Multi-view Banded Spectral Clustering (mvBSC)

```
# devtools::install_github("celehs/mvBSC")
```

```
library(mvBSC)
library(data.table)
```

```
va_cosK <- readRDS(paste0("data/va_I00-I25_cosineMat.rds"))
bio_cosK <- readRDS(paste0("data/biobank_I00-I25_cosineMat.rds"))
this.R <- readRDS(paste0("data/I00-I25_distR_wt_avg_1.rds"))
icd.info <- readRDS("data/rollable_new_icd_info_20190130.rds")
codes_in_use <- colnames(bio_cosK)
length(codes_in_use)
```

```
## [1] 208
```

```
mvbsc(codes = codes_in_use,
      distance = this.R,
      similarity = list(va_cosK, bio_cosK),
      # K0 = c(16, 18, 20, 22, 24),
      K0 = c(15, 20),
      delta = c(5, 10),
      h = 1:5)
```

```
## $summary
##    K0 delta h     ratio
## 9  15     5 3 0.8795127
## 11 15    10 3 0.8795127
## 5  15     5 2 0.8650460
## 7  15    10 2 0.8650460
## 1  15     5 1 0.8469891
## 13 15     5 4 0.8446031
## 2  20     5 1 0.8437923
## 4  20    10 1 0.8437923
## 15 15    10 4 0.8413106
## 17 15     5 5 0.8409211
## 6  20     5 2 0.8381913
## 8  20    10 2 0.8381913
## 3  15    10 1 0.8359611
## 19 15    10 5 0.8248256
## 18 20     5 5 0.7850573
## 10 20     5 3 0.7832861
## 12 20    10 3 0.7832861
## 14 20     5 4 0.7751756
## 20 20    10 5 0.7706106
## 16 20    10 4 0.7611275
##
## $optimal
## $optimal$ratio
## [1] 0.8795127
##
## $optimal$K0
## [1] 15
##
```

```
## $optimal$delta
## [1] 5
##
## $optimal$h
## [1] 3
##
## $optimal$wt
## [1] 0.5 0.5
##
## $optimal$size
## cluster
##  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
## 20  3  2  2  3  2  1  1  1  1  1  3  3  1  2  3  2  2  1  1  2  2  1  1 11
## 26 27 28 29 30 31 32 33 34 35 36 37 38
## 10  9 16 14 17  6  3  6 20  5  9  8 13
##
## $optimal$cluster
##   394.9   395.9   396.0   396.1   396.2   396.3   396.8   396.9   397.0
##      26      21      31      31      31      31      31      33      31
##   397.1   397.9  398.99   401.0   401.1   401.9  402.00  402.01  402.10
##      33      33      33       4       9       4      36      36      36
##  402.11  402.90  402.91  403.00  403.01  403.10  403.11  403.90  403.91
##      36      36      36      29      36      29      36      19      36
##  404.00  404.01  404.02  404.03  404.10  404.11  404.12  404.13  404.90
##      29      29      29      29      29      29      29      29      29
##  404.91  404.92  404.93  405.01  405.09  405.11  405.19  405.91  405.99
##      29      29      29      35      35      35       7      35      35
##  410.00  410.01  410.02  410.10  410.11  410.12  410.20  410.21  410.22
##      30      30      30      30      30      30      28      28      28
##  410.30  410.31  410.32  410.40  410.41  410.42  410.50  410.51  410.52
##      28      28      28      28      28      28      28      30      28
##  410.60  410.61  410.62  410.70  410.71  410.72  410.80  410.81  410.82
##      30      28      28      22      30      30      30      30      22
##  410.90  410.91  410.92   411.1  411.89   413.0   413.9  414.00  414.01
##      28      28      28       6      38       6      30      38      38
##  414.02  414.03  414.04  414.05  414.06  414.07  414.10  414.19   414.8
##      38      38      38      38      38      38      38      38      38
##   414.9   429.2  429.79    I00.   I01.0   I01.1   I01.2   I01.8   I01.9
##      10      38       3      23      32      32       8      32       5
##   I02.0   I02.9   I05.0   I05.1   I05.2   I05.8   I05.9   I06.0   I06.1
##       5       5      26      26      26      26      26      26      26
##   I06.2   I06.8   I06.9   I07.1   I07.2   I07.8   I07.9   I08.0   I08.1
##      26      26      21      27      27      27      27      27      27
##   I08.2   I08.3   I08.8   I08.9   I09.1   I09.2  I09.81  I09.89   I09.9
##      27      27      27       2       2      24      33       2      33
##    I10.   I11.0   I11.9   I12.0   I12.9   I13.0  I13.10  I13.11   I13.2
##      11      18      18      16      16      16      13      13      13
##   I15.0   I15.1   I15.2   I15.8   I15.9   I20.0   I20.1   I20.8   I20.9
##      12      12      17      12      17      30      30      30      30
##  I21.01  I21.02  I21.09  I21.11  I21.19  I21.21  I21.29   I21.3   I21.4
##      25      25      25      25      25      25      25      25      25
##   I22.0   I22.1   I22.2   I22.8   I22.9   I23.1   I23.2   I23.6   I23.7
##      25      25      37      37      37      37      37      37      37
##   I23.8   I24.0   I24.1   I24.8   I24.9  I25.10 I25.110 I25.111 I25.118
```

```
##      37       3      20      15       1       1       1       1       1
## I25.119   I25.2   I25.3  I25.41  I25.42   I25.5   I25.6 I25.700 I25.701
##       1       1       1       1       1       1       1      34      34
## I25.708 I25.709 I25.710 I25.711 I25.718 I25.719 I25.720 I25.721 I25.728
##      34      34      34      15      34      34      34       1      34
## I25.729 I25.739 I25.750 I25.758 I25.759 I25.760 I25.769 I25.790 I25.791
##      34      34       1      34      34       1      34      34      34
## I25.798 I25.799 I25.810 I25.811 I25.812  I25.82  I25.83  I25.84  I25.89
##      34      34      34      34      14       1       1       1       1
##   I25.9
##       1
## 38 Levels: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 ... 38
```

```
proc.time()
```

```
##    user  system elapsed
##   7.056   0.355   7.428
```