Readme

Files:

- A synthetic dataset: sim_networks.rds
- Helper functions: mixture.ergm.functions.R
- Pseudolikelihood-based inference demo: demo_mixture_ergms_PL.R
- Adjusted pseudolikelihood based inference demo: demo_mixture_ergms_APL.R

Session info:

```
> sessionInfo()
R version 3.6.1 (2019-07-05)
Platform: x86_64-pc-linux-gnu (64-bit)
Running under: Ubuntu 14.04.6 LTS

Matrix products: default
BLAS:   /usr/lib/libblas/libblas.so.3.0
LAPACK: /usr/lib/lapack/liblapack.so.3.0

locale:
 [1] LC_CTYPE=en_US.UTF-8       LC_NUMERIC=C
 [3] LC_TIME=en_US.UTF-8        LC_COLLATE=en_US.UTF-8
 [5] LC_MONETARY=en_US.UTF-8    LC_MESSAGES=en_US.UTF-8
 [7] LC_PAPER=en_US.UTF-8       LC_NAME=C
 [9] LC_ADDRESS=C               LC_TELEPHONE=C
[11] LC_MEASUREMENT=en_US.UTF-8 LC_IDENTIFICATION=C

attached base packages:
 [1] stats4    grid      parallel  stats     graphics  grDevices utils
 [8] datasets  methods   base

other attached packages:
 [1] Bergm_5.0.1          mcclust_1.0          lpSolve_5.6.13.3
 [4] mclust_5.4.5         mvtnorm_1.0-11       Matrix_1.2-17
 [7] sna_2.4              statnet.common_4.3.0 ClusterR_1.2.2
[10] gtools_3.8.1         flexclust_1.4-0      modeltools_0.2-22
[13] lattice_0.20-38      coda_0.19-3          ergm_3.10.4
[16] network_1.15         pwr_1.2-2            xtable_1.8-4
[19] dplyr_0.8.5          doParallel_1.0.11    iterators_1.0.10
[22] foreach_1.4.4        scales_1.1.0

loaded via a namespace (and not attached):
 [1] tidyselect_1.0.0   purrr_0.3.4        brainGraph_3.0.0   colorspace_1.4-1
 [5] vctrs_0.2.4        gmp_0.6-2          MCMCpack_1.4-4     rlang_0.4.10
 [9] pillar_1.4.3       glue_1.4.0         trust_0.1-7        lifecycle_0.2.0
[13] robustbase_0.93-5  MatrixModels_0.4-1 munsell_0.5.0      gtable_0.3.0
[17] codetools_0.2-16   permute_0.9-5      SparseM_1.77       quantreg_5.51
[21] class_7.3-15       DEoptimR_1.0-8     Rcpp_1.0.4.6       intergraph_2.0-2
[25] abind_1.4-5        mcmc_0.9-6         ggplot2_3.3.0      tools_3.6.1
[29] magrittr_1.5       tibble_3.0.1       crayon_1.3.4       pkgconfig_2.0.2
[33] MASS_7.3-51.4      ellipsis_0.3.0     data.table_1.12.6  matrixcalc_1.0-3
[37] assertthat_0.2.0   R6_2.4.1           igraph_1.2.4.1     compiler_3.6.1
```

Note: As the adjusted pseudolikelihood calculation code requires the ergm.Cprepare functionality, which was removed in ergm 4. Therefore, to run the adjusted pseudolikelihood based inference demo, please download ergm 3.10.4 from https://cran.r-project.org/src/contrib/Archive/ergm/ and install manually. We plan to update our codes to make it compatible with ergm 4.x in the future.

CPU info:

```
Architecture:            x86_64
CPU op-mode(s):          32-bit, 64-bit
Byte Order:              Little Endian
CPU(s):                  40
On-line CPU(s) list:     0-39
Thread(s) per core:      2
Core(s) per socket:      10
Socket(s):               2
NUMA node(s):            2
Vendor ID:               GenuineIntel
CPU family:              6
Model:                   62
Stepping:                4
CPU MHz:                 1200.000
BogoMIPS:                6001.96
Virtualization:          VT-x
L1d cache:               32K
L1i cache:               32K
L2 cache:                256K
L3 cache:                25600K
NUMA node0 CPU(s):       0-9,20-29
NUMA node1 CPU(s):       10-19,30-39
```

Computation time (using a single core of a server with configuration listed above):

- About 1.05 hours to run demo_mixture_ergms_PL.R
- About 3.41 hours to run demo_mixture_ergms_APL.R