Software

El-Ghazali Talbi

Université des Sciences et Techniques de Lille

E-mail : El-Ghazali.Talbi@lifl.fr

PARADISEO (PARAllel and DIStributed Evolving Objects). ParadisEO is a free C++ white-box object-oriented framework dedicated to the reusable design of parallel metaheuristics for (multi-objective) optimization. It is basically an extension of the EO evolutionary computation framework (http://eodev.sourceforge.net). It provides a broad range of new features including local searches (Hill Climbing, Simulated Annealing and Tabu Search), the most common parallel models (based on the walk, the solution and the objective function) and some hybridization mechanisms. ParadisEO is based on a clear conceptual separation of the solution methods from the problems they are intended to solve. This separation confers to the user a maximum code and design reuse. A first implementation relies on a multi-programmation layer (Posix threads) and some communication libraries (LAM-MPI or PVM) for execution on dedicated parallel and/or distributed computational resources. Another implementation relies on Athapascan and Inuktitut for the dynamic scheduling on a dedicated grid environment. A last release will be available soon. It is based on Condor and the Master/Worker API for High Throughput Computing and Grid Computing on volatile non dedicated resources.

GUIMOO (a Graphical User Interface for Multi Objective Optimization). Guimoo is a free software dedicated to the analysis of results in multi-objective optimization.
Its main features enable - The on-line visualization of approximative Pareto frontiers. Such information could be used by the expert to build more efficient metaheuristics. A Pareto frontier may be characterized by its (dis)continuity, (dis)convexity, modality, - some metrics for quantitative and qualitative performance evaluation (contribution, entropy, generational distance, spacing, size of the dominated space, coverage of two sets and coverage difference) GUIMOO aims to be generic. Yet, its architecture permits to easily customize it in order to provide the user more functionalities, as a specific problem is tackled (it was done for radio network optimization). Some 'problems' with related files are supplied for demonstration. They deal with the 'Vehicle Routing Problem' and the 'Flow Shop Scheduling'. The latest release of Guimoo is available either as an executable file on Windows or a tarball of sources on Linux. http://www.lifl.fr/~cahon/logiciels.html.