Package: modelc (via r-universe)

October 15, 2024

Title A Linear Model to 'SQL' Compiler

Version 1.0.0.0

Description This is a cross-platform linear model to 'SQL' compiler. It generates 'SQL' from linear and generalized linear models. Its interface consists of a single function, modelc(), which takes the output of lm() or glm() functions (or any object which has the same signature) and outputs a 'SQL' character vector representing the predictions on the scale of the response variable as described in Dunn & Smith (2018) <doi:10.1007/978-1-4419-0118-7> and originating in Nelder & Wedderburn (1972) <doi:10.2307/2344614>. The resultant 'SQL' can be included in a 'SELECT' statement and returns output similar to that of the glm.predict() or lm.predict() predictions, assuming numeric types are represented in the database using sufficient precision. Currently log and identity link functions are supported.

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URL https://github.com/sparkfish/modelc

BugReports https://github.com/sparkfish/modelc/issues

Encoding UTF-8

LazyData true

Suggests testthat (>= 2.1.0)

RoxygenNote 7.1.0

Repository https://sparkfish.r-universe.dev

RemoteUrl https://github.com/sparkfish/modelc

RemoteRef HEAD

RemoteSha 2f6a779e2349ac49898fff749dffbf0ad12d40cb

Contents

`apply_linkinverse` *Wrap the model SQL in the appropriate link function inverse to return scaled predictions*

Description

Wrap the model SQL in the appropriate link function inverse to return scaled predictions

Usage

```
apply_linkinverse(model, sql)
```

Arguments

`model`	A list with the same signature as the output of `lm` or `glm`
`sql`	A character string representing the SQL to be wrapped in the link inverse

Value

A character string representing a SQL model formula

build_additive_term *Get SQL representing a continuous term in the model with no interactions*

Description

Get SQL representing a continuous term in the model with no interactions

Usage

```
build_additive_term(model, additive_term, first = FALSE)
```

Arguments

model	A list with the same signature as the output of lm or glm
additive_term	A parameter name.
first	A logical flag signaling whether the term is the first term in the formula

Value

A SQL character string representing an additive term

build_factor_case_statements *Build SQL CASE statements representing the factors in the model*

Description

Build SQL CASE statements representing the factors in the model

Usage

```
build_factor_case_statements(model, first = FALSE)
```

Arguments

model	A list with the same signature as the output of lm or glm
first	A logical flag signaling whether the term is the first term in the formula

Value

A character string representing a SQL CASE statement

build_interaction_term *Build a SQL interaction term*

Description

Build a SQL interaction term

Usage

```
build_interaction_term(model, interaction_term, first = FALSE)
```

Arguments

model	A list with the same signature as the output of lm or glm
interaction_term	The raw interaction term (a character string) from the R model
first	A logical flag signaling whether the term is the first term in the formula

Value

A character string representing a SQL interaction term

build_intercept *Get SQL representing the intercept term given the R model and parameter name*

Description

Get SQL representing the intercept term given the R model and parameter name

Usage

```
build_intercept(model, parameter, first = FALSE)
```

Arguments

model	A list with the same signature as the output of lm or glm
parameter	A parameter name.
first	A logical flag signaling whether the term is the first term in the formula

Value

A SQL character string representing the intercept term in the model

build_product *Build a SQL product*

Description

Build a SQL product

Usage

```
build_product(lhs, rhs)
```

Arguments

lhs	A character string representing the left hand side of the multiplication
rhs	A character string representing the right hand side of the multiplication

Value

A character string representing a valid SQL product term

extract_level *Extract the level from the factor name*

Description

Extract the level from the factor name

Usage

```
extract_level(parameter, factor)
```

Arguments

parameter	A parameter name
factor	A factor term

Value

A SQL string literal representing the factor level

extract_parameters *Extract parameters from a linear model*

Description

Extract parameters from a linear model

Usage

```
extract_parameters(model)
```

Arguments

model	A list with the same signature as the output of lm or glm

Value

A character vector of terms from a linear model

extract_parameter_coefficient *Extract the coefficient of a model parameter*

Description

Extract the coefficient of a model parameter

Usage

```
extract_parameter_coefficient(model, parameter)
```

Arguments

model	A list with the same signature as the output of lm or glm
parameter	A character string corresponding to a model predictor

Value

A double corresponding to the coefficient, or 0 if the coefficient is missing

get_factor_name *Extract the factor name from an R model*

Description

Extract the factor name from an R model

Usage

```
get_factor_name(parameter, model)
```

Arguments

parameter	A parameter name.
model	A list with the same signature as the output of lm or glm

Value

A character string representing the factor name

has_parameter *Check if an R model contains a coefficient*

Description

Check if an R model contains a coefficient

Usage

```
has_parameter(model, parameter)
```

Arguments

model	A list with the same signature as the output of lm or glm
parameter	A parameter name

Value

A logical representing whether a coefficient is present in the model

is_factor *Detect if the given model term is a factor*

Description

Detect if the given model term is a factor

Usage

```
is_factor(parameter, model)
```

Arguments

parameter	A parameter name.
model	A list with the same signature as the output of lm or glm

Value

A logical representing whether or not the term is a factor

is_interaction *Detect if the given model term is an interaction*

Description

Detect if the given model term is an interaction

Usage

```
is_interaction(parameter)
```

Arguments

parameter	A parameter name.

Value

A logical representing whether or not the term is an interaction

is_intercept *Check if the given parameter is the intercept*

Description

Check if the given parameter is the intercept

Usage

```
is_intercept(parameter)
```

Arguments

parameter	A parameter name.

Value

A logical representing whether the given parameter is the intercept

modelc *Compile an R model to a valid TSQL formula*

Description

Compile an R model to a valid TSQL formula

Usage

```
modelc(model, modify_scipen = TRUE)
```

Arguments

model	A list with the same signature as the output of `lm` or `glm`
modify_scipen	A boolean indicating whether to modify the "scipen" option to avoid generating invalid SQL

Value

A character string representing a SQL model formula

Examples

```
a <- 1:10
b <- 2*1:10
c <- as.factor(a)
df <- data.frame(a, b, c)
formula = b ~ a + c

# A vanilla linear model
linear_model <- lm(formula, data = df)
modelc::modelc(linear_model)

# A generalized linear model with gamma family distribution and log link function
gamma_loglink_model <- glm(formula, data = df, family=Gamma(link="log"))
modelc::modelc(gamma_loglink_model)

# A generalized linear model with gamma family distribution and identity link function
gamma_idlink_model <- glm(formula, data = df, family=Gamma(link="identity"))
modelc::modelc(gamma_idlink_model)
```

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