

# Multi-view Banded Spectral Clustering (mvBSC)

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

library(mvBSC)

## Loading required package: Matrix

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),
      k = c(15, 20),
      delta = c(5, 10),
      h = 1:5)

## $summary
##      k 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
##
## $optimal$k
## [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
##    7.433    0.381    8.340

```