

Package: bayesianrvfl (via r-universe)

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Type Package

Title Bayesian Quasi-Randomized nnetworks

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Description Bayesian Quasi-Randomized nnetworks.

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Encoding UTF-8

LazyData true

LinkingTo Rcpp

Imports Rcpp, randtoolbox, foreach, memoise

Depends cclust, memoise, mlbench, caret

RoxygenNote 7.3.2

Suggests misc

Remotes thierrymoudiki/misc

Config/pak/sysreqs libicu-dev

Repository <https://techtonique.r-universe.dev>

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bayes_opt	<i>Bayesian optimization using surrogate models</i>
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Description

Bayesian optimization using surrogate models

Usage

```
bayes_opt(  
  objective,  
  lower,  
  upper,  
  type_acq = c("ei", "ucb"),  
  nb_init = 10L,  
  nb_iter = 90L,  
  kappa = 1.96,  
  method = c("standard", "direct_online", "polyak_online"),  
  surrogate_model = c("rvfl", "matern52", "rvfl_emcee", "rf"),  
  optim_surr = c("GCV", "loglik", "cv"),  
  activation_function = c("relu", "tanh", "sigmoid"),  
  type_optim = c("nlinb", "DEoptim", "msnlinb", "randsearch", "none"),  
  early_stopping = FALSE,  
  abs_tol = 1e-07,  
  rel_tol = 0.001,  
  seed = 123,  
  verbose = TRUE,  
  show_progress = TRUE,  
  ...  
)
```

Arguments

objective	function to be optimized
lower	lower bound for search
upper	upper bound for search
type_acq	type of acquisition function
nb_init	number of points in initial design

nb_iter	number of iterations of the algo
kappa	quantile for ucb
method	fit all, or online
surrogate_model	surrogate model
optim_surr	surrogate hyperparams fitting
activation_function	activation for bayesian rvfl
type_optim	optim for acquisition (nlminb, DEoptim, msnlminb, randsearch, none)
early_stopping	if TRUE, the algorithm will stop if the acquisition function is below a certain threshold
abs_tol	absolute tolerance for early stopping
rel_tol	relative tolerance for early stopping
seed	seed for random number generation
verbose	if TRUE, the algorithm will print progress messages
show_progress	if TRUE, the algorithm will show a progress bar
...	

fit_rvfl

Fitting base rvfl

Description

Fitting base rvfl

Usage

```
fit_rvfl(
  x,
  y,
  nb_hidden = 5,
  n_clusters = 0,
  nodes_sim = c("sobol", "halton", "unif"),
  activ = c("relu", "sigmoid", "tanh", "leakyrelu", "elu", "linear"),
  lambda = 10^seq(from = -10, to = 10, length.out = 100),
  method = c("svd", "solve", "chol"),
  compute_Sigma = FALSE,
  seed = 123
)
```

Arguments

seed

msnlminb	<i>Multistart nlmnb</i>
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Description

Multistart nlmnb

Usage

```
msnlminb(objective, nb_iter = 100, lower, upper, cl = NULL, max_fails = 3, ...)
```

Arguments

objective	function to be minimized
nb_iter	number of iterations
lower	lower bounds
upper	upper bounds
cl	number of cores to be used
max_fails	maximum consecutive failures before adjusting parameters
...	other arguments to be passed to nlmnb

Value

list with the best solution

msnmkb	<i>Multistart nmkb</i>
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Description

Multistart nmkb

Usage

```
msnmkb(objective, nb_iter = 100, lower, upper, cl = NULL, ...)
```

Arguments

objective	function to be minimized
nb_iter	number of iterations
lower	lower bounds
upper	upper bounds
cl	number of cores to be used
...	other arguments to be passed to nmkb

Value

list with the best solution

predict.glmnet_rvfl *Predict Method for Elastic Net Models*

Description

Predict Method for Elastic Net Models

Usage

```
## S3 method for class 'glmnet_rvfl'  
predict(object, newdata, s = 0.1, ...)
```

Arguments

object	Fitted model object
newdata	New data for prediction
s	Value of the penalty parameter lambda at which predictions are required
...	Additional arguments

Value

Predictions for new data

predict.matern52 *Predict Method for Matérn 5/2 Models*

Description

Predict Method for Matérn 5/2 Models

Usage

```
## S3 method for class 'matern52'  
predict(object, newdata, ci = NULL, ...)
```

Arguments

object	Fitted model object
newdata	New data for prediction
ci	Confidence interval (optional)
...	Additional arguments

Value

Predictions for new data

predict.rvfl	<i>Predict Method for RVFL Models</i>
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Description

Predict Method for RVFL Models

Usage

```
## S3 method for class 'rvfl'  
predict(object, newdata, ci = NULL, graph = FALSE, ...)
```

Arguments

object	Fitted model object
newdata	New data for prediction
ci	Confidence interval (optional)
graph	Whether to create a graph (optional)
...	Additional arguments

Value

Predictions for new data

predict.rvfl_mcmc	<i>Predict Method for RVFL MCMC Models</i>
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Description

Predict Method for RVFL MCMC Models

Usage

```
## S3 method for class 'rvfl_mcmc'  
predict(object, newdata, ci = NULL, graph = FALSE, ...)
```

Arguments

object	Fitted model object
newdata	New data for prediction
ci	Confidence interval (optional)
graph	Whether to create a graph (optional)
...	Additional arguments

Value

Predictions for new data

predict_rvfl	<i>Predict from an rvfl</i>
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Description

Predict from an rvfl

Usage

```
predict_rvfl(fit_obj, newx, ci = NULL, graph = FALSE)
```

Arguments

graph

update_params	<i>Update function</i>
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Description

Update function

Usage

```
update_params(  
  fit_obj,  
  newx,  
  newy,  
  re_clust = TRUE,  
  method = c("direct", "polyak"),  
  alpha = 0.5  
)
```

Arguments

alpha

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