Installation

```
library(devtools)
devtools::install_github("montilab/CaDrA", ref="devel")
```

Quickstart

```
library(CaDrA)
```

Core functions of CaDrA: calc_rowscore(), candidate_search(), CaDrA()

1. Using data matrix as an input to core functions

```
# Create a feature matrix
mat <- matrix(c(1,0,1,0,0,0,0,0,1,0,
                0,0,1,0,1,0,1,0,0,0,
                0,0,0,0,1,0,1,0,1,0), nrow=3)

colnames(mat) <- 1:10
row.names(mat) <- c("TP_1", "TP_2", "TP_3")

# Create a vector of observed input scores
set.seed(42)
input_score = rnorm(n = ncol(mat))
names(input_score) <- colnames(mat)

# calc_rowscore()
rowscore_res_v1 <- calc_rowscore(
  FS = mat,   ## <--- Here mat is a data matrix
  input_score = input_score,
  method = "ks_pval",
  weight = NULL  ,
  alternative = "less"
)

head(rowscore_res_v1)
```

```
##       TP_1       TP_3       TP_2
## 1.15384615 0.91428571 0.03333333
```

```
# candidate_search()
candidate_search_res_v1 <- candidate_search(
  FS = mat,   ## <--- Here mat is a data matrix
  input_score = input_score,
  method = "ks_pval",
  weight = NULL,
  alternative = "less",
  search_method = "both",
  top_N = 1,
  max_size = 3,
```

```
  best_score_only = TRUE
)

candidate_search_res_v1
```

```
##     TP_1
## 1.153846
```

```
# CaDrA()
cadra_res_v1 <- CaDrA(
  FS = mat,   ## <--- Here mat is a data matrix
  input_score = input_score,
  method = "ks_pval",
  weight = NULL,
  alternative = "less",
  search_method = "both",
  top_N = 1,
  max_size = 3,
  n_perm = 10,
  ncores = 4
)
```

```
## Setting cache root path as: /Users/reinachau/Library/Caches/org.R-project.R/R/R.cache

## Found 10 permutated scores for the specified dataset and search parameters in cache path

## LOADING PERMUTATED SCORES FROM CACHE
```

```
cadra_res_v1$perm_pval
```

```
## [1] 0.1818182
```

Using SummarizedExperiment object as an input to core functions

```
# Load pre-computed feature set
data(sim_FS)

# Load pre-computed input-score
data(sim_Scores)

# calc_rowscore()
rowscore_res_v2 <- calc_rowscore(
  FS = sim_FS,   ## <--- Here simFS is a SummarizedExperiment class object
  input_score = sim_Scores,
  method = "ks_pval",
  weight = NULL  ,
  alternative = "less"
)

head(rowscore_res_v2)
```

```
##   TN_716     TP_8     TP_9   TN_844   TN_963   TN_579
## 4.718447 4.148571 4.148571 4.148571 4.013010 3.987692
```

```
# candidate_search()
candidate_search_res_v2 <- candidate_search(
  FS = sim_FS,   ## <--- Here simFS is a SummarizedExperiment class object
  input_score = sim_Scores,
  method = "ks_pval",
  weight = NULL,
  alternative = "less",
  search_method = "both",
  top_N = 3,
  max_size = 7,
  best_score_only = TRUE
)

candidate_search_res_v2
```

```
##    TP_8
## 16.8175
```

```
# CaDrA()
cadra_res_v2 <- CaDrA(
  FS = sim_FS,   ## <--- Here simFS is a SummarizedExperiment class object
  input_score = sim_Scores,
  method = "ks_pval",
  weight = NULL,
  alternative = "less",
  search_method = "both",
  top_N = 3,
  max_size = 7,
  n_perm = 10,
  ncores = 4
)
```

```
## Setting cache root path as: /Users/reinachau/Library/Caches/org.R-project.R/R/R.cache

## Found 10 permutated scores for the specified dataset and search parameters in cache path

## LOADING PERMUTATED SCORES FROM CACHE
```

```
cadra_res_v2$perm_pval
```

```
## [1] 0.1818182
```