ANNOUNCEMENT FOR PHD THESIS

Constraints meet concurrency

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Abstract
We investigate the benefits that emerge when the fields of constraint programming and concurrency meet. On one hand, constraints can be use in concurrency theory to increase the conciseness and the expressive power of concurrent languages from a pragmatic point of view. On the other hand, problems modeled by using constraints can be solved faster and more efficiently using a concurrent system. We explore both directions providing two separate lines of contribution. Firstly we study the expressive power of a concurrent language, namely Constraint Handling Rules, that supports constraints as a primitive construct. We show what features of this language make it Turing powerful. Then we propose a framework to solve constraint problems that is intended to be deployed on a concurrent system. For the development of this framework we used the concurrent language Jolie following the Service Oriented paradigm. Based on this experience, we also propose an extension to Service Oriented Languages to overcome some of their limitations and to improve the development of concurrent applications.

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Notes:
- Best doctoral dissertations of 2010–2012 by the Italian Association for Logic Programming (GULP)
- Best doctoral dissertations of 2012 in Theoretical Computer Science by the Italian Chapter of the European Association for Theoretical Computer Science

Reference:
- Constraints meet concurrency, Alma Mater Studiorum Università di Bologna. Dottorato di ricerca inInformatica, 24 Ciclo. DOI 10.6092/unibo/amsdottorato/4341