Abstract

Real life problems such as scheduling meeting between people at different locations can be modelled as distributed Constraint Satisfaction Problems (CSPs). Suitable and satisfactory solutions can then be found using constraint satisfaction algorithms which can be exhaustive (backtracking) or otherwise (local search). However, most research in this area tested their algorithms by simulation on a single PC with a single program entry point. The main contribution of our work is the design and implementation of a truly distributed constraint solver based on a local search algorithm using Java Agent DEvelopment framework (JADE) to enable communication between agents on different machines. Particularly, we discuss design and implementation issues related to truly distributed constraint solver which might not be critical when simulated on a single machine. Evaluation results indicate that our truly distributed constraint solver works well within the observed limitations when tested with various distributed CSPs. Our application can also incorporate any constraint solving algorithm with little modifications.

References

- Chen X, van Beek P. Conflict-Directed Backjumping Revisited. JAIR. 2001; 14: 53-81.
- Bethea W L. Adding parametric polymorphism to the common object request broker architecture (CORBA). In Addendum to the proceedings of OOPSLA &apos;00. ACM, NY; 2000: 119-120.

Index Terms
Computer Science Algorithms

Keywords
Constraint Satisfaction Jade Dispel Multi-agent Systems