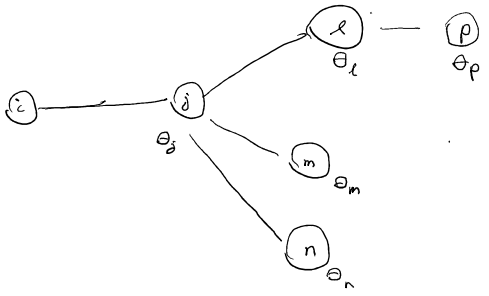
Formulation

Tuesday, 1 October 2024 4:35 AM



$$F_j + f_{ij} = \Theta_j + \sum_{(j,k)\in A} f_{jk}$$

$$F_j \le M x_{ij}$$

$$f_{ij} = (1-x_{ij})\left(\Theta_j + (1-x_{jm})\Theta_m + (1-x_{jn})\Theta_n + (1-x_{jl})\left(\Theta_l + (1-x_{lp})\Theta_p\right)\right)$$

idea:

define subproblem V_{ij} $\forall i,j \in A$

Sets

S_{ij} ← Set of successor arcs of arc (i,j) (includes (i,j))

$\forall (i,j) \in A$

Variables

f ← interruption time on (i,j)

C_{jk} ← interruption time $(j,k) \in S_{ij}$

has objective $\min (\tilde{l}_i - \tilde{l}_j) f$

Constraints

$$C_{jk} = (1-x^*_{jk})\left(\Theta_k + \sum_{k,l \in S_{jk}} C_{jk}\right) \quad \forall jk \in S_{ij}$$

$$f = C_{ij}$$

define main problem

Variables

Variables

$x_{ij} \in \{0,1\} \quad \forall (i,j) \in A$

Objective

$$\min \sum_{(i,j) \in A} V_{i,j}(x)$$

Constraints

$$\sum x_{i,j} \leq N$$