A Mobile Agent Framework to Support Parallel Computing: Application to Multi-product Planning and Scheduling Problems

Submitted by Emmanuel Lemoine on Thu, 01/30/2014 - 14:51

Titre	A Mobile Agent Framework to Support Parallel Computing: Application to Multi-product Planning and Scheduling Problems
Type de publication	Communication
Type	Communication avec actes dans un congrès
Année	2009
Langue	Anglais
Date du colloque	2009
Titre du colloque	Second International Conference on Developments in eSystems Engineering, DESE 2009
Titre des actes ou de la revue	Proceedings of the 2nd International Conference on Developments in eSystems Engineering
Pagination	335 - 342
Auteur	Belkhelladi, Kamel [1], Chauvet, Pierre [2], Schaal, A. [3], Daya, Bassam [4]
Pays	Emirats arabes unis
Ville	Abu Dhabi
ISBN	978-1-4244-5401-3 / 978-1-4244-5402-0
Mots-clés	Adaptation [5], combinatorial [6], Computer [7], Concurrent [8], Dynamic [9], earliness [10], ETPSP [11], Evolutionary [12], Genetic [13], Information [14], JADE [15], Java [16], mobile [17], multiproduct [18], parallel [19], parameters [20], personal [21], Processor [22], Production [23], Selective [24], user [25]
Résumé en anglais	This paper focuses on an extensible framework for the development of parallel/distributed population-based algorithms. This framework uses mobile agents launched into different hosts on available networked PCs and cooperating among them to solve large combinatorial problems efficiently. The execution environment used to realize our framework is based on the JADE technology. In addition, we define a new information exchange strategy based on a dynamic migration window method and a selective migration model. A parameters adaptation model is also proposed. This model is used to adjust different parameters/operators of the genetic algorithm executed by each mobile agent. The proposed framework has been experimented on an extended set of Earliness and Tardiness Production Scheduling and Planning Problem (ETPSP). Several experiments are carried out on different computer networks of different sizes. Results obtained show the advantages and efficiency of our approach.
Notes	Date du colloque : 12/2000
URL de la notice	http://okina.univ-angers.fr/publications/ua1553 [26]
DOI	10.1109/DeSE.2009.58 [27]

| Lien vers le document en ligne | http://dx.doi.org/10.1109/DeSE.2009.58 [27] |

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