

Untitled Flow

?

Assistance

<i>Routine</i>	<i>Description</i>
↳ importFiles	Import file(s) into H ₂ O
↳ importSqlTable	Import SQL table into H ₂ O
↳ getFrames	Get a list of frames in H ₂ O
✖ splitFrame	Split a frame into two or more frames
🔗 mergeFrames	Merge two frames into one
🕒 getModels	Get a list of models in H ₂ O
grid getGrids	Get a list of grid search results in H ₂ O
⚡ getPredictions	Get a list of predictions in H ₂ O
🕒 getJobs	Get a list of jobs running in H ₂ O
automl runAutoML	Automatically train and tune many models
📦 buildModel	Build a model
📦 importModel	Import a saved model
⚡ predict	Make a prediction

?

Assistance

<i>Routine</i>	<i>Description</i>
↳ importFiles	Import file(s) into H ₂ O
↳ importSqlTable	Import SQL table into H ₂ O
↳ getFrames	Get a list of frames in H ₂ O
✖ splitFrame	Split a frame into two or more frames
🔗 mergeFrames	Merge two frames into one
🕒 getModels	Get a list of models in H ₂ O

<i>Routine</i>	<i>Description</i>
grid.getGrids	Get a list of grid search results in H ₂ O
predictor.getPredictions	Get a list of predictions in H ₂ O
job.getJobs	Get a list of jobs running in H ₂ O
model.runAutoML	Automatically train and tune many models
model.buildModel	Build a model
model.importModel	Import a saved model
predictor.predict	Make a prediction

Import Files

Search: E:\REVA-MBA-BUSINESS-ANALYTICS\TRIMESTER2_Module05_Advanced_Machine_Learning_RatnakarPandey\modue5 🔍

Search (All files added)

Results:

Selected 1 file selected: Clear All

Files:

✗ E:\REVA-MBA-BUSINESS-ANALYTICS\TRIMESTER2_Module05_Advanced_Machine_Learning_RatnakarPandey\modue5_day4assignment_RP\mnist_test.csv

Actions: Import

1 / 1 files imported.

Files ✗ E:\REVA-MBA-BUSINESS-ANALYTICS\TRIMESTER2_Module05_Advanced_Machine_Learning_RatnakarPandey\modue5_day4assignment_RP\mnist_test.csv

Actions Parse these files...

Setup Parse

PARSE CONFIGURATION

Sources  nfs:\E:\REVA-MBA-BUSINESS-ANALYTICS\TRIMESTER2_Module05_Advanced_Machine_Learning_RatnakarPandey\modue5_day4assignment_RP\mnist_test.csv

ID mnist_test.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...

1	label	Numeric ▾	7	2	1	0	4	1	4	9	5
2	1x1	Numeric ▾	0	0	0	0	0	0	0	0	0
3	1x2	Numeric ▾	0	0	0	0	0	0	0	0	0
4	1x3	Numeric ▾	0	0	0	0	0	0	0	0	0
5	1x4	Numeric ▾	0	0	0	0	0	0	0	0	0
6	1x5	Numeric ▾	0	0	0	0	0	0	0	0	0
7	1x6	Numeric ▾	0	0	0	0	0	0	0	0	0
8	1x7	Numeric ▾	0	0	0	0	0	0	0	0	0
9	1x8	Numeric ▾	0	0	0	0	0	0	0	0	0
10	1x9	Numeric ▾	0	0	0	0	0	0	0	0	0
11	1x10	Numeric ▾	0	0	0	0	0	0	0	0	0
12	1x11	Numeric ▾	0	0	0	0	0	0	0	0	0
13	1x12	Numeric ▾	0	0	0	0	0	0	0	0	0
14	1x13	Numeric ▾	0	0	0	0	0	0	0	0	0
15	1x14	Numeric ▾	0	0	0	0	0	0	0	0	0

[← Previous page](#)[→ Next page](#)[Parse](#)

Job

Run Time 00:00:02.309

Remaining Time 00:00:00.0

Type Frame

Key mnist_test.hex

Description Parse

Status DONE

Progress 100%

Done.

Actions

mnist_test.hex

Actions: [View Data](#) [Split](#) [Build Model](#) [Run AutoML](#) [Predict](#) [Download](#) [Export](#) [Delete](#)

Rows

Columns

Compressed Size

10000

785

4MB

COLUMN SUMMARIES

label	type	Missing	Zeros	+Inf	-Inf	min	max	mean	sigma	cardinality	Actions
label	int	0	980	0	0	0	9.0	4.4434	2.8959	• Convert to enum	
1x1	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x2	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x3	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x4	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x5	int	0	10000	0	0	0	0	0	0	• Convert to enum	

label	type	Missing	Zeros	+Inf	-Inf	min	max	mean	sigma	cardinality	Actions
1x6	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x7	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x8	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x9	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x10	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x11	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x12	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x13	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x14	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x15	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x16	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x17	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x18	int	0	10000	0	0	0	0	0	0	• Convert to enum	
1x19	int	0	10000	0	0	0	0	0	0	• Convert to enum	

[← Previous 20 Columns](#)[→ Next 20 Columns](#)

► CHUNK COMPRESSION SUMMARY

► FRAME DISTRIBUTION SUMMARY

mnist_test.hex

▼ DATA

[← Previous 20 Columns](#)[→ Next 20 Columns](#)

51	6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	4.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	9.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Row	label	1x1	1x2	1x3	1x4	1x5	1x6	1x7	1x8	1x9	1x10	1x11	1x12	1x13	1x14	1x15	1x16	1x17	1x18	1x19
61	7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
62	8.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
63	9.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
64	3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
65	7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
66	4.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
67	6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
68	4.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
69	3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
71	7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
73	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
74	9.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
75	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

◀ Previous 20 Columns ▶ Next 20 Columns

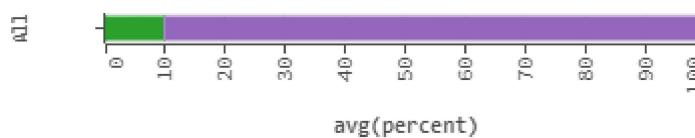
Summary: label

Actions

◀ Impute

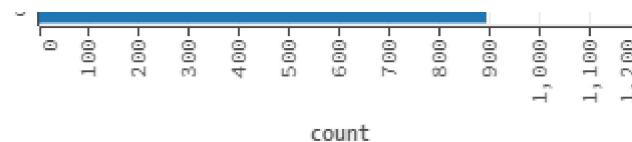
☰ Inspect

CHARACTERISTICS



DOMAIN (MAX 1000 LEVELS)





mnist_hex

DATA

[◀ Previous 20 Columns](#) [▶ Next 20 Columns](#)

Row	label	1x1	1x2	1x3	1x4	1x5	1x6	1x7	1x8	1x9	1x10	1x11	1x12	1x13	1x14	1x15	1x16	1x17	1x18	1x19
1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
23	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
24	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

[← Previous 20 Columns](#)[→ Next 20 Columns](#)

mnist_test.hex

Actions: [View Data](#)[Split](#)[Build Model](#)[Run AutoML](#)[Predict](#)[Download](#)[Export](#)[Delete](#)

Rows

Columns

Compressed Size

10000

785

4MB

▼ COLUMN SUMMARIES

		label	type	Missing	Zeros	+Inf	-Inf	min	max	mean	sigma	cardinality	Actions
		label	enum	0	980	0	0	0	9.0	.	.	10	Convert to numeric
1x1		1x1	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x2		1x2	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x3		1x3	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x4		1x4	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x5		1x5	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x6		1x6	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x7		1x7	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x8		1x8	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x9		1x9	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x10		1x10	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x11		1x11	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x12		1x12	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x13		1x13	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x14		1x14	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x15		1x15	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x16		1x16	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x17		1x17	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x18		1x18	int	0	10000	0	0	0	0	0	0	.	Convert to enum
1x19		1x19	int	0	10000	0	0	0	0	0	0	.	Convert to enum

[← Previous 20 Columns](#)[→ Next 20 Columns](#)

► CHUNK COMPRESSION SUMMARY

► FRAME DISTRIBUTION SUMMARY

✖ Split Frame

Frame: **mnist_test.hex** ▾Splits: *Ratio*

0.75

0.250

Add a new split

Seed: 275049

Key

frame_0.750



frame_0.250

✖ Create

▪ Split Frames

Type	Key	Ratio
▪	frame_0.750	0.75
▪	frame_0.250	0.25

▪ frame_0.750

Actions: [View Data](#) [✖ Split](#) [Build Model](#) [Run AutoML](#) [⚡ Predict](#) [Download](#) [Export](#) [Delete](#)

Rows	Columns	Compressed Size
7502	785	3MB

▼ COLUMN SUMMARIES

label	type	Missing	Zeros	+Inf	-Inf	min	max	mean	sigma	cardinality	Actions
label	enum	0	720	0	0	0	9.0	.	.	10	Convert to numeric
1x1	int	0	7502	0	0	0	0	0	0	.	Convert to enum

label	type	Missing	Zeros	+Inf	-Inf	min	max	mean	sigma	cardinality	Actions
1x2	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x3	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x4	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x5	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x6	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x7	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x8	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x9	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x10	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x11	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x12	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x13	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x14	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x15	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x16	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x17	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x18	int	0	7502	0	0	0	0	0	0	·	Convert to enum
1x19	int	0	7502	0	0	0	0	0	0	·	Convert to enum

[◀ Previous 20 Columns](#)[→ Next 20 Columns](#)**► CHUNK COMPRESSION SUMMARY****► FRAME DISTRIBUTION SUMMARY****frame_0.250**

Actions: [View Data](#) [Split](#) [Build Model](#) [Run AutoML](#) [Predict](#) [Download](#) [Export](#) [Delete](#)

Rows	Columns	Compressed Size
2498	785	2MB

▼ COLUMN SUMMARIES

label	type	Missing	Zeros	+Inf	-Inf	min	max	mean	sigma	cardinality	Actions
label	enum	0	260	0	0	0	9.0	.	.	10	Convert to numeric

label	type	Missing	Zeros	+Inf	-Inf	min	max	mean	sigma	cardinality	Actions
1x1	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x2	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x3	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x4	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x5	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x6	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x7	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x8	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x9	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x10	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x11	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x12	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x13	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x14	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x15	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x16	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x17	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x18	int	0	2498	0	0	0	0	0	0	1	• Convert to enum
1x19	int	0	2498	0	0	0	0	0	0	1	• Convert to enum

[◀ Previous 20 Columns](#)[▶ Next 20 Columns](#)[▶ CHUNK COMPRESSION SUMMARY](#)[▶ FRAME DISTRIBUTION SUMMARY](#)

Build a Model

Select an algorithm: **Distributed Random Forest** ▾[PARAMETERS](#)[GRID ?](#)**model_id** RANDOM_FOREST_MNIST

Destination id for this model; auto-generated if not specified.

training_frame frame_0.750 ▾

Id of the training data frame.

validation_frame frame_0.250 ▾

Id of the validation data frame.



<i>nfold</i>	0	Number of folds for K-fold cross-validation (0 to disable or >= 2).																														
<i>response_column</i>	label ▼	Response variable column.																														
<i>ignored_columns</i>	Search...	Names of columns to ignore for training.																														
<p>Showing page 1 of 79. -785 ignored.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;"><input type="checkbox"/></td><td style="padding: 2px;">label</td><td style="padding: 2px;">ENUM(10)</td></tr> <tr><td style="padding: 2px;"><input type="checkbox"/></td><td style="padding: 2px;">1x1</td><td style="padding: 2px;">INT</td></tr> <tr><td style="padding: 2px;"><input type="checkbox"/></td><td style="padding: 2px;">1x2</td><td style="padding: 2px;">INT</td></tr> <tr><td style="padding: 2px;"><input type="checkbox"/></td><td style="padding: 2px;">1x3</td><td style="padding: 2px;">INT</td></tr> <tr><td style="padding: 2px;"><input type="checkbox"/></td><td style="padding: 2px;">1x4</td><td style="padding: 2px;">INT</td></tr> <tr><td style="padding: 2px;"><input type="checkbox"/></td><td style="padding: 2px;">1x5</td><td style="padding: 2px;">INT</td></tr> <tr><td style="padding: 2px;"><input type="checkbox"/></td><td style="padding: 2px;">1x6</td><td style="padding: 2px;">INT</td></tr> <tr><td style="padding: 2px;"><input type="checkbox"/></td><td style="padding: 2px;">1x7</td><td style="padding: 2px;">INT</td></tr> <tr><td style="padding: 2px;"><input type="checkbox"/></td><td style="padding: 2px;">1x8</td><td style="padding: 2px;">INT</td></tr> <tr><td style="padding: 2px;"><input type="checkbox"/></td><td style="padding: 2px;">1x9</td><td style="padding: 2px;">INT</td></tr> </table> <p style="text-align: center;"> <input checked="" type="checkbox"/> All <input type="button" value="← Previous 10"/> <input type="checkbox"/> None <input type="button" value="→ Next 10"/> </p> <p>Only show columns with more than 0 % missing values.</p>			<input type="checkbox"/>	label	ENUM(10)	<input type="checkbox"/>	1x1	INT	<input type="checkbox"/>	1x2	INT	<input type="checkbox"/>	1x3	INT	<input type="checkbox"/>	1x4	INT	<input type="checkbox"/>	1x5	INT	<input type="checkbox"/>	1x6	INT	<input type="checkbox"/>	1x7	INT	<input type="checkbox"/>	1x8	INT	<input type="checkbox"/>	1x9	INT
<input type="checkbox"/>	label	ENUM(10)																														
<input type="checkbox"/>	1x1	INT																														
<input type="checkbox"/>	1x2	INT																														
<input type="checkbox"/>	1x3	INT																														
<input type="checkbox"/>	1x4	INT																														
<input type="checkbox"/>	1x5	INT																														
<input type="checkbox"/>	1x6	INT																														
<input type="checkbox"/>	1x7	INT																														
<input type="checkbox"/>	1x8	INT																														
<input type="checkbox"/>	1x9	INT																														
<i>ignore_const_cols</i>	<input checked="" type="checkbox"/>	Ignore constant columns.																														
<i>ntrees</i>	50	Number of trees.																														
<i>max_depth</i>	20	Maximum tree depth.																														
<i>min_rows</i>	1	Fewest allowed (weighted) observations in a leaf.																														
<i>nbins</i>	20	For numerical columns (real/int), build a histogram of (at least) this many bins, then split at the best point																														
<i>seed</i>	-1	Seed for pseudo random number generator (if applicable)																														

mtries -1

Number of variables randomly sampled as candidates at each split. If set to -1, defaults to \sqrt{p} for classification and $p/3$ for regression (where p is the # of predictors)

sample_rate 0.632

Row sample rate per tree (from 0.0 to 1.0)

ADVANCED

GRID ?

score_each_iteration

Whether to score during each iteration of model training.

score_tree_interval 0

Score the model after every so many trees. Disabled if set to 0.

fold_column (Choose...)

Column with cross-validation fold index assignment per observation.

offset_column (Choose...)

Offset column. This will be added to the combination of columns before applying the link function.

weights_column (Choose...)

Column with observation weights. Giving some observation a weight of zero is equivalent to excluding it from the dataset; giving an observation a relative weight of 2 is equivalent to repeating that row twice. Negative weights are not allowed. Note: Weights are per-row observation weights and do not increase the size of the data frame. This is typically the number of times a row is repeated, but non-integer values are supported as well. During training, rows with higher weights matter more, due to the larger loss function pre-factor.

balance_classes

Balance training data class counts via over/under-sampling (for imbalanced data).

max_confusion_matrix_size 20

[Deprecated] Maximum size (# classes) for confusion matrices to be printed in the Logs

max_hit_ratio_k 0

Max. number (top K) of predictions to use for hit ratio computation (for multi-class only, 0 to disable)

nbins_top_level 1024

For numerical columns (real/int), build a histogram of (at most) this many bins at the root level, then decrease by factor of two per level

nbins_cats 1024

For categorical columns (factors), build a histogram of this many bins, then split at the best point. Higher values can lead to more overfitting.

r2_stopping	1.7976931348623157e+308	H2O Flow r2_stopping is no longer supported and will be ignored if set - please use stopping_rounds, stopping_metric and stopping_tolerance instead. Previous version of H2O would stop making trees when the R^2 metric equals or exceeds this	<input type="checkbox"/>
stopping_rounds	0	Early stopping based on convergence of stopping_metric. Stop if simple moving average of length k of the stopping_metric does not improve for k:=stopping_rounds scoring events (0 to disable)	<input type="checkbox"/>
stopping_metric	AUTO	Metric to use for early stopping (AUTO: logloss for classification, deviance for regression and anomaly_score for Isolation Forest). Note that custom and custom_increasing can only be used in GBM and DRF with the Python client.	<input type="checkbox"/>
stopping_tolerance	0.001	Relative tolerance for metric-based stopping criterion (stop if relative improvement is not at least this much)	<input type="checkbox"/>
max_runtime_secs	0	Maximum allowed runtime in seconds for model training. Use 0 to disable.	<input type="checkbox"/>
checkpoint		Model checkpoint to resume training with.	
col_sample_rate_per_tree	1	Column sample rate per tree (from 0.0 to 1.0)	<input type="checkbox"/>
min_split_improvement	0.00001	Minimum relative improvement in squared error reduction for a split to happen	<input type="checkbox"/>
histogram_type	AUTO	What type of histogram to use for finding optimal split points	<input type="checkbox"/>
categorical_encoding	AUTO	Encoding scheme for categorical features	<input type="checkbox"/>
distribution	AUTO	Distribution function	<input type="checkbox"/>
custom_metric_func		Reference to custom evaluation function, format: 'language:keyName=funcName'	
export_checkpoints_dir		Automatically export generated models to this directory.	

EXPERIMENT

GRID?

build_tree_one_node	<input type="checkbox"/>	Run on one node only; no network overhead but fewer cpus used. Suitable for small datasets.
sample_rate_per_class		A list of row sample rates per class (relative fraction for each class, from 0.0 to 1.0), for each tree

<i>binomial_double_trees</i>	<input type="checkbox"/>	For binary classification: Build 2x as many trees (one per class) - can lead to higher accuracy.
<i>col_sample_rate_change_per_level</i>	1	Relative change of the column sampling rate for every level (must be > 0.0 and <= 2.0)
<i>calibrate_model</i>	<input type="checkbox"/>	Use Platt Scaling to calculate calibrated class probabilities. Calibration can provide more accurate estimates of class probabilities.
<i>calibration_frame</i>	(Choose...)	Calibration frame for Platt Scaling
<i>check_constant_response</i>	<input checked="" type="checkbox"/>	Check if response column is constant. If enabled, then an exception is thrown if the response column is a constant value. If disabled, then model will train regardless of the response column being a constant value or not.

 Build Model

Job

Run Time 00:04:42.653

Remaining Time 00:00:00.0

Type Model

Key  RANDOM_FOREST_MNIST

Description DRF

Status DONE

Progress 100%

Done.

Actions  View

Model

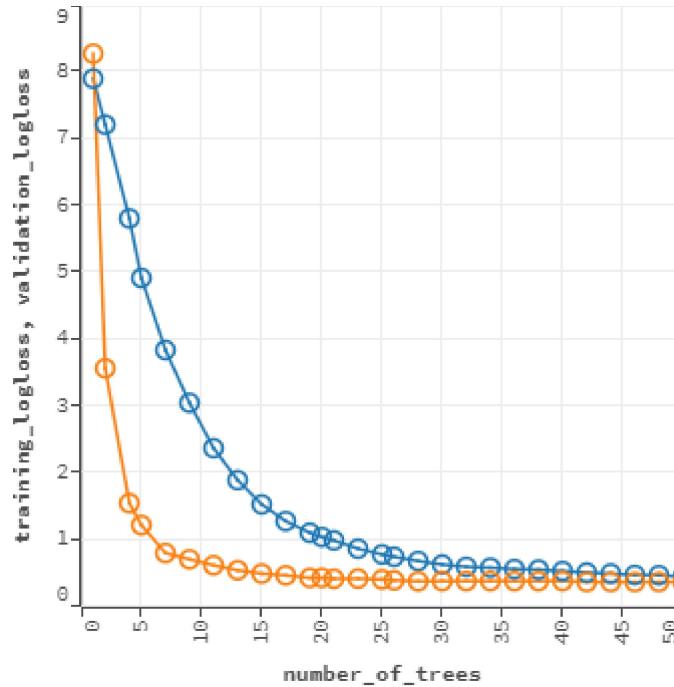
Model ID: RANDOM_FOREST_MNIST

Algorithm: Distributed Random Forest

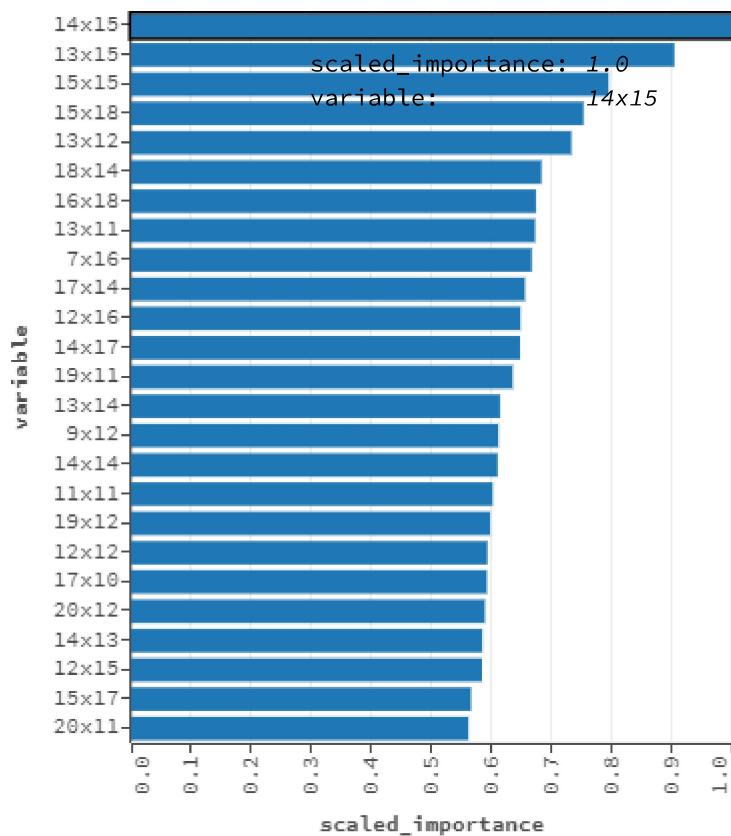
Actions: [Refresh](#) [Predict...](#) [Download POJO](#) [Download Model Deployment Package \(MOJO\)](#) [Export](#) [Inspect](#)
[Delete](#) [Download Gen Model](#)

► MODEL PARAMETERS

▼ SCORING HISTORY - LOGLOSS



▼ VARIABLE IMPORTANCES



▼ TRAINING METRICS - CONFUSION MATRIX ROW LABELS: ACTUAL CLASS; COLUMN LABELS: PREDICTED CLASS

H2O Flow

	0	1	2	3	4	5	6	7	8	9	Error	Rate	Precision
0	706	0	0	0	1	2	4	2	5	0	0.0194	14 / 720	0.96
1	0	836	4	2	0	1	4	1	4	0	0.0188	16 / 852	0.97
2	8	1	698	8	7	2	7	9	17	3	0.0816	62 / 760	0.93
3	2	1	14	695	1	11	2	9	15	3	0.0770	58 / 753	0.93
4	2	1	1	2	683	2	7	0	6	26	0.0644	47 / 730	0.96
5	4	2	3	17	2	621	13	2	9	11	0.0921	63 / 684	0.93
6	4	2	1	0	3	9	702	0	6	0	0.0344	25 / 727	0.94
7	1	10	12	4	2	2	1	712	4	19	0.0717	55 / 767	0.94
8	4	6	11	6	5	10	6	5	684	8	0.0819	61 / 745	0.91
9	5	6	5	13	7	5	1	15	5	702	0.0812	62 / 764	0.91
Total	736	865	749	747	711	665	747	755	755	772	0.0617	463 / 7,502	
Recall	0.98	0.98	0.92	0.92	0.94	0.91	0.97	0.93	0.92	0.92			

▼ VALIDATION METRICS - CONFUSION MATRIX ROW LABELS: ACTUAL CLASS; COLUMN LABELS: PREDICTED CLASS

	0	1	2	3	4	5	6	7	8	9	Error	Rate	Precision
0	257	0	0	0	0	0	1	0	2	0	0.0115	3 / 260	0.94
1	1	279	1	0	1	0	1	0	0	0	0.0141	4 / 283	0.98
2	3	0	259	2	1	1	1	4	1	0	0.0478	13 / 272	0.94
3	1	0	6	238	0	2	0	7	1	2	0.0739	19 / 257	0.95
4	0	1	0	0	239	0	0	0	0	12	0.0516	13 / 252	0.97
5	3	0	0	2	0	201	0	1	1	0	0.0337	7 / 208	0.96
6	4	1	0	0	1	3	222	0	0	0	0.0390	9 / 231	0.99
7	1	1	7	0	2	0	0	245	0	5	0.0613	16 / 261	0.94
8	1	1	1	6	0	2	0	2	213	3	0.0699	16 / 229	0.96
9	2	2	1	2	3	0	0	2	3	230	0.0612	15 / 245	0.91
Total	273	285	275	250	247	209	225	261	221	252	0.0460	115 / 2,498	
Recall	0.99	0.99	0.95	0.93	0.95	0.97	0.96	0.94	0.93	0.94			

▼ OUTPUT

```
    original_names  ·  
    cross_validation_models  ·  
    cross_validation_predictions  ·  
cross_validation_holdout_predictions_frame_id  ·  
    cross_validation_fold_assignment_frame_id  ·  
        model_category Multinomial  
    cross_validation_metrics  ·  
    cross_validation_metrics_summary  ·  
        status  ·  
        start_time 1587201002311  
        end_time 1587201284848  
        run_time 282537  
        init_f 0
```

▼ COLUMN_TYPES

column_types
Numeric

▼ OUTPUT - MODEL SUMMARY

```
number_of_trees 50
number_of_internal_trees 500
model_size_in_bytes 1200265
    min_depth 10
    max_depth 20
    mean_depth 15.9480
    min_leaves 72
    max_leaves 284
    mean_leaves 185.8920
```

▼ OUTPUT - SCORING HISTORY

timestamp	duration	number_of_trees	training_rmse	training_logloss	training_classification_error	validation_rmse	validation
2020-04-18 14:40:02	0.076 sec	0
2020-04-18 14:40:06	4.450 sec	1	0.5121	7.8987		0.3203	0.5188
2020-04-18 14:40:10	8.667 sec	2	0.4968	7.2107		0.2922	0.4001
2020-04-18 14:40:19	17.031 sec	4	0.4673	5.8084		0.2534	0.3508
2020-04-18 14:40:23	21.532 sec	5	0.4446	4.9171		0.2301	0.3433
2020-04-18 14:40:31	28.835 sec	7	0.4186	3.8396		0.1959	0.3336
2020-04-18 14:40:38	36.005 sec	9	0.3968	3.0498		0.1606	0.3280
2020-04-18 14:40:45	43.470 sec	11	0.3799	2.3721		0.1416	0.3271
2020-04-18 14:40:53	50.927 sec	13	0.3670	1.8936		0.1223	0.3267
2020-04-							

▼ OUTPUT - TRAINING_METRICS

```
model RANDOM_FOREST_MNIST
model_checksum 996973630112786578
frame frame_0.750
frame_checksum 248042873191249
description Metrics reported on Out-Of-Bag training samples
model_category Multinomial
scoring_time 1587201284016
predictions .
MSE 0.109349
RMSE 0.330680
nobs 7502
custom_metric_name .
custom_metric_value 0
r2 0.986945
logloss 0.450661
mean_per_class_error 0.062244
```

▼ OUTPUT - TRAINING_METRICS - TOP-10 HIT RATIOS

<u>k</u>	<u>hit_ratio</u>
1	0.9383
2	0.9711
3	0.9791
4	0.9828
5	0.9836
6	0.9843
7	0.9844
8	0.9845
9	0.9845
10	1.0

▼ OUTPUT - VALIDATION_METRICS

```
model RANDOM_FOREST_MNIST
model_checksum 996973630112786578
frame frame_0.250
frame_checksum 83694139828475
description .
model_category Multinomial
scoring_time 1587201284791
predictions .
    MSE 0.103821
    RMSE 0.322213
    nobs 2498
custom_metric_name .
custom_metric_value 0
    r2 0.987647
    logloss 0.371827
mean_per_class_error 0.046400
```

▼ OUTPUT - VALIDATION_METRICS - TOP-10 HIT RATIOS

<u>k</u>	<u>hit_ratio</u>
1	0.9540
2	0.9828
3	0.9884
4	0.9920
5	0.9932
6	0.9932
7	0.9932
8	0.9936
9	0.9936
10	1.0

▼ OUTPUT - VARIABLE IMPORTANCES

variable	relative_importance	scaled_importance	percentage
14x15	2040.2836	1.0	0.0090
13x15	1842.1676	0.9029	0.0082
15x15	1619.7638	0.7939	0.0072
15x18	1534.6703	0.7522	0.0068
13x12	1493.0352	0.7318	0.0066
18x14	1391.6824	0.6821	0.0062
16x18	1373.1600	0.6730	0.0061
13x11	1370.3669	0.6717	0.0061
7x16	1358.6387	0.6659	0.0060
17x14	1335.5658	0.6546	0.0059
12x16	1320.7457	0.6473	0.0058
14x17	1319.1210	0.6465	0.0058
19x11	1294.1986	0.6343	0.0057
13x14	1250.7969	0.6131	0.0055
9x12	1245.9181	0.6107	0.0055
14x14	1243.3634	0.6094	0.0055
11x11	1225.9209	0.6009	0.0054
19x12	1218.1293	0.5970	0.0054
12x12	1208.2356	0.5922	0.0053
17x10	1206.5100	0.5913	0.0053
20x12	1199.6058	0.5880	0.0053
14x13	1191.3032	0.5839	0.0053
12x15	1190.2814	0.5834	0.0053
15x17	1152.5643	0.5649	0.0051

▼ PREVIEW POJO**◁/▷ Preview POJO****⚡ Predict**Name: Model:

Frame: frame_0.250

Actions: Predict

Prediction

Actions: Inspect

▼ PREDICTION

```
model RANDOM_FOREST_MNIST
model_checksum 996973630112786578
frame frame_0.250
frame_checksum 83694139828475
description .
model_category Multinomial
scoring_time 1587201594787
predictions prediction-
    MSE 0.103821
    RMSE 0.322213
    nobs 2498
custom_metric_name .
custom_metric_value 0
    r2 0.987647
    logloss 0.371827
mean_per_class_error 0.046400
```

Combine predictions with frame

▼ PREDICTION - TOP-10 HIT RATIOS

k	hit_ratio
1	0.9540
2	0.9828
3	0.9884
4	0.9920
5	0.9932

<i>k</i>	<i>hit_ratio</i>
6	0.9932
7	0.9932
8	0.9936
9	0.9936
10	1.0

▼ PREDICTION - CONFUSION MATRIX ROW LABELS: ACTUAL CLASS; COLUMN LABELS: PREDICTED CLASS

	0	1	2	3	4	5	6	7	8	9	Error	Rate	Precision
0	257	0	0	0	0	1	0	2	0	0	0.0115	3 / 260	0.94
1	1	279	1	0	1	0	1	0	0	0	0.0141	4 / 283	0.98
2	3	0	259	2	1	1	1	4	1	0	0.0478	13 / 272	0.94
3	1	0	6	238	0	2	0	7	1	2	0.0739	19 / 257	0.95
4	0	1	0	0	239	0	0	0	0	12	0.0516	13 / 252	0.97
5	3	0	0	2	0	201	0	1	1	0	0.0337	7 / 208	0.96
6	4	1	0	0	1	3	222	0	0	0	0.0390	9 / 231	0.99
7	1	1	7	0	2	0	0	245	0	5	0.0613	16 / 261	0.94
8	1	1	1	6	0	2	0	2	213	3	0.0699	16 / 229	0.96
9	2	2	1	2	3	0	0	2	3	230	0.0612	15 / 245	0.91
Total	273	285	275	250	247	209	225	261	221	252	0.0460	115 / 2,498	
Recall	0.99	0.99	0.95	0.93	0.95	0.97	0.96	0.94	0.93	0.94			

i Data

TABLES

Name	Actions
i Prediction	Inspect
i Prediction - Top-10 Hit Ratios	Inspect
i Prediction - cm	Inspect
i Prediction - cm - Confusion Matrix	Inspect

i Prediction

S C H E M A

	Name	Type
⋮	model	Object
⋮	model_checksum	Object
⋮	frame	Object
⋮	frame_checksum	Object
⋮	description	Object
⋮	model_category	Object
⋮	scoring_time	Object
⋮	predictions	Object
⋮	MSE	Object
⋮	RMSE	Object
⋮	nobs	Object
⋮	custom_metric_name	Object
⋮	custom_metric_value	Object
⋮	r2	Object
⋮	logloss	Object
⋮	mean_per_class_error	Object

Actions [i View](#)

i Prediction - Top-10 Hit Ratios

S C H E M A

	Name	Type
⋮	k	String
⋮	hit_ratio	Number

Actions [i View](#)

ℹ Prediction - cm

S C H E M A

Name Type

Actions [ⓘ View](#)

ℹ Prediction - cm - Confusion Matrix

S C H E M A

Name Type

- ⋮ 0 Number
- ⋮ 1 Number
- ⋮ 2 Number
- ⋮ 3 Number
- ⋮ 4 Number
- ⋮ 5 Number
- ⋮ 6 Number
- ⋮ 7 Number
- ⋮ 8 Number
- ⋮ 9 Number
- ⋮ Error Number
- ⋮ Rate String

Actions [ⓘ View](#)

☒ Frames Combined

The specified frames were combined successfully.

[☒ View Frame](#)

combined-prediction-

Actions: [View Data](#) [Split](#) [Build Model](#) [Run AutoML](#) [Predict](#) [Download](#) [Export](#) [Delete](#)

Rows	Columns	Compressed Size
2498	796	2MB

▼ COLUMN SUMMARIES

label	type	Missing	Zeros	+Inf	-Inf	min	max	mean	sigma	cardinality	Actions
predict	enum	0	273	0	0	0	9.0	.	.	10	Convert to numeric
p0	real	0	1658	0	0	0	1.0	0.0966	0.2480	.	.
p1	real	0	568	0	0	0	1.0	0.1191	0.3002	.	.
p2	real	0	1081	0	0	0	1.0	0.1016	0.2300	.	.
p3	real	0	1166	0	0	0	1.0	0.0994	0.2188	.	.
p4	real	0	1125	0	0	0	1.0	0.1013	0.2254	.	.
p5	real	0	1081	0	0	0	0.9615	0.0869	0.1945	.	.
p6	real	0	1486	0	0	0	1.0	0.0909	0.2349	.	.
p7	real	0	1273	0	0	0	1.0	0.1047	0.2449	.	.
p8	real	0	1012	0	0	0	1.0	0.0928	0.1953	.	.
p9	real	0	1049	0	0	0	1.0	0.1066	0.2248	.	.
label	enum	0	260	0	0	0	9.0	.	.	10	Convert to numeric
1x1	int	0	2498	0	0	0	0	0	0	.	Convert to enum
1x2	int	0	2498	0	0	0	0	0	0	.	Convert to enum
1x3	int	0	2498	0	0	0	0	0	0	.	Convert to enum
1x4	int	0	2498	0	0	0	0	0	0	.	Convert to enum
1x5	int	0	2498	0	0	0	0	0	0	.	Convert to enum
1x6	int	0	2498	0	0	0	0	0	0	.	Convert to enum
1x7	int	0	2498	0	0	0	0	0	0	.	Convert to enum
1x8	int	0	2498	0	0	0	0	0	0	.	Convert to enum

[◀ Previous 20 Columns](#)

[▶ Next 20 Columns](#)

► CHUNK COMPRESSION SUMMARY

► FRAME DISTRIBUTION SUMMARY

grid combined-prediction-

DATA

[← Previous 20 Columns](#)
[→ Next 20 Columns](#)

Row	predict	p0	p1	p2	p3	p4	p5	p6	p7	p8	p9	label	1x1	1x2	1x3	1x4	1x5	1x6
1	2	0.0256	0.0256	0.5256	0.1667	0.0128	0.0513	0.1154	0	0.0769	0	2	0	0	0	0	0	
2	0	0.9792	0.0	0.0208	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	9	0	0.0313	0.0312	0.0625	0.1250	0.1250	0.0312	0	0.0312	0.5625	9	0	0	0	0	0	
4	9	0	0.0	0.0196	0.0196	0.0588	0	0	0.0588	0	0.8431	9	0	0	0	0	0	
5	3	0.0135	0.0135	0.2162	0.2703	0.0811	0.0541	0.1351	0.0405	0.1486	0.0270	3	0	0	0	0	0	
6	9	0	0.0	0	0.0208	0.0417	0.0208	0	0.1042	0.0208	0.7917	9	0	0	0	0	0	
7	6	0.0182	0.0182	0.0910	0.0182	0.1636	0	0.6363	0.0182	0.0182	0.0182	6	0	0	0	0	0	
8	3	0	0	0.0185	0.6470	0.0185	0.0924	0	0.2033	0	0.0203	3	0	0	0	0	0	
9	1	0	0.8958	0.0001	0.0208	0.0417	0	0	0.0208	0	0.0208	1	0	0	0	0	0	
10	2	0.0392	0	0.7843	0.0196	0	0.0784	0.0392	0.0196	0	0.0196	2	0	0	0	0	0	
11	1	0	1.0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
12	4	0	0.0	0.0001	0	0.9777	0	0	0.0222	0	0	4	0	0	0	0	0	
13	1	0	0.7021	0.0426	0.1489	0.0213	0.0425	0	0.0213	0.0213	0	1	0	0	0	0	0	
14	4	0	0.0	0	0.0333	0.7667	0	0	0	0.1000	0.1000	4	0	0	0	0	0	
15	5	0	0.0	0	0.0333	0.1000	0.7667	0	0.0167	0.0500	0.0333	5	0	0	0	0	0	
16	7	0.0208	0.0	0.0833	0.1042	0.1458	0.0208	0	0.3125	0.0625	0.2500	7	0	0	0	0	0	
17	4	0	0	0.0002	0.0384	0.8070	0.0392	0.0384	0	0	0.0769	4	0	0	0	0	0	
18	7	0.0392	0	0	0.0196	0	0	0	0.9216	0	0.0196	7	0	0	0	0	0	
19	2	0	0	0.5077	0.0308	0	0.0154	0	0.4000	0.0154	0.0308	2	0	0	0	0	0	
20	6	0	0.0	0.0222	0	0.0222	0.0222	0.9111	0	0	0.0222	6	0	0	0	0	0	
21	3	0.0179	0.0	0	0.6607	0	0.1964	0.0179	0.0357	0.0179	0.0536	3	0	0	0	0	0	
22	6	0.0185	0.0	0	0	0.0741	0	0.9074	0	0	0	6	0	0	0	0	0	
23	3	0	0	0	0.9388	0	0.0408	0	0	0	0.0204	3	0	0	0	0	0	

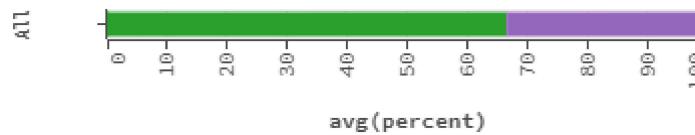
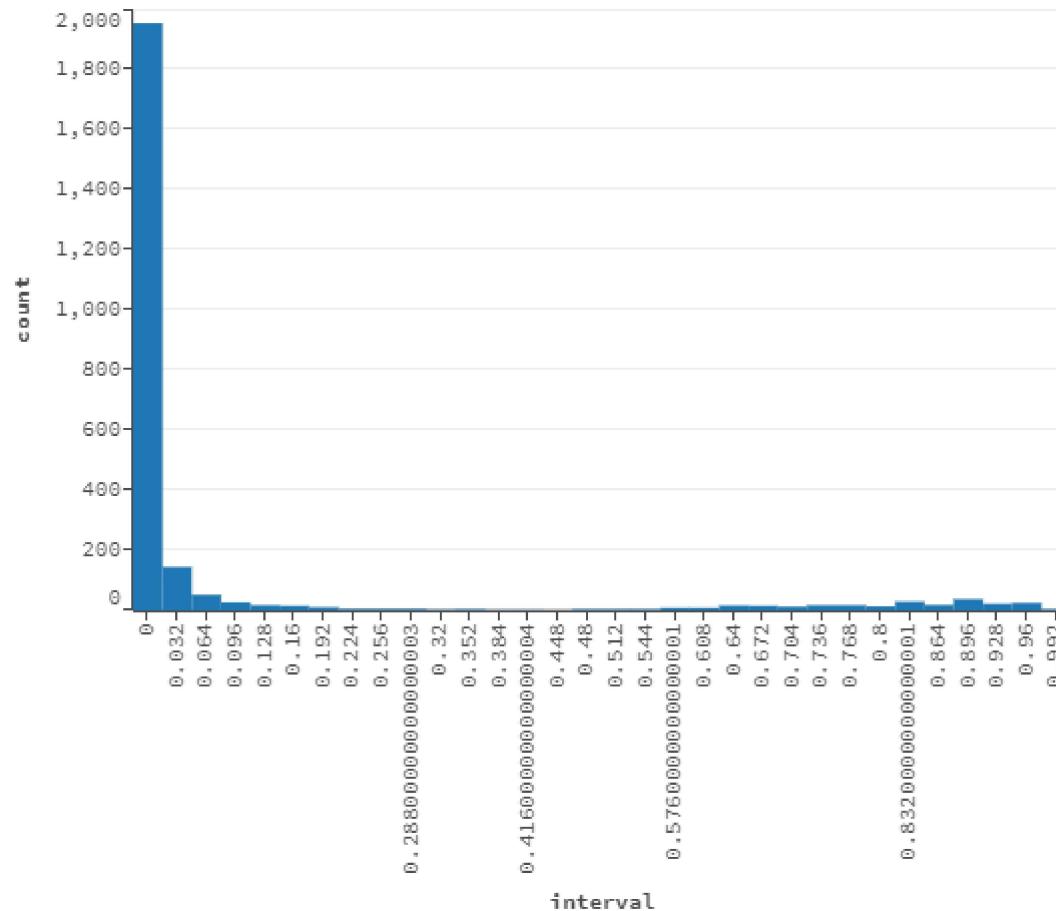
[← Previous 20 Columns](#)
[→ Next 20 Columns](#)

Summary: p0

Actions

Impute

Inspect

CHARACTERISTICS**SUMMARY****DISTRIBUTION**

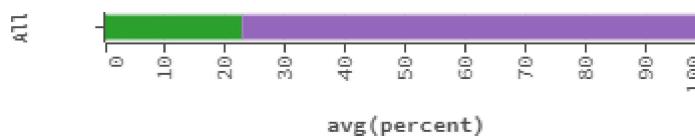
Summary: p1

Actions

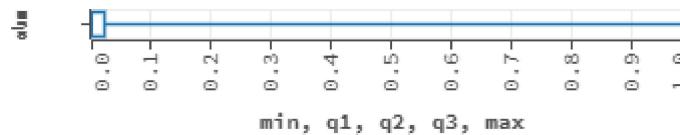
◀ Impute

☰ Inspect

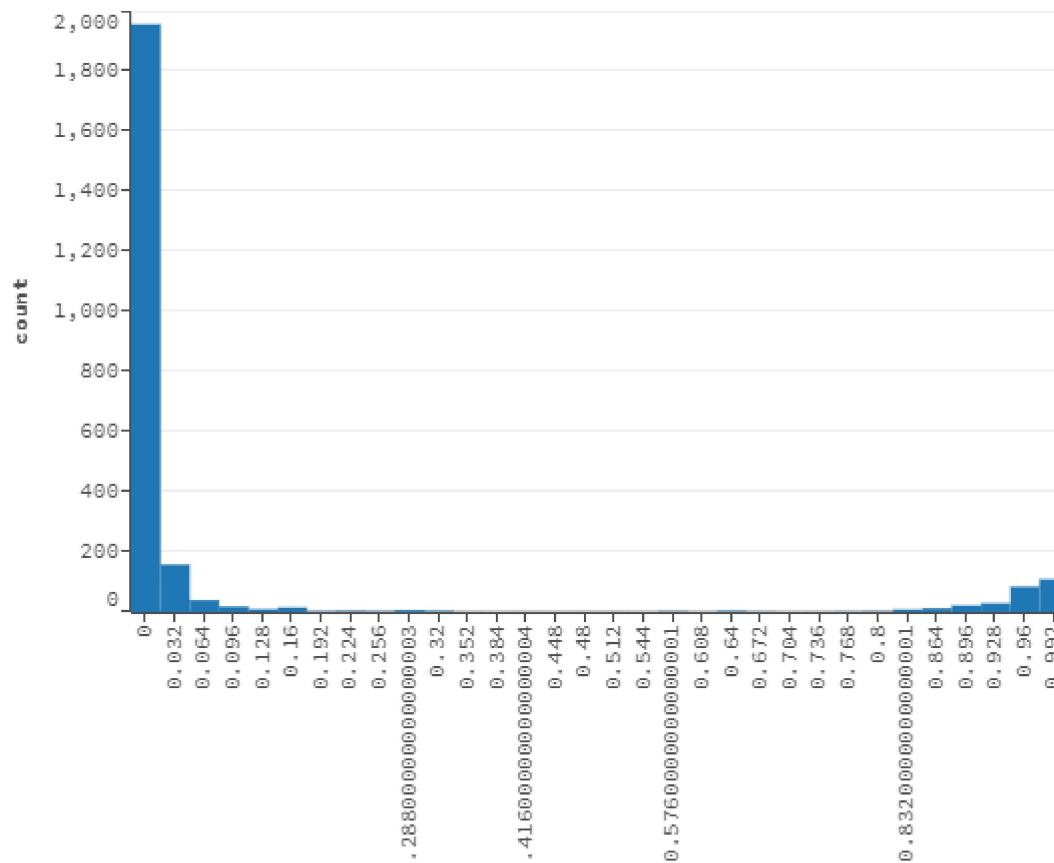
CHARACTERISTICS



SUMMARY



DISTRIBUTION





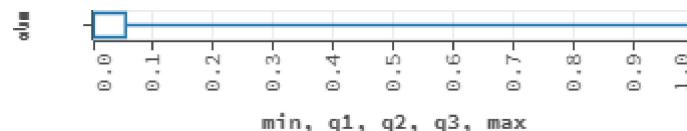
Summary: p2

[Actions](#)[Impute](#)[Inspect](#)

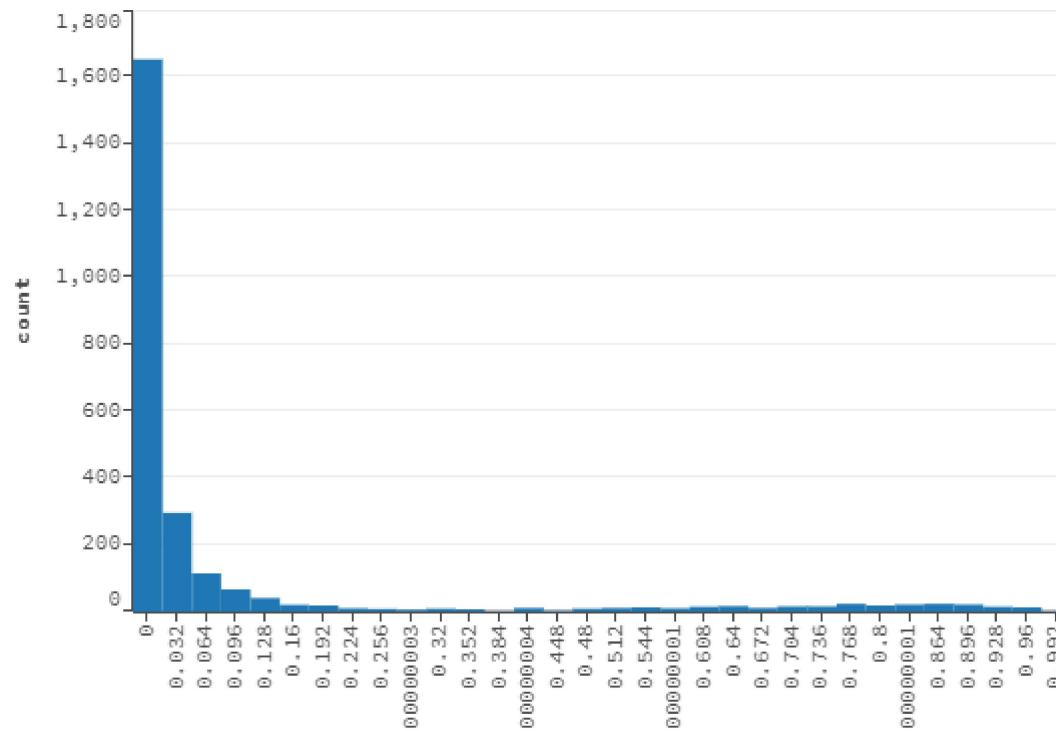
CHARACTERISTICS



SUMMARY



DISTRIBUTION





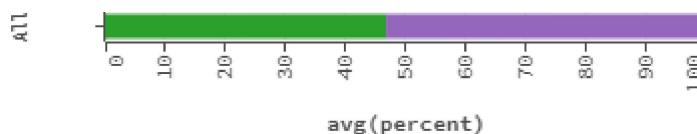
Summary: p3

Actions

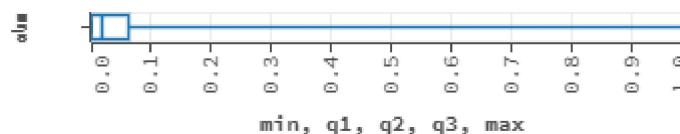
◀ Impute

☰ Inspect

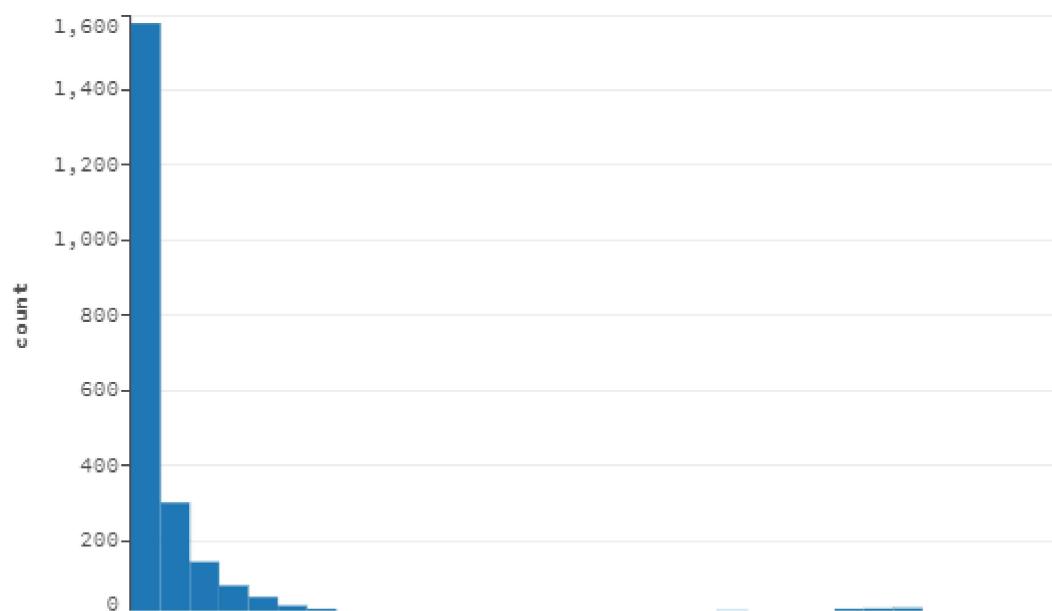
CHARACTERISTICS

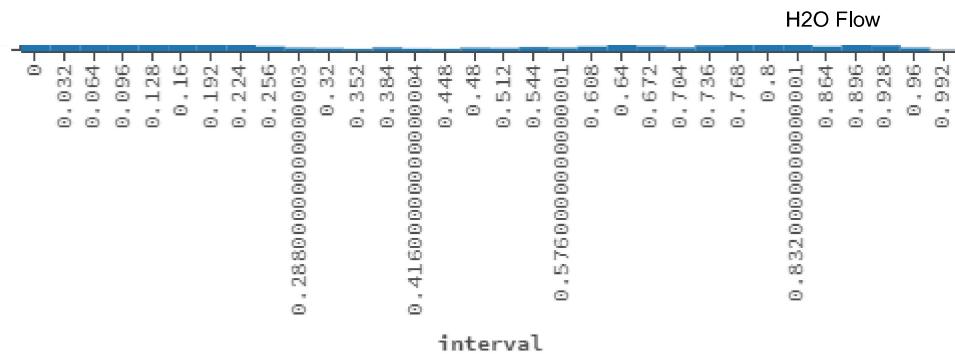


SUMMARY



DISTRIBUTION





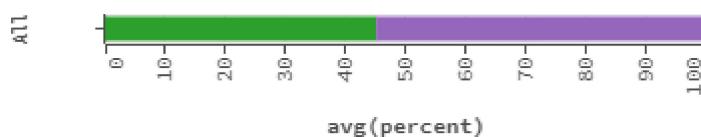
Summary: p4

Actions

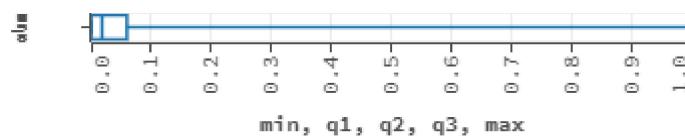
↳ Impute

☰ Inspect

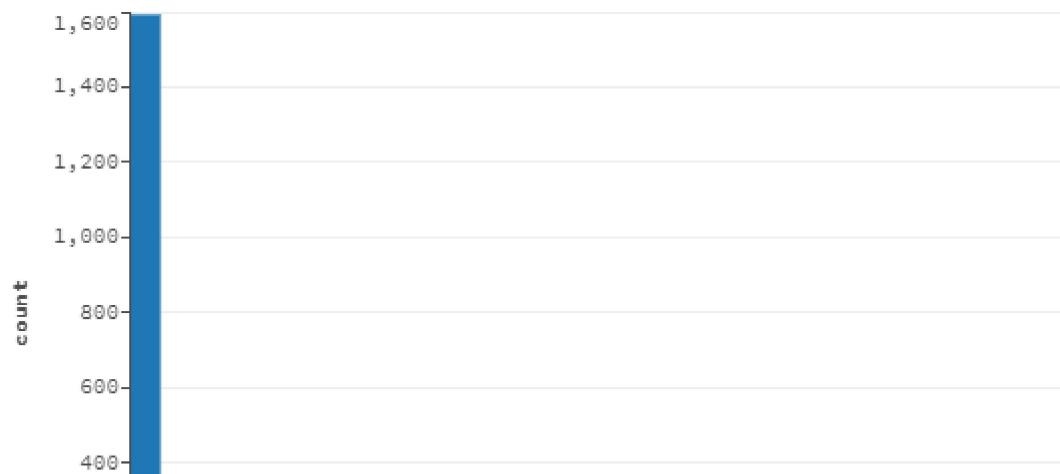
CHARACTERISTICS

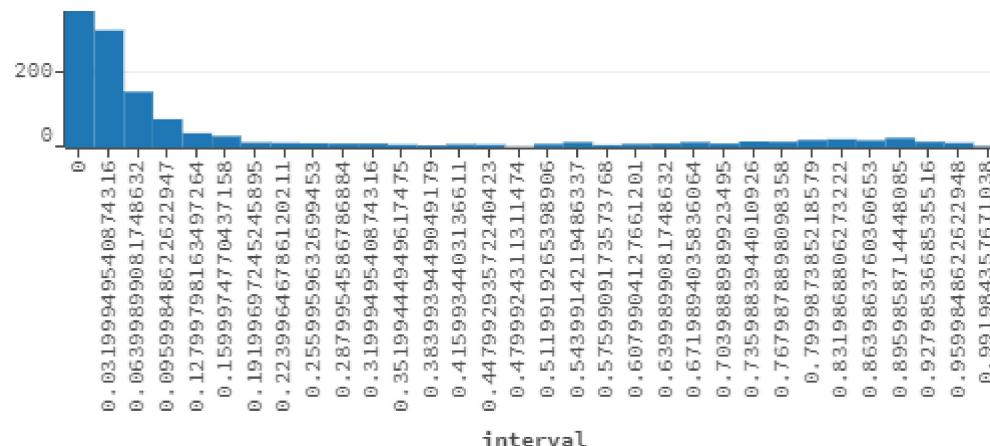


SUMMARY



DISTRIBUTION





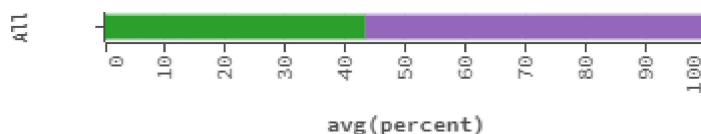
Summary: p5

Actions

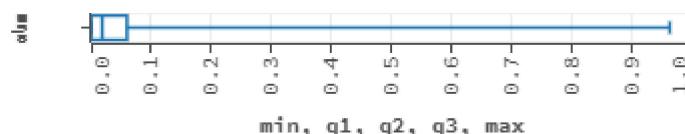
◀ Impute

☰ Inspect

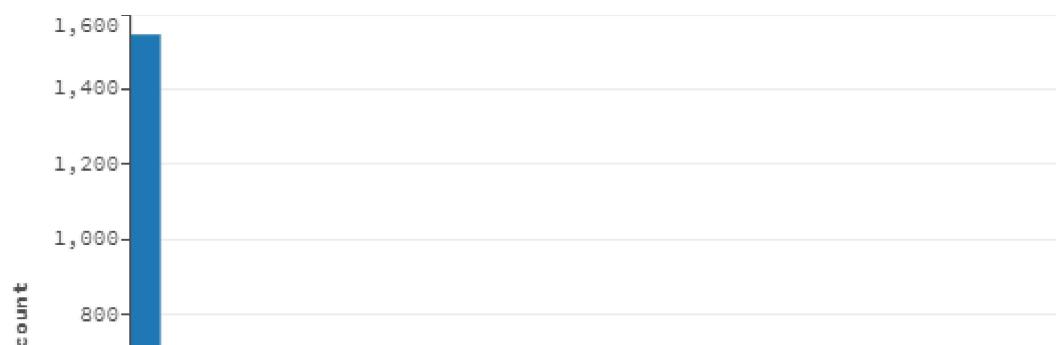
CHARACTERISTICS

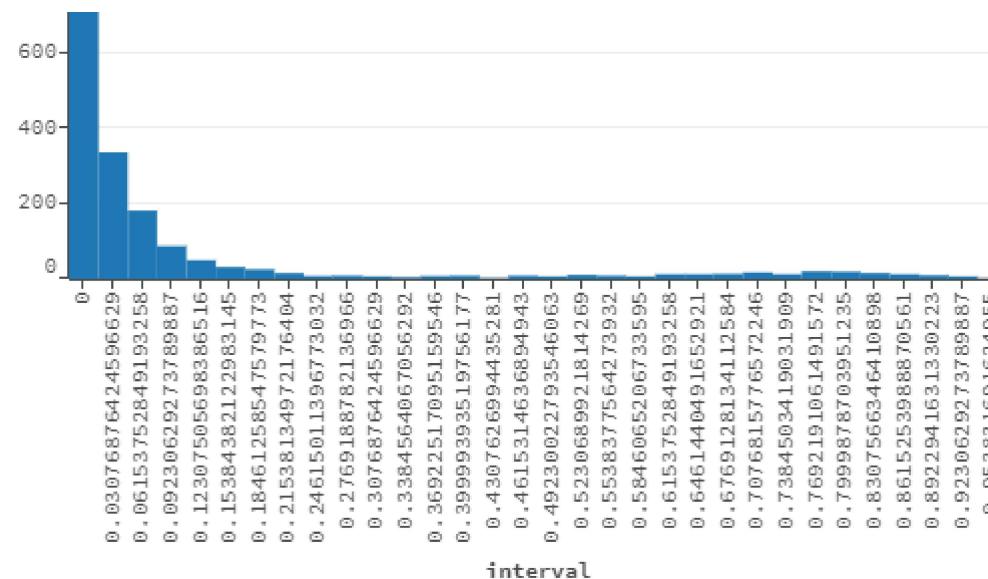


SUMMARY



DISTRIBUTION





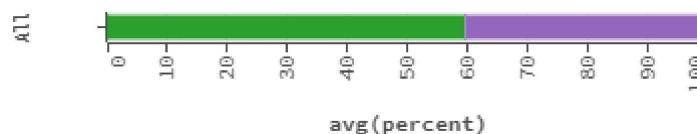
Summary: p6

Actions

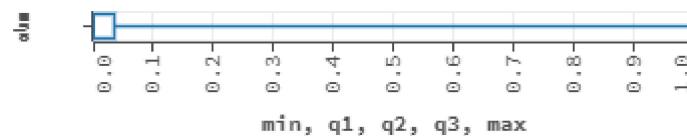
↳ Impute

☰ Inspect

CHARACTERISTICS

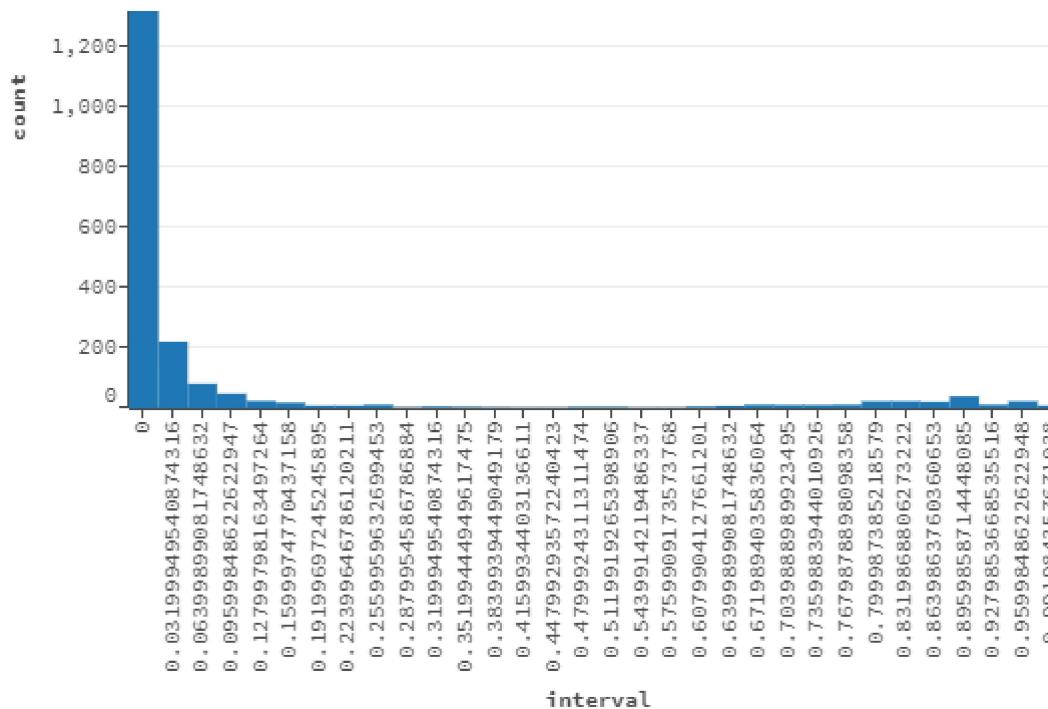


SUMMARY



DISTRIBUTION





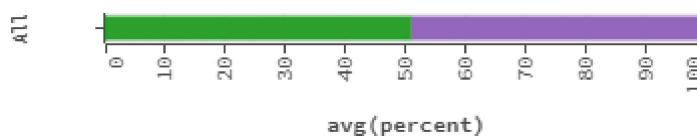
Summary: p7

Actions

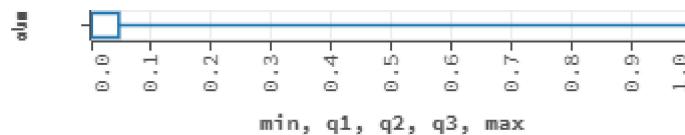
↳ Impute

☰ Inspect

CHARACTERISTICS

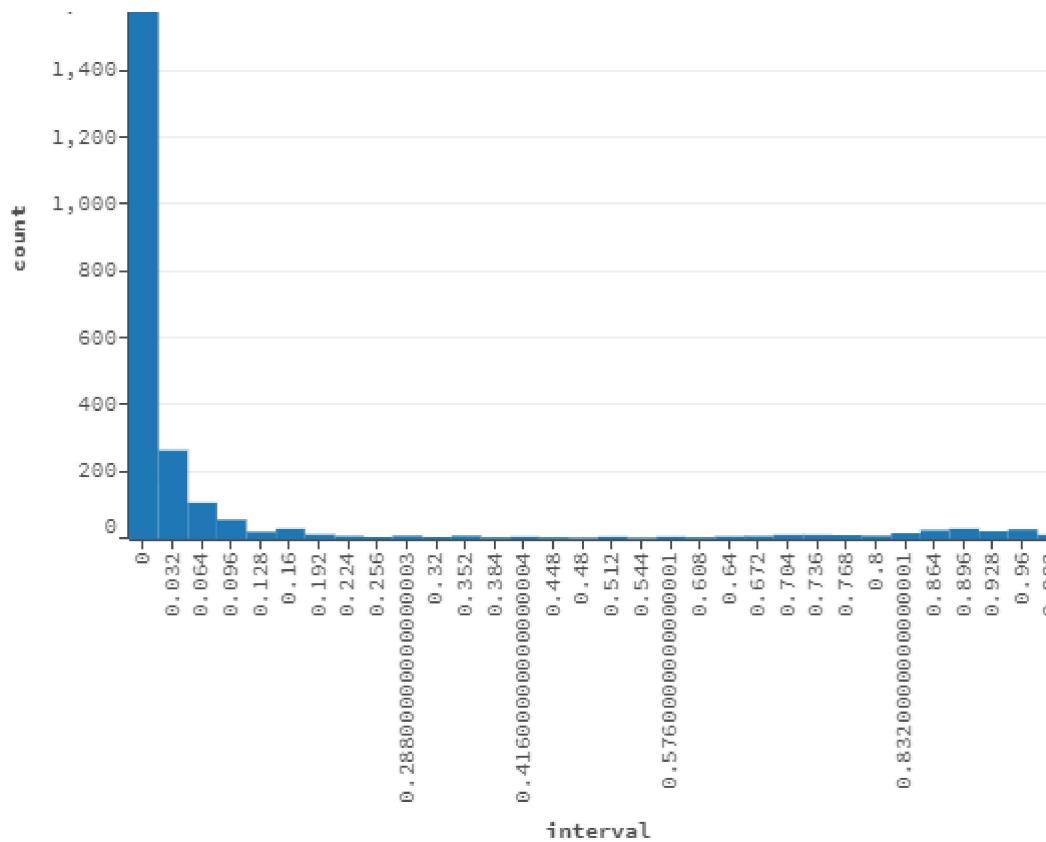


SUMMARY



DISTRIBUTION





Summary: p8

Actions

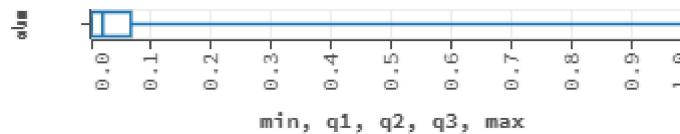
Impute

Inspect

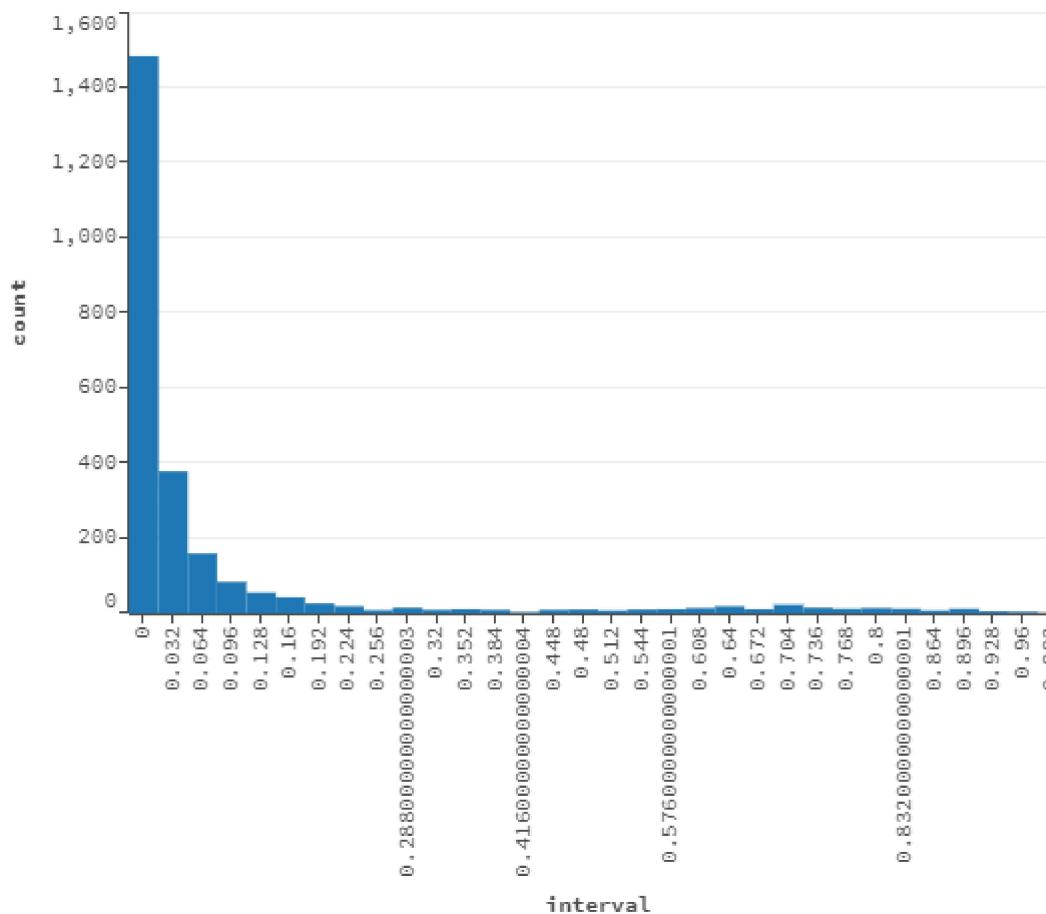
CHARACTERISTICS



SUMMARY



DISTRIBUTION



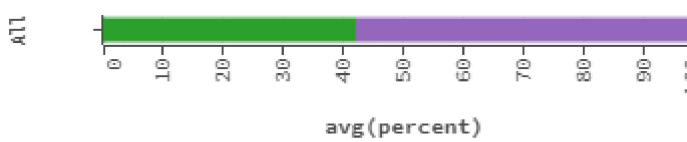
Summary: p9

Actions

↳ Impute

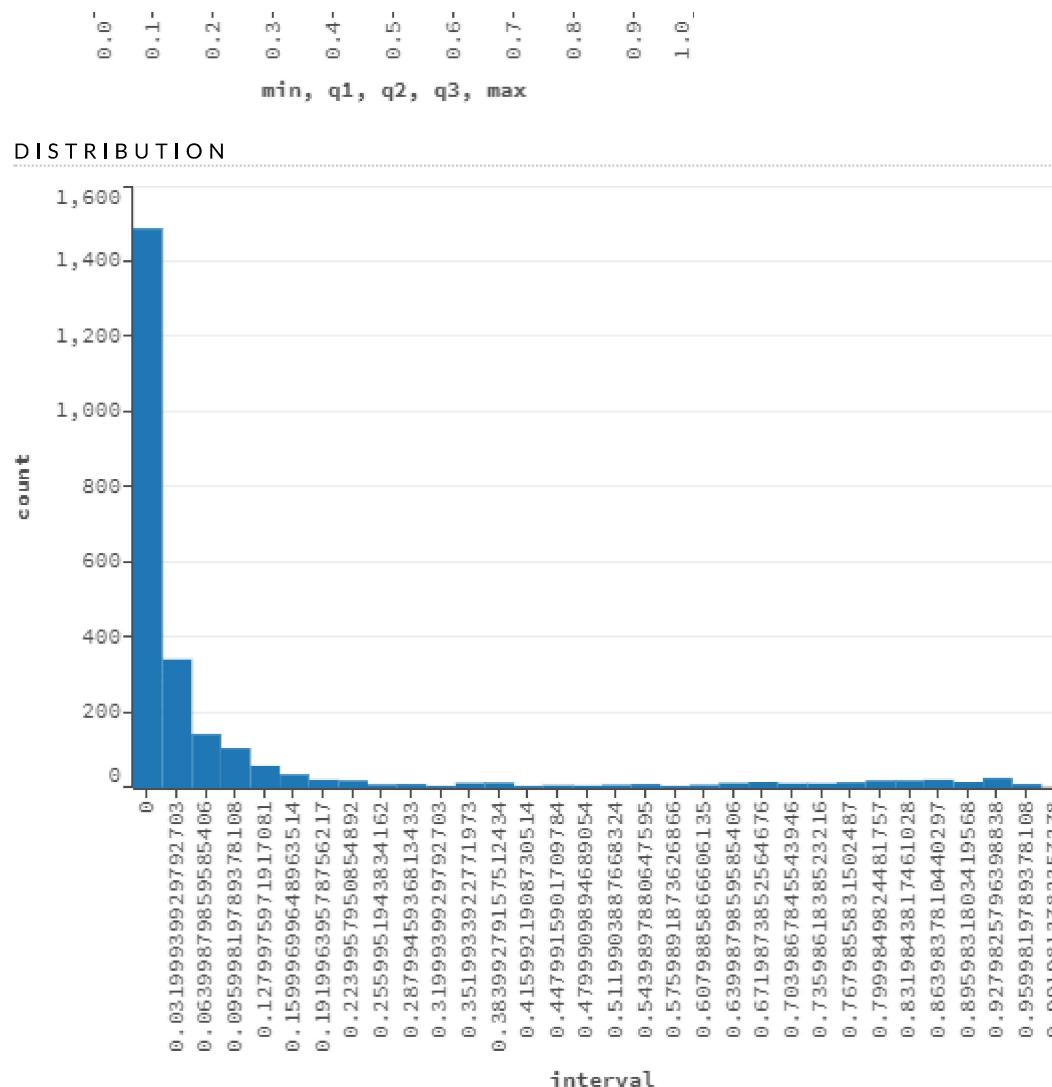
☰ Inspect

CHARACTERISTICS



SUMMARY





CS

Summary: label

Actions



Inspect

CHARACTERISTICS

All

