This TDIC CPU version has two types of computation. TDIC not considering cancer type, and TDIC considering every cancer type individually.

The command line for executions are:

withCan:        exeFile -f 'GtMatrix'    -d 'GeMatrix' -g 'GlobalDriver' -o 'output path' -s 'start tumor' -e 'end tumor'

withoutCan:  exeFile -c 'GtMatrixC' -d 'GeMatrix' -g 'GlobalDriver' -o 'output path' -s 'start tumor' -e 'end tumor'

Pseudo code which considering cancer type is as follows:

for tumor in Gt(e)Matrix

        for Ge in Ge indexes

                for Gt in Gt indexes

                         for t in tumors

                                  count (Ge, Gt, t) --> T1, T0, D1, D0

                                  countC (Ge, Gt, t) -->T1c, T0c , D1c, D0c

end for t

                          FscoreNoCan = TFscore(T1, T0) + DFscore(D1, D0) + Prior(Gt) + log(0.5)

                          FscoreCan = 0

                          for c in cancerType

                                  calculate TFscoreC  ( T1c, T0c ) \*//see below for calculation of TFscoreC

                                  calculate DFscoreC ( D1c, D0c ) \*//see below for calculation of CFscoreC

                                  FscoreC = TFscoreC + DFscoreC+ Prior(Gt) + log (0.5\*Proportion[c] )

                                  FscoreCan += logSum(FscoreCan, FscoreC)

end for c

                          Fscore = logsum(FscoreNoCan, FscoreCan)

                      save Fscore to tumorPosteriorMatrix[ ]

end for Gt

            normalizize tumorPosteriorMatrix[ ] current Ge

end for Ge

output current tumor

end for tumor

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\*Calculation of TFscoreC :

         calculate TFscoreCself  ( T1c, T0c (wich is 0) )

         calculate TFscoreCrest ( T1cRest \*\*, T0cRest (which is 0) )

         TFscoreC = TFscoreCself  + TFscoreCrest

\*\*T1cRest is the sum of rest of T1c.  Pseudo code is as follows

for c in cancer type

         T1cRest = 0

         for j in cancer type

                   if (j != c)

                         T1cRest  += T1j

\*Calculation of DfscoreC [c] is similar to TFscoreC [c] calculation

         calculate DFscoreCself  ( D1c, D0c  )

         calculate DFscoreCrest ( D1cRest \*\*, D0cRest \*\* )

         DFscoreC = DFscoreCself  + DFscoreCrest

\*\*D1cRest , D0cRest  calculation are similar to T1cRest  calculation

D1cRest is the sum of rest of D1c

D0cRest is the sum of rest of D0c