

Special issue on Constraint Programming – Preface

Constraint programming is an alternative approach to computing in which the programming process is limited to a generation of requirements (constraints) and to solving them by general and domain dependent methods. It has been successfully used in many areas of computer science including optimization, numerical computing, natural language processing, computer algebra and computer graphics, to mention a few. Recent applications outside of computer science include such areas as molecular biology, music and architecture.

Over the last few years constraint programming continued to attract a lot of interest – see, e.g., the Bibliography. The aim of this special issue of CWI Quarterly is to provide the reader with an alternative starting point to a study this exciting area. It also presents selected current research in this area in the Netherlands.

This issue opens with a survey of the theoretical underpinnings of this subject by Zsófia Ruttkay. The next paper, by Rosella Gennari, is an extensive survey of temporal constraints, an important and rich subarea of constraint programming,

One of the main techniques in constraint programming is constraint propagation that deals with an efficient way of reducing constraint satisfaction problems to simpler but equivalent ones. The paper by Apt provides a uniform account of constraint propagation algorithms based on the concept of chaotic iterations and the subsequent paper of Monfroy shows how the framework of chaotic iterations can be profitably used to deal with polynomial constraints over reals.

The remaining two papers deal with concurrent constraint programming. The paper by van Eijk, de Boer, van der Hoek and Meyer shows how the ideas originally developed in the framework of concurrent constraint programming can be used for developing a language for multi-agent systems. Finally, the paper by Etalle and Gabbrielli and Meo deals with the transformations of concurrent constraint programs by means of the techniques originally developed for functional and logic programming languages.

I would like thank the authors of the papers here presented for having agreed to contribute to this special issue.

Krzysztof R. Apt
Guest editor

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