Package 'JKGWAS'

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Type Package

Title Contains functions used for HORT545 class assignments.

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Description Package contains functions pertaining to tasks necessary for the imputation and analysis of genomic data.

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Encoding UTF-8

LazyData false

RoxygenNote 7.1.1

R topics documented:

JKGLM   *Compute SNP p-values for GWAS by GLM*

Description

Compute p-values for the association tests between phenotype and SNPs by Generalized Linear Model fitted for the fixed effects of SNP, with option to include Principal Compoenents and Covariates.

Usage

```
JKGLM(X, y, CV = NULL, PC = NULL)
```

Arguments

X	Matrix containing genotype data organized with SNPs as columns, individuals as rows
y	Matrix containing SNP positions and chromosomes corresponding to X
CV	Optional argument to include matrix containing covariates. Default is NULL.
PC	Optional argument to include matrix containing principal components such as an object of JKPCA. Default is NULL.

Value

Pvals array of length ncol of X for SNPs from fitted GLM

JKManhattan	*Manhattan Plot for GWAS Visualization*

Description

Visualize the GWAS by GLM results by Manhattan plot. User can also specify QTN.

Usage

```
JKManhattan(Pvals, SNP, sigcutoff = NULL, QTN = NULL)
```

Arguments

Pvals	Input vector of Pvals such as an object returned by the JKGLM function
SNP	Input matrix containing SNP location. Must include columns Position and Chromosome
QTN	Vector of QTN positions that is provided by the user to highlight position in the Manhattan plot. If NULL, then QTN will not be identified.
sig.cutoff	Significance threshold for visualization. If NULL, then uses bonferroni correction with alpha = 0.05

Value

Manhattan plot with user inputs.

JKPCA *Principle Component Analysis*

Description

Removes PCs that are linearly dependent with the given covariates and also user can specify how many PCs to chooose as co-factors

Usage

```
JKPCA(X, CV = NULL, npc = 5)
```

Arguments

X	Markers data in the form n by m with n number of individuals and m number of markers
CV	Covariates matrix in the form n by t with n number of individuals and t number of co-variates
npc	Number of Principle Components (PCs) that are specified by the user

Value

Principle Component Analysis

JKQQ *QQ plot*

Description

Function to generate QQ-plot

Usage

```
JKQQ(Pvals)
```

Arguments

Pvals	Input vector of Pvals such as an object returned by the JKGLM function

Value

QQplot with user inputs.

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