MCNF - minimum-cost network flow

June 21, 2023

1 Sets

j	[0, 3]
$k\,(j)$	j =¿ heads[j]
$i\,(j)$	j =¿ tails[j]

2 Parameters

w_{ij}	weight of arc (i,j)	weights
b_i	node balance	demand if i=s; -demand if i=t; 0 o/w

3 Variables

x_{ij}	amount of flow on arc (i, j)	custom bounds $\in \mathbb{R}$

4 Model

$$\min \quad \sum_{j} \sum_{k(j)} w_{jk} x_{jk} \tag{1}$$

$$\text{s.t.} \quad \sum_{k(j)} x_{jk} + \sum_{i(j)} -x_{ij} = b_j \qquad \forall j \tag{2}$$

4.1 Objective

minimize dist
minimize total cost of flow

4.2 Constraint: flowbal

flow balance constraints