LogisticRegression

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Name	LogisticRegression
Version	1.0.0
Description	Logistic Regression implementation
License	http://www.apache.org/licenses/LICENSE-2.0
Copyright	Copyright (C) 2017 HPCC Systems
Authors	HPCCSystems
DependsOn	ML_Core, PBblas
Platform	6.2.0

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BinomialConfusion

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ML_Core.Types | LogisticRegression | LogisticRegression.Types |

DESCRIPTIONS

FUNCTION BinomialConfusion

DATASET(Types.Binomial_Confusion_Summary)	**BinomialConfusion**
(DATASET(Core_Types.Confusion_Detail) d)	

Binomial confusion matrix. Work items with multinomial responses are ignored by this function. The higher value lexically is considered to be the positive indication.

PARAMETER **d** ||| TABLE (Confusion_Detail) — confusion detail for the work item and classifier

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED4 classifier , UNSIGNED8 true_positive , UNSIGNED8 true_negative , UNSIGNED8 false_positive , UNSIGNED8 false_negative , UNSIGNED8 cond_pos , UNSIGNED8 pred_pos , UNSIGNED8 cond_neg , UNSIGNED8 pred_neg , REAL8 prevalence , REAL8 accuracy , REAL8 true_pos_rate , REAL8 false_neg_rate , REAL8 false_pos_rate , REAL8 true_neg_rate , REAL8 pos_pred_val , REAL8 false_disc_rate , REAL8 false_omit_rate , REAL8 neg_pred_val })** — confusion matrix for a binomial classifier

LogisticRegression/

BinomialLogisticRegression

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IMPORTS

LogisticRegression | LogisticRegression.Constants | ML_Core.Interfaces | ML_Core.Types |

DESCRIPTIONS

MODULE BinomialLogisticRegression

	BinomialLogisticRegression
	`(UNSIGNED max_iter=200, REAL8 epsilon=Constants.default_epsilon, REAL8 ridge=Constants.default_ridge)`

Binomial logistic regression using iteratively re-weighted least squares.

PARAMETER **epsilon** ||| REAL8 — the minimum change in the Beta value estimate to continue

PARAMETER **max_iter** ||| UNSIGNED8 — maximum number of iterations to try

PARAMETER **ridge** ||| REAL8 — a value to populate a diagonal matrix that is added to a matrix help assure that the matrix is invertible.

PARENT **ML_Core.Interfaces.IClassify** <../ML_Core/Interfaces/IClassify.ecl.tex>

Children

1. GetModel : Calculate the model to fit the observation data to the observed classes
2. Classify : Classify the observations using a model
3. Report : Report the confusion matrix for the classifier and training data

---

FUNCTION GetModel

BinomialLogisticRegression \

DATASET(Types.Layout_Model)	**GetModel**
(DATASET(Types.NumericField) observations, DATASET(Types.DiscreteField) classifications)	

Calculate the model to fit the observation data to the observed classes.

PARAMETER **observations** ||| TABLE (NumericField) — the observed explanatory values

PARAMETER **classifications** ||| TABLE (DiscreteField) — the observed classification used to build the model

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED8 id , UNSIGNED4 number , REAL8 value })** — the encoded model

OVERRIDE

FUNCTION Classify

BinomialLogisticRegression \

DATASET(Types.Classify_Result)	**Classify**
(DATASET(Types.Layout_Model) model, DATASET(Types.NumericField) new_observations)	

Classify the observations using a model.

PARAMETER **model** ||| TABLE (Layout_Model) — The model, which must be produced by a corresponding getModel function.

PARAMETER **new_observations** ||| TABLE (NumericField) — observations to be classified

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED8 id , UNSIGNED4 number , INTEGER4 value , REAL8 conf })** — Classification with a confidence value

OVERRIDE

FUNCTION Report

BinomialLogisticRegression \

DATASET(Types.Confusion_Detail)	**Report**
(DATASET(Types.Layout_Model) model, DATASET(Types.NumericField) observations, DATASET(Types.DiscreteField) classifications)	

Report the confusion matrix for the classifier and training data.

PARAMETER **model** ||| TABLE (Layout_Model) — the encoded model

PARAMETER **observations** ||| TABLE (NumericField) — the explanatory values.

PARAMETER **classifications** ||| TABLE (DiscreteField) — the classifications associated with the observations

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED4 classifier , INTEGER4 actual_class , INTEGER4 predict_class , UNSIGNED4 occurs , BOOLEAN correct })** — the confusion matrix showing correct and incorrect results

OVERRIDE

Confusion

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IMPORTS

ML_Core | ML_Core.Types | LogisticRegression | LogisticRegression.Types |

DESCRIPTIONS

FUNCTION Confusion

DATASET(Confusion_Detail)	Confusion
(DATASET(DiscreteField) dependents, DATASET(DiscreteField) predicts)	

Detail confusion records to compare actual versus predicted response variable values.

PARAMETER **predicts** ||| TABLE (DiscreteField) — the predicted responses

PARAMETER **dependents** ||| TABLE (DiscreteField) — the original response values

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED4 classifier , INTEGER4 actual_class , INTEGER4 predict_class , UNSIGNED4 occurs , BOOLEAN correct })** — confusion counts by predicted and actual response values.

Constants

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DESCRIPTIONS

MODULE Constants

	Constants

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Children

1. limit_card : No Documentation Found
2. default_epsilon : No Documentation Found
3. default_ridge : No Documentation Found
4. local_cap : No Documentation Found
5. id_base : No Documentation Found
6. id_iters : No Documentation Found
7. id_delta : No Documentation Found
8. id_correct : No Documentation Found
9. id_incorrect : No Documentation Found
10. id_stat_set : No Documentation Found
11. id_betas : No Documentation Found
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14. base_builder : No Documentation Found

15. base_max_iter : No Documentation Found
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20. builder_irls_local : No Documentation Found
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22. builder_softmax : No Documentation Found

ATTRIBUTE limit_card

Constants \

UNSIGNED2	**limit_card**

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RETURN **UNSIGNED2** —

ATTRIBUTE default_epsilon

Constants \

REAL8	**default_epsilon**

No Documentation Found

RETURN **REAL8** —

ATTRIBUTE default_ridge

Constants \

REAL8	**default_ridge**

No Documentation Found

RETURN **REAL8** —

ATTRIBUTE local_cap

Constants \

UNSIGNED4	**local_cap**

No Documentation Found

RETURN **UNSIGNED4** —

ATTRIBUTE id_base

Constants \

	id_base

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE id_iters

Constants \

	id_iters

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE id_delta

Constants \

	id_delta

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE id_correct

Constants \

	id_correct

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE id_incorrect

Constants \

	id_incorrect

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE id_stat_set

Constants \

	id_stat_set

No Documentation Found

RETURN **SET (INTEGER8)** —

ATTRIBUTE id_betas

Constants \

	id_betas

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE id_betas_coef

Constants \

	id_betas_coef

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE id_betas_SE

Constants \

	id_betas_SE

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE base_builder

Constants \

	base_builder

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE base_max_iter

Constants \

	base_max_iter

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE base_epsilon

Constants \

	base_epsilon

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE base_ind_vars

Constants \

	base_ind_vars

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE base_dep_vars

Constants \

	base_dep_vars

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE base_obs

Constants \

	base_obs

No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE builder_irls_local

Constants \

	builder_irls_local

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RETURN **INTEGER8** —

ATTRIBUTE builder_irls_global

Constants \

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No Documentation Found

RETURN **INTEGER8** —

ATTRIBUTE builder_softmax

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RETURN **INTEGER8** —

LogisticRegression/

DataStats

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IMPORTS

ML_Core.Types | LogisticRegression | LogisticRegression.Types |
LogisticRegression.Constants |

DESCRIPTIONS

FUNCTION DataStats

DATASET(Types.Data_Info)	DataStats
(DATASET(Core_Types.NumericField) indep, DATASET(Core_Types.DiscreteField) dep, BOOLEAN field_details=FALSE)	

Information about the datasets. Without details the range for the x and y (independent and dependent) columns. Note that a column of all zero values cannot be distinguished from a missing column. When details are requested, the cardinality, minimum, and maximum values are returned. A zero cardinality is returned when the field cardinality exceeds the Constants.limit_card value.

PARAMETER **field_details** ||| BOOLEAN — Boolean directive to provide field level info

PARAMETER **dep** ||| TABLE (DiscreteField) — data set of dependent variables

PARAMETER **indep** ||| TABLE (NumericField) — data set of independent variables

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED4 dependent_fields , UNSIGNED4 dependent_records , UNSIGNED4 independent_fields , UNSIGNED4**

independent_records , UNSIGNED4 dependent_count , UNSIGNED4 independent_count , TABLE (Field_Desc) dependent_stats , TABLE (Field_Desc) independent_stats }) —

RETURNS a data set of information on each work item

LogisticRegression/

Deviance_Analysis

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DESCRIPTIONS

FUNCTION Deviance_Analysis

DATASET(Types.AOD_Record)	**Deviance_Analysis**
(DATASET(Types.Deviance_Record) proposed, DATASET(Types.Deviance_Record) base)	

Compare deviance information for an analysis of deviance.

PARAMETER **proposed** ||| TABLE (Deviance_Record) — the proposed model

PARAMETER **base** ||| TABLE (Deviance_Record) — the base model for comparison

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED4 classifier , UNSIGNED8 residual_df , UNSIGNED8 df , REAL8 residual_dev , REAL8 deviance , REAL8 p_value })** — the comparison of the deviance between the models

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Deviance_Detail

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ML_Core | ML_Core.Types | LogisticRegression | LogisticRegression.Types |

DESCRIPTIONS

FUNCTION Deviance_Detail

DATASET(Types.Observation_Deviance)	**Deviance_Detail**
(DATASET(Core_Types.DiscreteField) dependents, DATASET(Types.Raw_Prediction) predicts)	

Detail deviance for each observation.

PARAMETER **predicts** ||| TABLE (Raw_Prediction) — the predicted values of the response variable

PARAMETER **dependents** ||| TABLE (DiscreteField) — original dependent records for the model

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED8 id , UNSIGNED4 classifier , INTEGER4 actual , INTEGER4 predicted , REAL8 mod_ll , REAL8 mod_dev_component , REAL8 mod_dev_residual , REAL8 nil_ll , REAL8 nil_dev_component , REAL8 nil_dev_residual })** — the deviance information by observation and the log likelihood of the predicted result.

dimm

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std.blas | std.BLAS.Types |

DESCRIPTIONS

EMBED dimm

Types.matrix_t	dimm
(BOOLEAN transposeA, BOOLEAN transposeB, BOOLEAN diagonalA, BOOLEAN diagonalB, Types.dimension_t m, Types.dimension_t n, Types.dimension_t k, Types.value_t alpha, Types.matrix_t A, Types.matrix_t B, Types.value_t beta=0.0, Types.matrix_t C=[])	

Matrix multiply when either A or B is a diagonal and is passed as a vector. alpha*op(A) op(B) + beta*C where op() is transpose

PARAMETER **diagonalB** ||| BOOLEAN — true when B is the diagonal matrix

PARAMETER **m** ||| UNSIGNED4 — number of rows in product

PARAMETER **alpha** ||| REAL8 — scalar used on A

PARAMETER **k** ||| UNSIGNED4 — number of columns/rows for the multiplier/multiplicand

PARAMETER **C** ||| SET (REAL8) — matrix C or empty

PARAMETER **diagonalA** ||| BOOLEAN — true when A is the diagonal matrix

PARAMETER **B** ||| SET (REAL8) — matrix B

PARAMETER **n** ||| UNSIGNED4 — number of columns in product

PARAMETER **beta** ||| REAL8 — scalar for matrix C

PARAMETER **A** ||| SET (REAL8) — matrix A

PARAMETER **transposeA** ||| BOOLEAN — true when transpose of A is used

PARAMETER **transposeB** ||| BOOLEAN — true when transpose of B is used

RETURN **SET (REAL8)** —

Distributions

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ML_Core.Constants | ML_Core.Math |

DESCRIPTIONS

MODULE Distributions

	Distributions

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Children

1. Normal_CDF : Cumulative Distribution of the standard normal distribution, the probability that a normal random variable will be smaller than x standard deviations above or below the mean
2. Normal_PPF : Normal Distribution Percentage Point Function
3. T_CDF : Students t distribution integral evaluated between negative infinity and x
4. T_PPF : Percentage point function for the T distribution
5. Chi2_CDF : The cumulative distribution function for the Chi Square distribution
6. Chi2_PPF : The Chi Squared PPF function

FUNCTION Normal_CDF

Distributions \

REAL8	**Normal_CDF**
(REAL8 x)	

Cumulative Distribution of the standard normal distribution, the probability that a normal random variable will be smaller than x standard deviations above or below the mean. Taken from C/C++ Mathematical Algorithms for Scientists and Engineers, n. Shammas, McGraw-Hill, 1995

PARAMETER **x** ||| REAL8 — the number of standard deviations

RETURN **REAL8** —

RETURNS probability of exceeding x.

FUNCTION Normal_PPF

Distributions \

REAL8	**Normal_PPF**
(REAL8 x)	

Normal Distribution Percentage Point Function. Translated from C/C++ Mathematical Algorithms for Scientists and Engineers, N. Shammas, McGraw-Hill, 1995

PARAMETER **x** ||| REAL8 — probability

RETURN **REAL8** —

RETURNS number of standard deviations from the mean

FUNCTION T_CDF

Distributions \

REAL8	**T_CDF**
(REAL8 x, REAL8 df)	

Students t distribution integral evaluated between negative infinity and x. Translated from NIST SEL DATAPAC Fortran TCDF.f source

PARAMETER **df** ||| REAL8 — degrees of freedom

PARAMETER **x** ||| REAL8 — value of the evaluation

RETURN **REAL8** —

RETURNS the probability that a value will be less than the specified value

---

FUNCTION T_PPF

Distributions \

REAL8	**T_PPF**
(REAL8 x, REAL8 df)	

Percentage point function for the T distribution. Translated from NIST SEL DATAPAC Fortran TPPF.f source

PARAMETER **df** ||| REAL8 — No Doc

PARAMETER **x** ||| REAL8 — No Doc

RETURN **REAL8** —

FUNCTION Chi2_CDF

Distributions \

REAL8	**Chi2_CDF**
(REAL8 x, REAL8 df)	

The cumulative distribution function for the Chi Square distribution. the CDF for the specfied degrees of freedom. Translated from the NIST SEL DATAPAC Fortran subroutine CHSCDF.

PARAMETER **df** ||| REAL8 — No Doc

PARAMETER **x** ||| REAL8 — No Doc

RETURN **REAL8** —

FUNCTION Chi2_PPF

Distributions \

REAL8	**Chi2_PPF**
(REAL8 x, REAL8 df)	

The Chi Squared PPF function. Translated from the NIST SEL DATAPAC Fortran subroutine CHSPPF.

PARAMETER **df** ||| REAL8 — No Doc

PARAMETER **x** ||| REAL8 — No Doc

RETURN **REAL8** —

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ExtractBeta

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IMPORTS

ML_Core.Types | LogisticRegression | LogisticRegression.Types |

DESCRIPTIONS

FUNCTION ExtractBeta

	ExtractBeta
(DATASET(Core_Types.Layout_Model) mod_ds)	

Extract the beta values form the model dataset.

PARAMETER **mod_ds** ||| TABLE (Layout_Model) — the model dataset

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED4 ind_col , UNSIGNED4 dep_nom , REAL8 w , REAL8 SE })** — a beta values as Model Coefficient records, zero as the constant term.

LogisticRegression/

ExtractBeta_CI

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ML_Core.Types | LogisticRegression | LogisticRegression.Types |

DESCRIPTIONS

FUNCTION ExtractBeta_CI

DATASET(Types.Confidence_Model_Coef)	**ExtractBeta_CI**
(DATASET(Core_Types.Layout_Model) mod_ds, REAL8 level)	

Extract the beta values form the model dataset.

PARAMETER **level** ||| REAL8 — the significance value for the intervals

PARAMETER **mod_ds** ||| TABLE (Layout_Model) — the model dataset

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED4 ind_col , UNSIGNED4 dep_nom , REAL8 w , REAL8 SE , REAL8 upper , REAL8 lower })** — the beta values with confidence intervals term.

LogisticRegression/

ExtractBeta_pval

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DESCRIPTIONS

FUNCTION ExtractBeta_pval

DATASET(Types.pval_Model_Coef)	**ExtractBeta_pval**
(DATASET(Core_Types.Layout_Model) mod_ds)	

Extract the beta values form the model dataset.

PARAMETER **mod_ds** ||| TABLE (Layout_Model) — the model dataset

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED4 ind_col , UNSIGNED4 dep_nom , REAL8 w , REAL8 SE , REAL8 z , REAL8 p_value })** — the beta values with p-values as Model Coefficient records, zero as the constant term.

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ExtractReport

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DESCRIPTIONS

FUNCTION ExtractReport

DATASET(Types.Model_Report)	**ExtractReport**
(DATASET(Core_Types.Layout_Model) mod_ds)	

Extract Report records from model

PARAMETER **mod_ds** ||| TABLE (Layout_Model) — the model dataset

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED4 max_iterations , REAL8 epsilon , UNSIGNED4 dep_vars , UNSIGNED4 ind_vars , UNSIGNED8 obs , UNSIGNED2 builder , TABLE (Classifier_Stats) stats })** — the model report dataset

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LogisticRegression/

LogitPredict

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DESCRIPTIONS

FUNCTION LogitPredict

DATASET(Classify_Result)	**LogitPredict**
(DATASET(Model_Coef) coef, DATASET(NumericField) independents)	

Predict the category values with the logit function and the the supplied beta coefficients.

PARAMETER **coef** ||| TABLE (Model_Coef) — the model beta coefficients

PARAMETER **independents** ||| TABLE (NumericField) — the observations

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED8 id , UNSIGNED4 number , INTEGER4 value , REAL8 conf })** — the predicted category values and a confidence score

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LogisticRegression/

LogitScore

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DESCRIPTIONS

FUNCTION LogitScore

DATASET(Raw_Prediction)	**LogitScore**
(DATASET(Model_Coef) coef, DATASET(NumericField) independents)	

Calculate the score using the logit function and the the supplied beta coefficients.

PARAMETER **coef** ||| TABLE (Model_Coef) — the model beta coefficients

PARAMETER **independents** ||| TABLE (NumericField) — the observations

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED8 id , UNSIGNED4 number , REAL8 raw })** — the raw prediction value

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LogisticRegression/

Model_Deviance

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DESCRIPTIONS

FUNCTION Model_Deviance

DATASET(Types.Deviance_Record)	**Model_Deviance**
(DATASET(Types.Observation_Deviance) od, DATASET(Types.Model_Coef) mod)	

Model Deviance.

PARAMETER **od** ||| TABLE (Observation_Deviance) — observation deviance record

PARAMETER **mod** ||| TABLE (Model_Coef) — model co-efficients

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED4 classifier , UNSIGNED8 df , REAL8 deviance , REAL8 AIC })** — model deviance

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LogisticRegression/

Null_Deviance

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DESCRIPTIONS

FUNCTION Null_Deviance

DATASET(Types.Deviance_Record)	**Null_Deviance**
(DATASET(Types.Observation_Deviance) od)	

Deviance for the null model, that is, a model with only an intercept.

PARAMETER **od** ||| TABLE (Observation_Deviance) — Observation Deviance record set.

RETURN **TABLE ({ UNSIGNED2 wi , UNSIGNED4 classifier , UNSIGNED8 df , REAL8 deviance , REAL8 AIC })** — a data set of the null model deviances for each work item and classifier.

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1. t_Universe : No Documentation Found
2. Field_Desc : No Documentation Found
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5. DiscreteField_U : No Documentation Found
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8. Model_Report : No Documentation Found

9. Binomial_Confusion_Summary : No Documentation Found
10. Model_Coef : No Documentation Found
11. Confidence_Model_Coef : No Documentation Found
12. pval_Model_Coef : No Documentation Found
13. Raw_Prediction : No Documentation Found
14. Observation_Deviance : No Documentation Found
15. Deviance_Record : No Documentation Found
16. AOD_Record : No Documentation Found

ATTRIBUTE t_Universe

Types \

	t_Universe

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RETURN **UNSIGNED1** —

RECORD Field_Desc

Types \

	Field_Desc

No Documentation Found

FIELD **number** ||| UNSIGNED4 — No Doc

FIELD **min_value** ||| REAL8 — No Doc

FIELD **max_value** ||| REAL8 — No Doc

FIELD **cardinality** ||| UNSIGNED4 — No Doc

RECORD Data_Info

Types \

	Data_Info

No Documentation Found

FIELD **independent_fields** ||| UNSIGNED4 — No Doc

FIELD **dependent_fields** ||| UNSIGNED4 — No Doc

FIELD **dependent_records** ||| UNSIGNED4 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **independent_stats** ||| TABLE (Field_Desc) — No Doc

FIELD **independent_records** ||| UNSIGNED4 — No Doc

FIELD **dependent_stats** ||| TABLE (Field_Desc) — No Doc

FIELD **dependent_count** ||| UNSIGNED4 — No Doc

FIELD **independent_count** ||| UNSIGNED4 — No Doc

RECORD NumericField_U

Types \

	NumericField_U

No Documentation Found

FIELD **number** ||| UNSIGNED4 — No Doc

FIELD **value** ||| REAL8 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **u** ||| UNSIGNED1 — No Doc

FIELD **id** ||| UNSIGNED8 — No Doc

RECORD DiscreteField_U

Types \

	DiscreteField_U

No Documentation Found

FIELD **number** ||| UNSIGNED4 — No Doc

FIELD **value** ||| INTEGER4 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **u** ||| UNSIGNED1 — No Doc

FIELD **id** ||| UNSIGNED8 — No Doc

RECORD Layout_Column_Map

Types \

	Layout_Column_Map

No Documentation Found

FIELD **remap_number** ||| UNSIGNED4 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **orig_number** ||| UNSIGNED4 — No Doc

RECORD Classifier_Stats

Types \

	Classifier_Stats

No Documentation Found

FIELD **correct** ||| UNSIGNED4 — No Doc

FIELD **column** ||| UNSIGNED4 — No Doc

FIELD **incorrect** ||| UNSIGNED4 — No Doc

FIELD **iterations** ||| UNSIGNED4 — No Doc

FIELD **max_delta** ||| REAL8 — No Doc

RECORD Model_Report

Types \

	Model_Report

No Documentation Found

FIELD **max_iterations** ||| UNSIGNED4 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **dep_vars** ||| UNSIGNED4 — No Doc

FIELD **ind_vars** ||| UNSIGNED4 — No Doc

FIELD **stats** ||| TABLE (Classifier_Stats) — No Doc

FIELD **obs** ||| UNSIGNED8 — No Doc

FIELD **epsilon** ||| REAL8 — No Doc

FIELD **builder** ||| UNSIGNED2 — No Doc

RECORD Binomial_Confusion_Summary

Types \

	Binomial_Confusion_Summary

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FIELD **false_negative** ||| UNSIGNED8 — No Doc

FIELD **cond_neg** ||| UNSIGNED8 — No Doc

FIELD **false_omit_rate** ||| REAL8 — No Doc

FIELD **false_pos_rate** ||| REAL8 — No Doc

FIELD **cond_pos** ||| UNSIGNED8 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **true_pos_rate** ||| REAL8 — No Doc

FIELD **false_positive** ||| UNSIGNED8 — No Doc

FIELD **pred_pos** ||| UNSIGNED8 — No Doc

FIELD **neg_pred_val** ||| REAL8 — No Doc

FIELD **pos_pred_val** ||| REAL8 — No Doc

FIELD **true_neg_rate** ||| REAL8 — No Doc

FIELD **true_positive** ||| UNSIGNED8 — No Doc

FIELD **accuracy** ||| REAL8 — No Doc

FIELD **false_disc_rate** ||| REAL8 — No Doc

FIELD **true_negative** ||| UNSIGNED8 — No Doc

FIELD **false_neg_rate** ||| REAL8 — No Doc

FIELD **prevalence** ||| REAL8 — No Doc

FIELD **classifier** ||| UNSIGNED4 — No Doc

FIELD **pred_neg** ||| UNSIGNED8 — No Doc

RECORD Model_Coef

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	Model_Coef

No Documentation Found

FIELD **dep_nom** ||| UNSIGNED4 — No Doc

FIELD **w** ||| REAL8 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **se** ||| REAL8 — No Doc

FIELD **ind_col** ||| UNSIGNED4 — No Doc

RECORD Confidence_Model_Coef

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	Confidence_Model_Coef

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FIELD **lower** ||| REAL8 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **upper** ||| REAL8 — No Doc

FIELD **ind_col** ||| UNSIGNED4 — No Doc

FIELD **dep_nom** ||| UNSIGNED4 — No Doc

FIELD **w** ||| REAL8 — No Doc

FIELD **se** ||| REAL8 — No Doc

RECORD pval_Model_Coef

Types \

	pval_Model_Coef

No Documentation Found

FIELD **p_value** ||| REAL8 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **z** ||| REAL8 — No Doc

FIELD **ind_col** ||| UNSIGNED4 — No Doc

FIELD **dep_nom** ||| UNSIGNED4 — No Doc

FIELD **w** ||| REAL8 — No Doc

FIELD **se** ||| REAL8 — No Doc

RECORD Raw_Prediction

Types \

	Raw_Prediction

No Documentation Found

FIELD **number** ||| UNSIGNED4 — No Doc

FIELD **raw** ||| REAL8 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **id** ||| UNSIGNED8 — No Doc

RECORD Observation_Deviance

Types \

	Observation_Deviance

No Documentation Found

FIELD **predicted** ||| INTEGER4 — No Doc

FIELD **nil_dev_residual** ||| REAL8 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **mod_ll** ||| REAL8 — No Doc

FIELD **actual** ||| INTEGER4 — No Doc

FIELD **nil_dev_component** ||| REAL8 — No Doc

FIELD **mod_dev_residual** ||| REAL8 — No Doc

FIELD **mod_dev_component** ||| REAL8 — No Doc

FIELD **nil_ll** ||| REAL8 — No Doc

FIELD **classifier** ||| UNSIGNED4 — No Doc

FIELD **id** ||| UNSIGNED8 — No Doc

RECORD Deviance_Record

Types \

	Deviance_Record

No Documentation Found

FIELD **deviance** ||| REAL8 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **df** ||| UNSIGNED8 — No Doc

FIELD **aic** ||| REAL8 — No Doc

FIELD **classifier** ||| UNSIGNED4 — No Doc

RECORD AOD_Record

Types \

	AOD_Record

No Documentation Found

FIELD **residual_df** ||| UNSIGNED8 — No Doc

FIELD **deviance** ||| REAL8 — No Doc

FIELD **wi** ||| UNSIGNED2 — No Doc

FIELD **residual_dev** ||| REAL8 — No Doc

FIELD **p_value** ||| REAL8 — No Doc

FIELD **df** ||| UNSIGNED8 — No Doc

FIELD **classifier** ||| UNSIGNED4 — No Doc
