Package 'ovganet'

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Type Package

Title Overlapping Group Elastic Net Using OEM

Version 1.0.0

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Description Performs (overlapping) (group) elastic net regularization
for linear and binomial models using Orthogonalizing EM with flexible options for
penalization.

Depends R (>= 4.2.2), Matrix, oem, bigmemory

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 7.2.3

R topics documented:

`cv.ovganet` *Cross-validated overlapping group elastic net using package 'oem'*

Description

Cross-validated overlapping group elastic net using package 'oem'

Usage

```
cv.ovganet(
  X,
  y,
  group,
  weights = NULL,
  alpha = 1,
  type.measure = "deviance",
  family = c("gaussian", "binomial"),
  ...
)
```

Arguments

`X`	Design matrix (features). Note that the "oem" package we use is optimized for n » p settings.
`y`	Response vector (outcomes).
`group`	A list of vectors containing group information.
`weights`	A vector of weights for each group.
`alpha`	Mixing value for elastic.net.
`type.measure`	Measure to evaluate for cross-validation. The default is type.measure = "deviance." See package "oem" for more options.
`family`	Use "gaussian" for least squares problems and "binomial" for binary response.
`...`	other parameters to be passed to "cv.ovganet" function.

Value

An object with S3 class "cv.ovganet".

Examples

```
library(doMC)
library(ovganet)
registerDoMC(5)
cv_overlap_grp_lasso <- cv.ovganet(X = X, y = y, group = group, weights = group_weights, family ='binomial', par
```

expandMat — *Expand a matrix of predictors to a matrix of latent variables.*

Description

Expand a matrix of predictors to a matrix of latent variables.

Usage

```
expandMat(X, group)
```

Arguments

X	Design matrix (features).
group	A list of vectors containing group information.

Value

A sparse matrix with all latent variables included

gamma2beta — *Convert latent variable coefficients (gammas) to variable coefficients (betas)*

Description

Convert latent variable coefficients (gammas) to variable coefficients (betas)

Usage

```
gamma2beta(gamma, incidence.mat, grp.vec, family)
```

Arguments

incidence.mat	Incidence matrix
grp.vec	A vector indicating group membership
family	"gaussian" for least squares problems and "binomial" for binary response.
X	Design matrix (features).

Value

A vector of lasso coefficients.

incidenceMat *Create an incidence matrix indicating group membership*

Description

Create an incidence matrix indicating group membership

Usage

```
incidenceMat(X, group)
```

Arguments

X	Design matrix (features).
group	A list of vectors containing group information.

Value

A sparse matrix with all latent variables included

Examples

```
To be filled in.
```

ovganet *Overlapping group elastic net using package 'oem'*

Description

Overlapping group elastic net using package 'oem'

Usage

```
ovganet(
  X,
  y,
  group,
  weights = NULL,
  alpha = 1,
  family = c("gaussian", "binomial"),
  ...
)
```

Arguments

X	Design matrix (features). Note that "oem" is optimized for n » p settings.
y	Response vector (outcomes).
group	A list of vectors containing group information.
weights	A vector of weights for each group.
alpha	Mixing value for elastic.net.
family	Use "gaussian" for least squares problems and "binomial" for binary response.
...	other parameters to be passed to "cv.ovganet" function.

Value

An object with S3 class "ovganet".

Examples

```
library(ovganet)
overlap_grp_lasso <- ovganet(X = X, y = y, group = group, weights = group_weights, family ='binomial')
```

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plot.cv.ovganet *Plot method for cv.ovganet*

Description

Plot method for cv.ovganet

Usage

```
## S3 method for class 'cv.ovganet'
plot(obj, ...)
```

Arguments

obj	An object of class 'cv.ovganet'
...	Additional arguments to be passed to the plot function of 'plot.cv.oem'

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plot.ovganet *Plot method for ovganet plotting (coef. path)*

Description

Plot method for ovganet plotting (coef. path)

Usage

```
## S3 method for class 'ovganet'
plot(obj, ...)
```

Arguments

obj	An object of class 'ovganet'
...	Additional arguments to be passed to the plot function of 'plot.oem'

predict.cv.ovganet *Predict method for cv.ovganet*

Description

Predict method for cv.ovganet

Usage

```
## S3 method for class 'cv.ovganet'
predict(obj, newx, ...)
```

Arguments

obj	An object of class 'cv.ovganet'
newx	New data to predict from. If not provided, will use the data from the original fit.
...	Additional arguments to be passed to the predict function of 'predict.cv.oem'

Value

Predicted values based on the 'cv.ovganet' object

predict.ovganet *Predict method for ovganet*

Description

Predict method for ovganet

Usage

```
## S3 method for class 'ovganet'
predict(obj, newx, ...)
```

Arguments

obj	An object of class 'ovganet'
newx	New data to predict from. If not provided, will use the data from the original fit.
...	Additional arguments to be passed to the predict function of 'predict.oem'

Value

Predicted values based on the 'ovganet' object

summary.cv.ovganet *Summary method for cv.ovganet*

Description

Summary method for cv.ovganet

Usage

```
summary.cv.ovganet(obj, ...)
```

Arguments

obj	An obj of class 'cv.ovganet'
...	Additional arguments to be passed to the summary function of 'summary.cv.oem'

Value

A summary obj for 'cv.ovganet'

summary.ovganet *Summary method for ovganet*

Description

Summary method for ovganet

Usage

```
summary.ovganet(obj, ...)
```

Arguments

obj	An obj of class 'ovganet'
...	Additional arguments to be passed to the summary function of 'summary.oem'

Value

A summary obj for 'ovganet'

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