

# Package ‘poolVIM’

July 30, 2018

**Type** Package

**Title** Gene-Based Association Tests using the Actual Impurity Reduction (AIR) Variable Importance

**Version** 1.0.0

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**Description** Gene-based association tests using the actual impurity reduction (AIR) variable importance. The function aggregates AIR importance measures from a group of SNPs or probes and outputs a p-value for each gene. The procedure builds upon the method described in <doi:10.1093/Bioinformatics/Bty373> and will be published soon.

**License** GPL (>= 2)

**LazyData** TRUE

**Imports** stats, ranger

**Depends** R(>= 3.3.1), EmpiricalBrownsMethod(>= 1.6.0), Hmisc(>= 4.1)

**RoxygenNote** 6.0.1

**NeedsCompilation** no

**Repository** CRAN

**Date/Publication** 2018-07-30 17:30:08 UTC

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fisher	<i>fisher</i>
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**Description**

fisher

**Usage**

fisher(p, adjust, R)

**Arguments**

p	vector of pvalues
adjust	if correlation has to be taken into account
R	correlation matrix

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gaussianize	<i>gaussianize null variable importances</i>
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**Description**

gaussianize null variable importances

**Usage**

gaussianize(x, a)

**Arguments**

x	distr
a	value to interpolate/extrapolate

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m_effective	<i>meff.</i>
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**Description**

meff.

**Usage**

m\_effective(R)

**Arguments**

R	R
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poolVIM	<i>after the Actual Impurity Reduction Importance is computed with a Random Forest, pvalues from different probes or SNPs belonging to the same gene can be aggregated in order to obtain a single pvalue for that gene. Correlation between probes can also be taken into account.</i>
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### Description

after the Actual Impurity Reduction Importance is computed with a Random Forest, pvalues from different probes or SNPs belonging to the same gene can be aggregated in order to obtain a single pvalue for that gene. Correlation between probes can also be taken into account.

### Usage

```
poolVIM(rf, genenames, x, method = "Tippett", adjust)
```

### Arguments

rf	a ranger object with "importance="impurity_corrected"
genenames	a vector of the name of the gene to which each probe or SNP belongs, it has to be of size dim(x)[1]
x	design matrix used by the random forest
method	one of Tippett, Fisher, Kost, EBM
adjust	"no" / "yes" depending if correlation has to be taken into account

### Examples

```
n <- 250
x=replicate(50, runif(n))
dat <- data.frame(y = factor(rbinom(n, 1, .5)), x)
library(ranger)
rf <- ranger(y ~ ., dat, importance = "impurity_corrected",num.trees=100)
genenames=colnames(x)=rep(c("G1", "G2"),50/2)
poolVIM(rf,genenames,x,method="Fisher",adjust="no")
```

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tippett	<i>tippett.</i>
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### Description

*tippett.*

### Usage

```
tippett(p, adjust, R)
```

**Arguments**

p	vector of pvalues
adjust	if correlation has to be taken into account
R	correlation matrix

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