Function Test

Guanyu

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```
devtools::load_all()
library(WASABI.ext)
library(BNPmix)
library(mcclust)
library(salso)
library(superheat)
library(ggplot2)
```

Test Generalized VI.Rcpp function.

1. Check the accuracy of the function.

```
cls1 <- matrix(sample(0:3,25,replace = TRUE), nrow = 1)
cls2 <- matrix(sample(0:6,25,replace = TRUE), nrow = 1)
salso_loss <- salso::VI(cls1,cls2, a = 0.5)
print(salso_loss)
```

```
## [1] 3.03356
```

```
rcpp_loss <- VI_compute_Rcpp(cls1,cls2, 4, 7, a = 0.5)
print(rcpp_loss)
```

```
## [1] 3.03356
```

2. Compare the speed.

```
library(microbenchmark)
microbenchmark(
  salso = salso::VI(cls1,cls2),
  cpp = VI_compute_Rcpp(cls1,cls2, 4, 7),
  times = 100L
)
```

```
## Warning in microbenchmark(salso = salso::VI(cls1, cls2), cpp =
## VI_compute_Rcpp(cls1, : less accurate nanosecond times to avoid potential
## integer overflows
```

```
## Unit: microseconds
##   expr   min    lq     mean median      uq    max neval
##  salso 9.307 9.635 10.44065  9.758 10.1885 29.643   100
##    cpp 1.148 1.476  1.73389  1.640  1.8450  8.282   100
```

Test Generalized Binder.Rcpp function.

1. Check the accuracy of the function.

```r
cls1 <- matrix(sample(0:3,25,replace = TRUE), nrow = 1)
cls2 <- matrix(sample(0:6,25,replace = TRUE), nrow = 1)
salso_loss <- salso::binder(cls1,cls2, a = 0.5)
print(salso_loss)
```

```
## [1] 0.224
```

```r
rcpp_loss <- Binder_compute_Rcpp(cls1,cls2, 4, 7, a = 0.5)
print(rcpp_loss)
```

```
## [1] 0.224
```

2. Compare the speed.

```r
library(microbenchmark)
microbenchmark(
  salso = salso::binder(cls1,cls2, a = 0.5),
  cpp = Binder_compute_Rcpp(cls1,cls2, 4, 7, a = 0.5),
  times = 100L
)
```

```
## Unit: microseconds
##   expr   min    lq    mean median    uq    max neval
##  salso 9.061 9.348 9.76128  9.512 9.717 29.643   100
##    cpp 1.230 1.394 1.66337  1.558 1.763  7.749   100
```

Testing omARI.rcpp

1. Check the accuracy of the function.

```r
cls1 <- matrix(sample(0:3,25,replace = TRUE), nrow = 1)
cls2 <- matrix(sample(0:6,25,replace = TRUE), nrow = 1)
salso_loss <- salso::omARI(cls1,cls2)
print(salso_loss)
```

```
## [1] 0.9543147
```

```r
rcpp_loss <- omARI_compute_Rcpp(cls1,cls2, 4, 7)
print(rcpp_loss)
```

```
## [1] 0.9543147
```

2. Compare the speed.

```r
library(microbenchmark)
microbenchmark(
  salso = salso::omARI(cls1,cls2),
  cpp = omARI_compute_Rcpp(cls1,cls2, 4, 7),
  times = 100L
)
```

```
## Unit: microseconds
##   expr   min    lq    mean median    uq    max neval
##  salso 8.364 8.528 8.91258  8.692 8.815 29.397   100
##    cpp 1.066 1.353 1.54406  1.435 1.640  6.601   100
```