Problem Formulation

$N = 5$

$M = 20$

The optimization problem is given by

Maximize $\sum_{i=1}^{N} T_i$

where

$T_i = \boldsymbol{C}_{[i]}\boldsymbol{E}\log_2\left(1 + \frac{P}{J_i + G\boldsymbol{C}_{[i]}\boldsymbol{E}}\right)$

$C_{n,m} \in \{0, 1\}$

where

$\boldsymbol{C}_{[i]}$ is the ith row of $\boldsymbol{C}^{N\times M}$

$J_i = \boldsymbol{I}_{[i]}\boldsymbol{C}\boldsymbol{C}_{[i]}^{Transpose}$

$\boldsymbol{E} = [1 \quad 1 \quad 1 \quad \cdots \quad 1]^{Transpose}$ is ones vector of size $M \times 1$

$\boldsymbol{I}$ is a given matrix and the values of P and G are known.

$\boldsymbol{I}_{[i]}$ is the ith row of $\boldsymbol{I}^{N\times N}$