Development of an automatically configurable ant colony optimization framework. State of the art.

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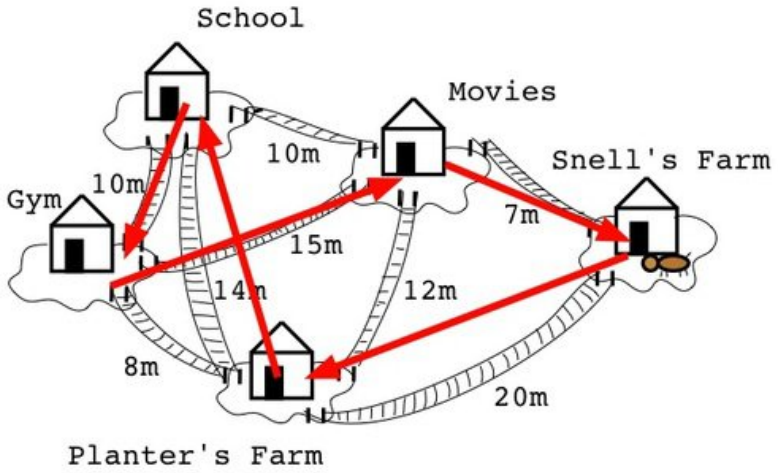
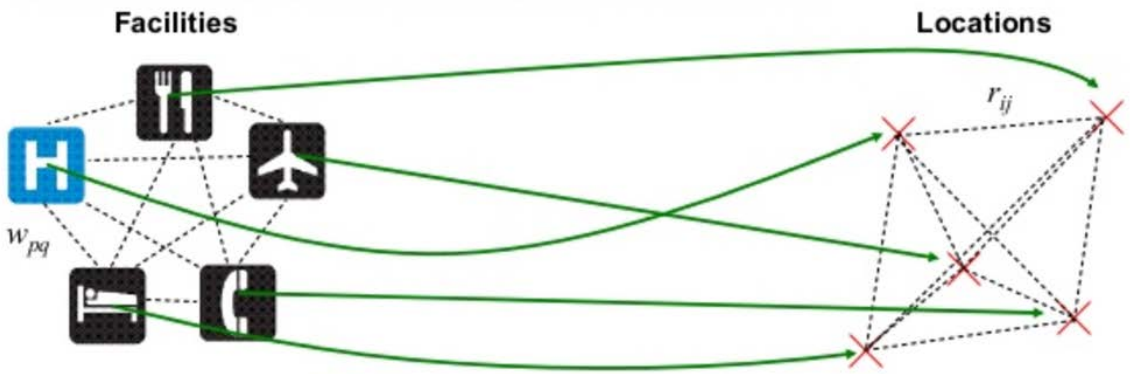
Université libre de Bruxelles, 2017

Combinatorial Optimization Problems

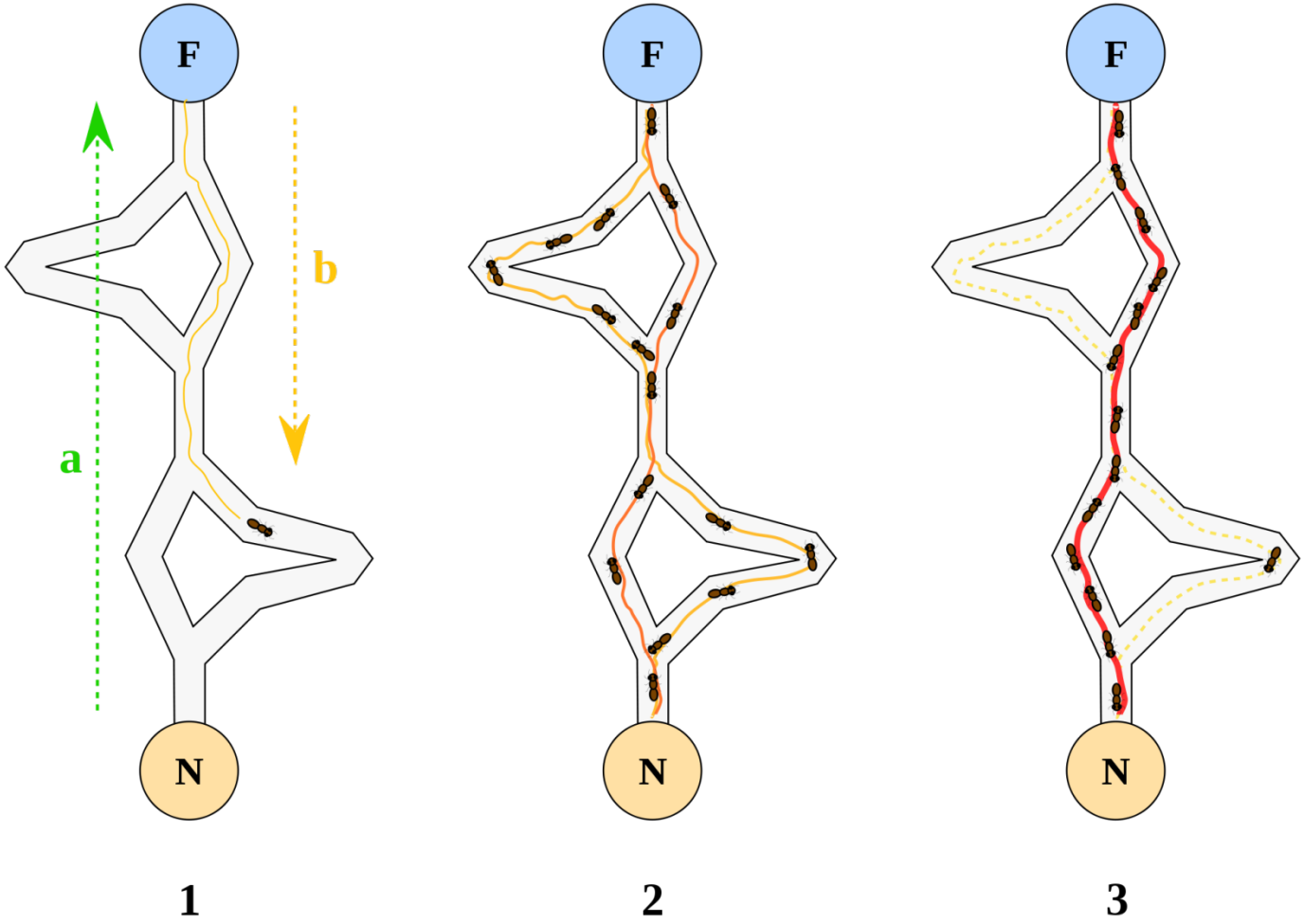


Traveling Salesman Problem illustration



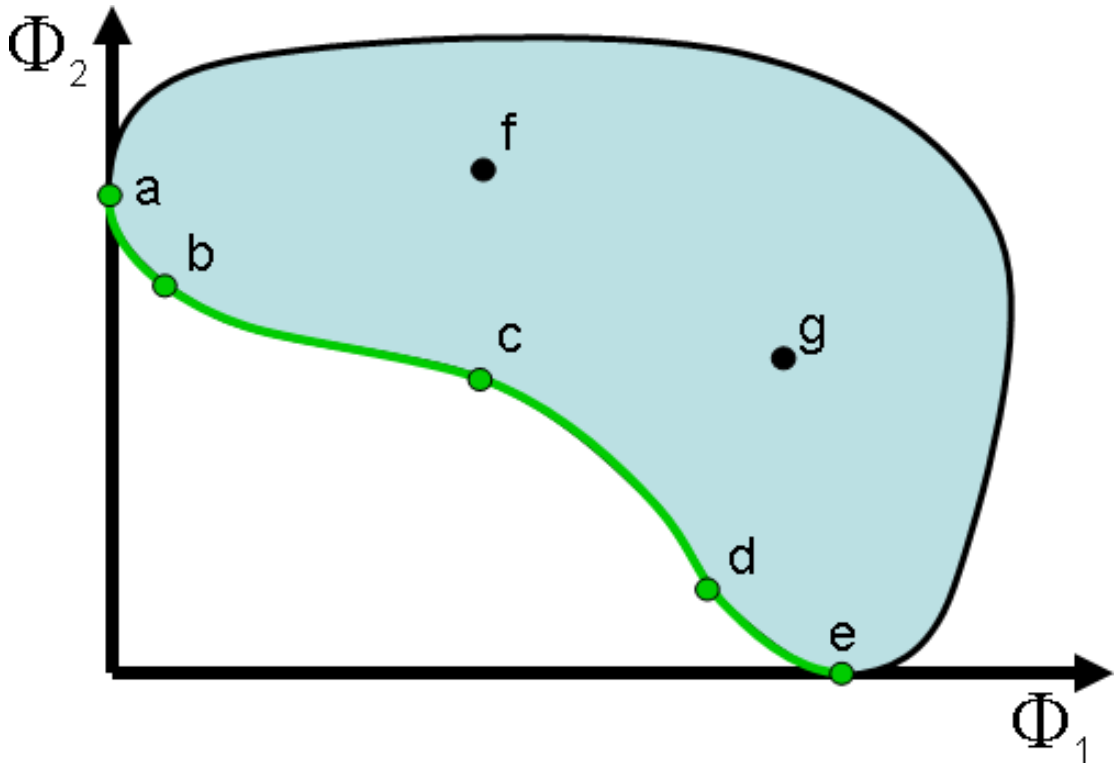
Quadratic Assignment Problem illustration

Ant Colony Optimization



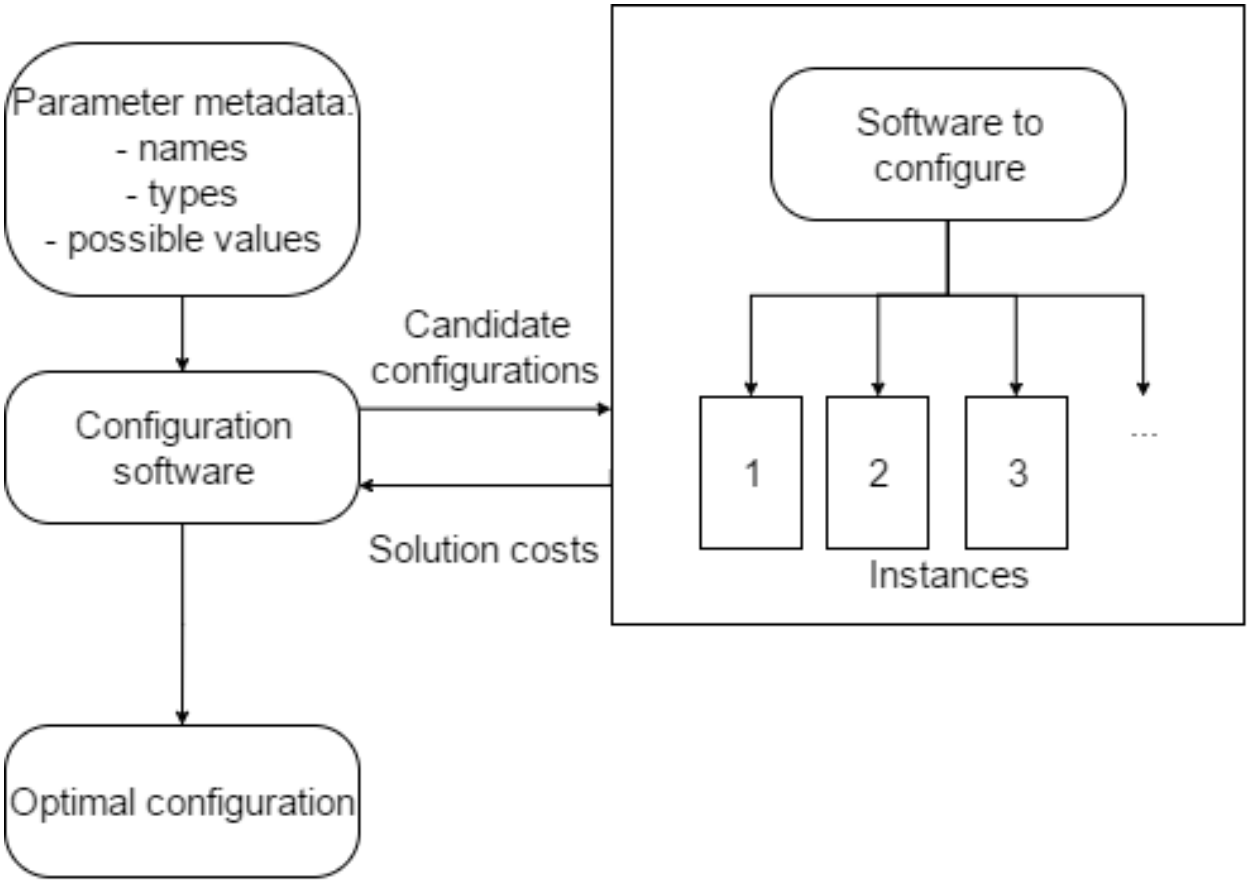
The pheromone trail bias the solution construction.
The ant path represents a problem solution in this case.

Multi-objective Optimization



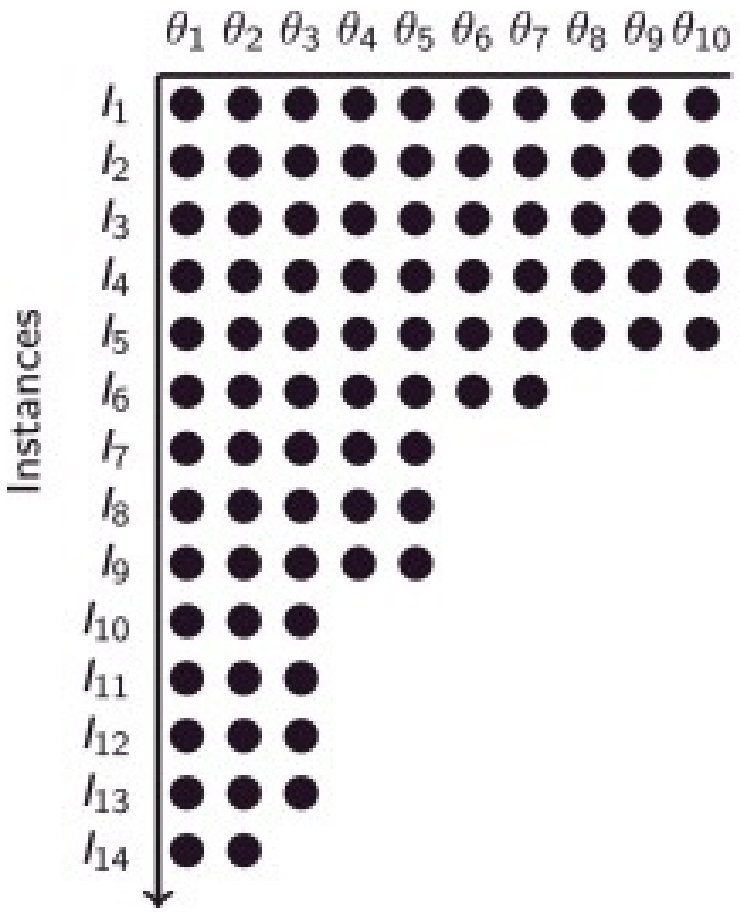
The Pareto Front (set of non-dominated solutions) is the final purpose of the optimization process.

Automatic Configuration



Software components and major data flows scheme

I-RACE



Configurations bypass several iterations of selection where the best ones win

Possible improvements

1. Implementing resolution algorithms for new NP-hard problems within ACO framework (VRP, SUBSET-SUM, KNAPSACK).

2. Object-oriented implementation.

3. Implementing the ACO algorithm stages as parallel algorithms.