Rolling Mean | REAL |
| ☐ Bollinger High | REAL |
| ☐ Bollinger Low | REAL |
| ☐ | REAL |

( ☑ All )  ( ☐ None )                    ( ← Previous 100 )  ( → Next 100 )

Only show columns with more than  0   % missing values.

Validation Frame: frame_0.250 ▼

Blending Frame: (Select) ▼

Leaderboard Frame: (Select) ▼

Balance classes: ☐

Exclude these algorithms
- ☑ GLM
- ☑ DRF
- ☐ GBM
- ☑ XGBoost
- ☐ DeepLearning
- ☐ StackedEnsemble

Max models to build: 

Max Run Time (sec): 3600

Max Run Time Per Model (sec): 0

Early stopping metric: AUTO ▼

Leaderboard sort metric: AUTO ▼

Early stopping rounds: 3

Early stopping tolerance: 

nfolds: 5

Keep cross-validation predictions: ☑

Keep cross-validation models: ☑

Keep cross-validation fold assignment: ☐

Seed: -1

Checkpoints path: 

⬢ Build Model

# ⬚ Job

Run Time 00:50:22.307

Remaining Time 00:00:00.0

Type Auto Model

Key 🔍 GoldPrice

| | Description | AutoML build |
|---|---|---|
| | Status | DONE |
| | Progress | 100% |
| | | Done. |
| | Actions | 🔍 View |

# ☰ Leaderboard

   ⟳ Monitor Live

▾ **M O D E L S**

models sorted in order of mean_residual_deviance, best first

| | | | |
|---|---|---|---|
| 26 | GBM_grid_1_AutoML_20190829_223124_model_20 | 58.909339510948 | 7.07324 |
| 27 | GBM_grid_1_AutoML_20190829_223124_model_30 | 59.033918134764164 | 7.68335 |
| 28 | GBM_grid_1_AutoML_20190829_223124_model_37 | 61.17386647704372 | 7.82137 |
| 29 | GBM_grid_1_AutoML_20190829_223124_model_1 | 63.59530882356254 | 7.97466 |
| 30 | GBM_grid_1_AutoML_20190829_223124_model_22 | 71.38328013371355 | 8.44886 |
| 31 | GBM_grid_1_AutoML_20190829_223124_model_19 | 71.47123840138678 | 8.45406 |
| | | | |
| 32 | GBM_grid_1_AutoML_20190829_223124_model_10 | 72.68976920339789 | 8.52582 |
| 33 | GBM_grid_1_AutoML_20190829_223124_model_35 | 74.70549051423673 | 8.64323 |
| 34 | GBM_grid_1_AutoML_20190829_223124_model_7 | 81.32368966176749 | 9.01796 |
| 35 | GBM_grid_1_AutoML_20190829_223124_model_36 | 114.7314494966798 | 10.7112 |
| 36 | GBM_grid_1_AutoML_20190829_223124_model_24 | 122.17638985536493 | 11.0533 |
| 37 | GBM_grid_1_AutoML_20190829_223124_model_21 | 129.27454225500307 | 11.3698 |
| 38 | GBM_grid_1_AutoML_20190829_223124_model_4 | 134.22868353618273 | 11.5857 |
| 39 | GBM_grid_1_AutoML_20190829_223124_model_43 | 138.46456771870413 | 11.7670 |
| 40 | GBM_grid_1_AutoML_20190829_223124_model_32 | 140.57364267076665 | 11.8563 |
| 41 | GBM_grid_1_AutoML_20190829_223124_model_17 | 143.41536106590272 | 11.9756 |
| 42 | GBM_grid_1_AutoML_20190829_223124_model_31 | 178.7894963426125 | 13.3712 |
| 43 | GBM_grid_1_AutoML_20190829_223124_model_26 | 235.2428930428541 | 15.3376 |
| 44 | StackedEnsemble_BestOfFamily_AutoML_20190829_223124 | 371.6733311721018 | 19.2788 |
| 45 | DeepLearning_1_AutoML_20190829_223124 | 546.2740708835497 | 23.3725 |
| 46 | GBM_grid_1_AutoML_20190829_223124_model_18 | 607.4636533000205 | 24.6467 |
| 47 | GBM_grid_1_AutoML_20190829_223124_model_38 | 813.4107829542894 | 28.5203 |
| 48 | DeepLearning_grid_1_AutoML_20190829_223124_model_2 | 2235.1497069346724 | 47.2773 |

▾ **E V E N T   L O G**

Actions taken and discoveries made by AutoML

| | timestamp | level | stage | message | nam |
|---|---|---|---|---|---|
| 0 | 22:31:24.691 | Info | Workflow | Project: GoldPrice | |
| 1 | 22:31:24.692 | Info | Workflow | AutoML job created: 2019.08.29 22:31:24.679 | cre |
| 2 | 22:31:24.695 | Info | ModelTraining | Disabling Algo: XGBoost as requested by the user. | |

| | timestamp | level | stage | message | nam |
|---|---|---|---|---|---|
| 3 | 22:31:24.695 | Info | ModelTraining | Disabling Algo: DRF as requested by the user. | |
| 4 | 22:31:24.695 | Info | ModelTraining | Disabling Algo: GLM as requested by the user. | |
| 5 | 22:31:24.695 | Info | Workflow | Build control seed: -1 (random) | |
| 6 | 22:31:24.697 | Info | DataImport | training frame: Frame key: automl_training_frame_0.750 cols: 16 rows: 3772 chunks: 32 size: 428685 checksum: -207662189231631914 | |
| 7 | 22:31:24.698 | Info | DataImport | validation frame: Frame key: frame_0.250 cols: 16 rows: 1247 chunks: 32 size: 166294 checksum: 7295859472605559777 | |
| 8 | 22:31:24.698 | Info | DataImport | leaderboard frame: NULL | |
| 9 | 22:31:24.698 | Info | DataImport | response column: GoldPrice | |
| 10 | 22:31:24.698 | Info | DataImport | fold column: null | |
| 11 | 22:31:24.698 | Info | DataImport | weights column: null | |
| 12 | 22:31:24.819 | Info | Workflow | Setting stopping tolerance adaptively based on the training frame: 0.0162822402256459 | |
| 13 | 22:31:24.881 | Info | Workflow | AutoML build started: 2019.08.29 22:31:24.867 | sta |

# 📦 Model

*Model ID*:  StackedEnsemble_BestOfFamily_AutoML_20190829_223124

*Algorithm*:  Stacked Ensemble

*Actions*:   ⟳ Refresh    ⚡ Predict...    ⬇ Download POJO

⬇ Download Model Deployment Package (MOJO)    🔒 Export    ☰ Inspect    🗑 Delete

⬇ Download Gen Model

▸ MODEL PARAMETERS

▸ OUTPUT

▸ NAMES

▸ COLUMN_TYPES

▸ DOMAINS

▾ OUTPUT - TRAINING_METRICS

|  |  |
|---:|:---|
| *model* | StackedEnsemble_BestOfFamily_AutoML_20190829_223124 |
| *model_checksum* | 3126500775977285976 |
| *frame* | automl_training_frame_0.750 |
| *frame_checksum* | -207662189231631914 |
| *description* | · |
| *model_category* | Regression |
| *scoring_time* | 1567092040332 |
| *predictions* | · |
| *MSE* | 319.579489 |
| *RMSE* | 17.876786 |
| *nobs* | 3772 |
| *custom_metric_name* | · |
| *custom_metric_value* | 0 |
| *r2* | 0.998573 |
| *mean_residual_deviance* | 319.579489 |
| *mae* | 15.099769 |
| *rmsle* | 0.042983 |
| *residual_deviance* | 1205453.832579 |
| *null_deviance* | 844501174.009110 |
| *AIC* | 32465.619058 |
| *null_degrees_of_freedom* | 3771 |
| *residual_degrees_of_freedom* | 3769 |

### ▼ OUTPUT - VALIDATION_METRICS

|  |  |
|---:|:---|
| *model* | metalearner_AUTO_StackedEnsemble_BestOfFamily_AutoML_20190829_223 |
| *model_checksum* | -1729518883079531408 |
| *frame* | · |
| *frame_checksum* | 0 |
| *description* | · |
| *model_category* | Regression |
| *scoring_time* | 1567092040173 |
| *predictions* | · |
| *MSE* | 358.406344 |
| *RMSE* | 18.931623 |
| *nobs* | 1247 |
| *custom_metric_name* | · |
| *custom_metric_value* | 0 |
| *r2* | 0.998452 |
| *mean_residual_deviance* | 358.406344 |
| *mae* | 15.842905 |
| *rmsle* | 0.043431 |
| *residual_deviance* | 446932.710970 |
| *null_deviance* | 288728541.262222 |
| *AIC* | 10881.271927 |
| *null_degrees_of_freedom* | 1246 |
| *residual_degrees_of_freedom* | 1244 |

▾ OUTPUT - CROSS_VALIDATION_METRICS

|  |  |
|---:|:---|
| *model* | StackedEnsemble_BestOfFamily_AutoML_20190829_223124 |
| *model_checksum* | 3126500775977285976 |
| *frame* | levelone_training_StackedEnsemble_BestOfFamily_AutoML_20190829_22 |
| *frame_checksum* | 6950976573771970728 |
| *description* | 5-fold cross-validation on training data (Metrics computed for combined holdout predictions) |
| *model_category* | Regression |
| *scoring_time* | 1567092040181 |
| *predictions* | · |
| *MSE* | 371.673331 |
| *RMSE* | 19.278831 |
| *nobs* | 3772 |
| *custom_metric_name* | · |
| *custom_metric_value* | 0 |
| *r2* | 0.998340 |
| *mean_residual_deviance* | 371.673331 |
| *mae* | 15.508308 |
| *rmsle* | 0.039317 |
| *residual_deviance* | 1401951.805181 |
| *null_deviance* | 845006518.378439 |
| *AIC* | 33035.226106 |
| *null_degrees_of_freedom* | 3771 |
| *residual_degrees_of_freedom* | 3769 |

▸ OUTPUT - HELP

# ⚡ Predict

|  |  |
|---:|:---|
| *Name:* | prediction-36a4f635-626 |
| *Model:* | StackedEnsemble_BestOfFamily_AutoML_20190829_223124   ▼ |
| *Frame:* | frame_0.250 |
| *Actions:* | ⚡ Predict |

# ⚡ Prediction

|  |  |
|---:|:---|
| *Actions:* | ☰ Inspect |

▾ PREDICTION

|  |  |
|---:|:---|
| *model* | StackedEnsemble_BestOfFamily_AutoML_20190829_223124 |
| *model_checksum* | 3126500775977285976 |
| *frame* | frame_0.250 |
| *frame_checksum* | 7295859472605559777 |
| *description* | · |

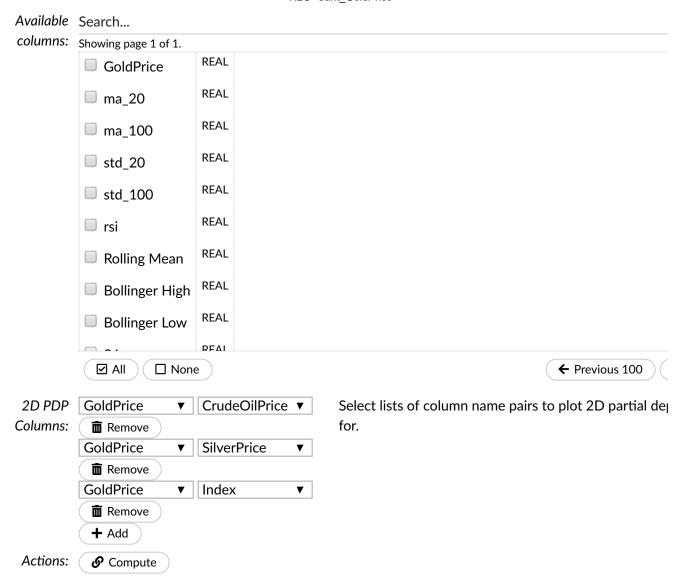|                              |                                                    |
|-----------------------------:|----------------------------------------------------|
| *model_category*             | Regression                                         |
| *scoring_time*               | 1567092520656                                      |
| *predictions*                | prediction-36a4f635-626c-425f-a9d8-5cf4f479ad32    |
| *MSE*                        | 358.406344                                         |
| *RMSE*                       | 18.931623                                          |
| *nobs*                       | 1247                                               |
| *custom_metric_name*         | ·                                                  |
| *custom_metric_value*        | 0                                                  |
| *r2*                         | 0.998452                                           |
| *mean_residual_deviance*     | 358.406344                                         |
| *mae*                        | 15.842905                                          |
| *rmsle*                      | 0.043431                                           |
| *residual_deviance*          | 446932.710970                                      |
| *null_deviance*              | 288728541.262222                                   |
| *AIC*                        | 10881.271927                                       |
| *null_degrees_of_freedom*    | 1246                                               |
| *residual_degrees_of_freedom*| 1244                                               |

⊞ Combine predictions with frame

# 🔗 Partial Dependence

| | |
|---:|---|
| *Save Destination PDP as:* | pdp-e769e4fa-8153-43c8-8421-8f3e37 |
| *Model:* | StackedEnsemble_BestOfFamily_AutoML_20190829_223124 ▼ |
| *Frame:* | frame_0.250 |
| *row_index* | -1 |
| *nbins* | 20 |
| *Select columns?* | ☑ |

Row for which partial dependence will be calculated in whole input frame (-1 for all).

How many levels should PDP compute. More levels w slower.

Checking this will allow you to select custom columns default, the top 10 features are used. Those features a variable importance.

*Available columns:*   Search...

Showing page 1 of 1.

| | |
|---|---|
| ☐ GoldPrice | REAL |
| ☐ ma_20 | REAL |
| ☐ ma_100 | REAL |
| ☐ std_20 | REAL |
| ☐ std_100 | REAL |
| ☐ rsi | REAL |
| ☐ Rolling Mean | REAL |
| ☐ Bollinger High | REAL |
| ☐ Bollinger Low | REAL |
| ☐ | REAL |

( ☑ All )   ( ☐ None )        ( ← Previous 100 )

*2D PDP Columns:*

| GoldPrice ▼ | CrudeOilPrice ▼ |
|---|---|

( 🗑 Remove )

| GoldPrice ▼ | SilverPrice ▼ |
|---|---|

( 🗑 Remove )

| GoldPrice ▼ | Index ▼ |
|---|---|

( 🗑 Remove )

( ➕ Add )

Select lists of column name pairs to plot 2D partial de[...] for.

*Actions:*   ( 🔗 Compute )

# ⁝≡ Job

| | |
|---|---|
| *Run Time* | 00:02:55.52 |
| *Remaining Time* | 00:00:00.0 |
| *Type* | PartialDependence |
| *Key* | 🔍 pdp-e769e4fa-8153-43c8-8421-8f3e374f749a |
| *Description* | PartialDependence |
| *Status* | DONE |
| *Progress* | 100% |

Done.

*Actions*   ( 🔍 View )

# ⊞ Partial Dependence Summary
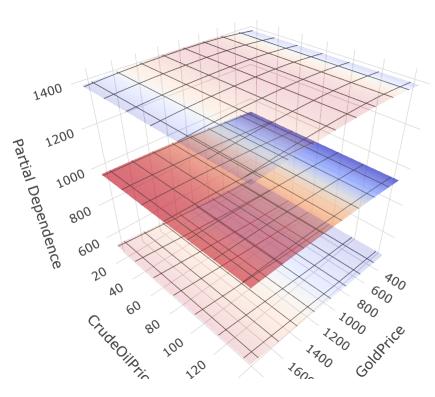
*Model ID:*   StackedEnsemble_BestOfFamily_AutoML_20190829_223124
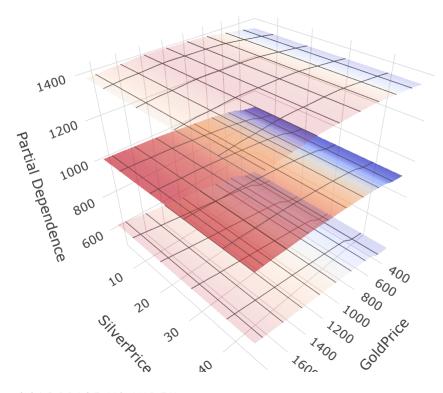
*Frame ID:*   frame_0.250

*Show PDP Data Table?*   ☐

▾ G O L D P R I C E   V S   C R U D E O I L P R I C E
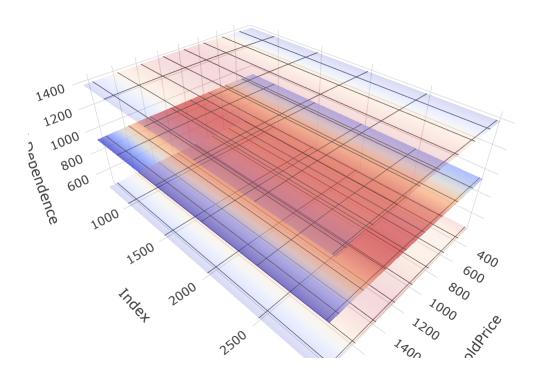


▾ G O L D P R I C E   V S   S I L V E R P R I C E



▾ G O L D P R I C E   V S   I N D E X

# ⬢ Model
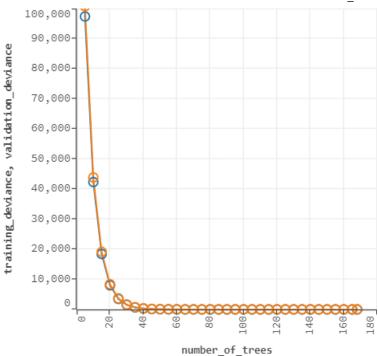
*Model ID:*   GBM_grid_1_AutoML_20190829_223124_model_33

*Algorithm:*   Gradient Boosting Machine
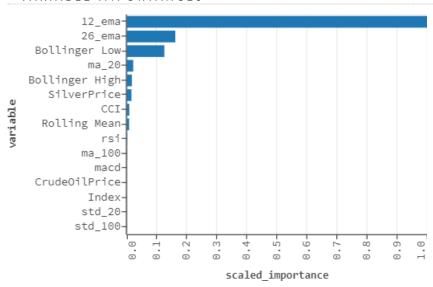
*Actions:*  
- ⟳ Refresh
- ⚡ Predict...
- ⬇ Download POJO
- ⬇ Download Model Deployment Package (MOJO)
- 💾 Export
- ☰ Inspect
- 🗑 Delete
- ⬇ Download Gen Model

▸ M O D E L   P A R A M E T E R S

▾ S C O R I N G   H I S T O R Y   -   D E V I A N C E

▼ VARIABLE IMPORTANCES



▸ OUTPUT

▸ COLUMN_TYPES

▸ CROSS_VALIDATION_MODELS

▸ CROSS_VALIDATION_PREDICTIONS

▸ OUTPUT - MODEL SUMMARY

▸ OUTPUT - SCORING HISTORY

▸ OUTPUT - TRAINING_METRICS

▸ OUTPUT - VALIDATION_METRICS

▸ O U T P U T  -  C R O S S _ V A L I D A T I O N _ M E T R I C S

▸ O U T P U T  -  C R O S S - V A L I D A T I O N  M E T R I C S  S U M M A R Y

▸ O U T P U T  -  V A R I A B L E  I M P O R T A N C E S

▾ P R E V I E W  P O J O

</> Preview POJO
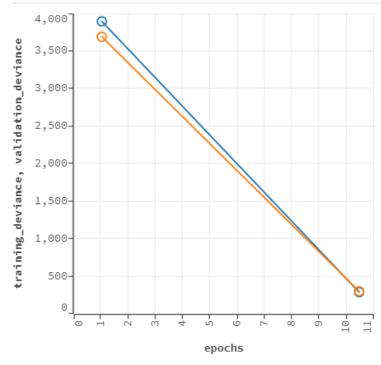
CS

# 🗿 Model

*Model ID:*  DeepLearning_1_AutoML_20190829_223124

*Algorithm:*  Deep Learning
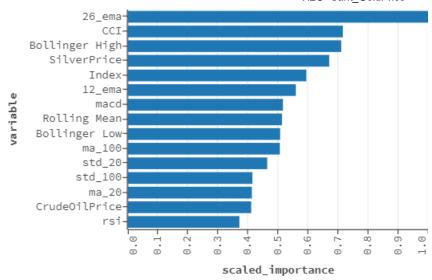
*Actions:*   ⟳ Refresh     ⚡ Predict…     ⬇ Download POJO

⬇ Download Model Deployment Package (MOJO)     💾 Export     ☰ Inspect     🗑 Delete

⬇ Download Gen Model

▸ M O D E L  P A R A M E T E R S

▾ S C O R I N G  H I S T O R Y  -  D E V I A N C E



▾ V A R I A B L E  I M P O R T A N C E S

▸ OUTPUT

▸ COLUMN_TYPES

▸ CROSS_VALIDATION_MODELS

▸ CROSS_VALIDATION_PREDICTIONS

▸ OUTPUT - STATUS OF NEURON LAYERS (PREDICTING GOLDPRICE, REGRESSION, GAUSSIAN DISTRIBUTION, QUADRATIC LOSS, 391 WEIGHTS/BIASES, 11.5 KB, 39,438 TRAINING SAMPLES, MINI-BATCH SIZE 1)

▸ OUTPUT - SCORING HISTORY

▸ OUTPUT - TRAINING_METRICS

▸ OUTPUT - VALIDATION_METRICS

▸ OUTPUT - CROSS_VALIDATION_METRICS

▸ OUTPUT - CROSS-VALIDATION METRICS SUMMARY

▸ OUTPUT - VARIABLE IMPORTANCES

▾ PREVIEW POJO

</> Preview POJO