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2. Metaheurísticas basadas en trayectorias

SAT problems aim at finding the best assignment for a number of variables in order to minimize C(x) function, restricted to some constraints which can penalize the potential solutions.

Apply the Tabu Search to the following SAT problem:

Let's assume the following Sat problem with 5 variables:

$F(x) = 20 x_1 + 25 x_2 - 30 x_3 - 45 x_4 + 40 x_5$ where $x_j = \{ 0,1 \}, j = 1,...,5$

Constraints:

$x_1 + x_2 - x_3 + x_4 + x_5 >= 1$

$x_1 + x_2 - x_4 + 2x_5 >= 2$

$-x_2 + x_4 + x_5 <= 1$

$x_2 + x_3 + x_5 <= 2$

Penalization: Each constraint violation costs:

- 70 (per each) for the two first constraints
- 100 (per each) for the two last constraints

The final cost to minimize is:

$$C(x) = F(x) + Penalization(x)$$

Actions: Swap the value of each variable (0 or 1)

- There exists a taboo list per each variable of the function.
- The taboo tenure is set to 4 iterations
- Best solution found until now is kept