


MatHeuristics

Hybridizing Metaheuristics and Mathematical Programming

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Blocks Relocation Problem

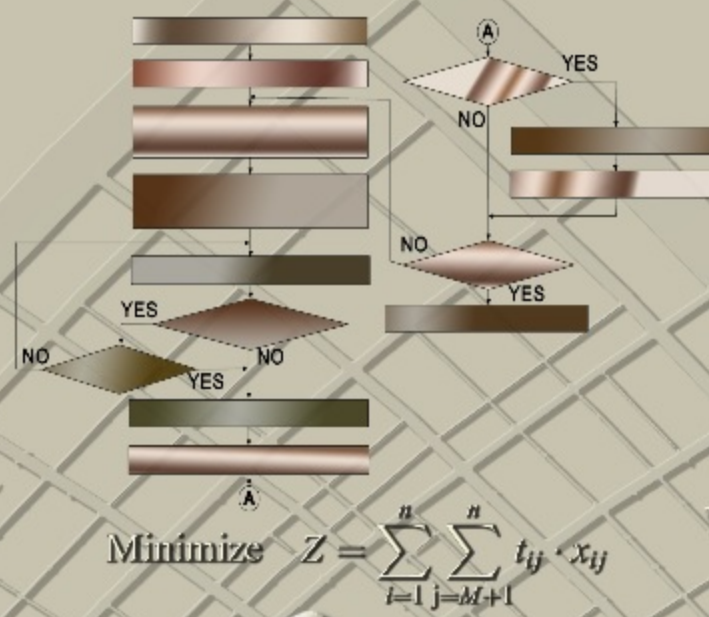
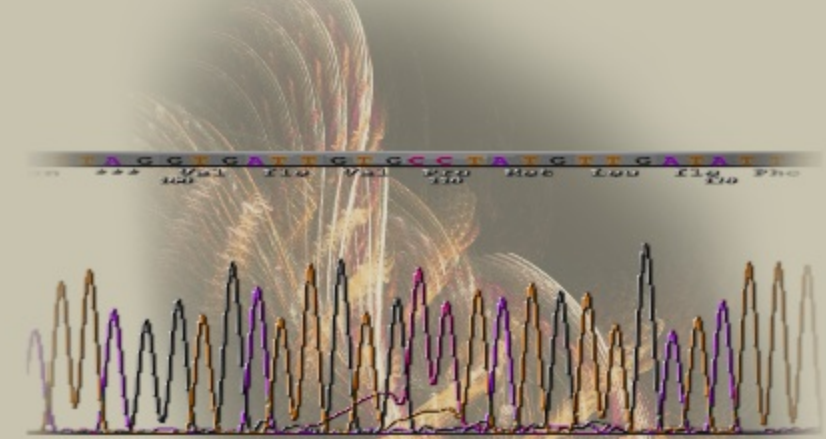
DNA Sequencing Problem



$$f(k, l, t, C) = \begin{cases} 1 + f(k+1, l', t', C), & t = \emptyset, \\ 1 + \min_{x \in D(k, l, t, C)} \{f(k, l, t \setminus \{x\}, C')\}, & t \neq \emptyset, \end{cases}$$

with $f(n, l, \emptyset, C) = 1$.

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$$\sum_{i=1}^m \sum_{j=1}^m x_{ij} a_{ij} \geq |\delta z^*|$$

Computation
Logistics

Computational
Biology

Matheuristics

are made by the interoperation of **metaheuristics** and **mathematical programming techniques**. An essential feature is the **exploitation** in some part of the algorithms of features derived from the **mathematical model** of the **problems of interest**, thus the definition „**model-based metaheuristics**“.

Computation
Logistics

Production

Methods

Capacitated Transport Corridors

Capacitated Lot Sizing Problem

POPMUSIC
 Partial OPTimization
 Metaheuristic
 Under Special
 Intensification Conditions

Problem $P(X)$: $z^* := \text{opt}_{x \in X} f(x)$

$$\min \sum_{i=1}^n \sum_{j=1}^n [c_{ij} y_{ij} + f_{ji}(x_{ji} - w_{ji}) + a_{ji} h_{ji}]$$



$$\min_{\pi \in \Pi} f(\pi) = \sum_{i=1}^l w_i \cdot \left\| \left(\sum_{i=1}^n w_i \cdot x_{\pi_i}, \sum_{i=1}^n w_i \cdot y_{\pi_i}, \dots \right) \right\|$$

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