

IntCP 2005 – 2nd CFP

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- *From:* christophe.jermann@xxxxxxxxxxx
 - *Date:* 27 Jun 2005 07:09:07 -0700
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(we apologize for possible multiple reception of this call)

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CALL FOR PAPERS

IntCP 2005 workshop
Interval Analysis and Constraint Propagation for Applications
<http://liawww.epfl.ch/Events/IntCP2005/>

Melia Sitges Hotel
Sitges (Barcelona) Spain
1st October 2005

Held in conjunction with the
Eleventh International Conference on Principles
and Practice of Constraint Programming (CP 2005)

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* Important Dates:

04 Jul 2005 – Submission deadline
29 Jul 2005 – Notification of acceptance
01 Aug 2005 – Early registration deadline
16 Aug 2005 – Final camera-ready copies
01 Oct 2005 – Workshop day

* Description and goals:

Since most physical laws are formulated as numerical constraints, problem areas that use physical models usually involve such constraints (e.g., robotics, control). Moreover, today's computing systems are more and more embedded into their physical environment (modern cars contain thousands of microprocessors), resulting in models of the total system that contain numerical constraints in an essential way. Constraint propagation solvers are appealing for solving

numerical problems because they can guarantee two essential properties:

- * _completeness_ which means the ability to find all solutions if any, or else to prove that there are no solutions to the problem,
- * _rigor_ which means that the rounding errors due to floating-point computation can be rigorously controlled.

These two properties are essential in many practical applications. For instance, real-world problems often have a continuum of solutions which express a spectrum of equally relevant choices, as the possible moving areas of a mobile robot, the collision regions between objects in mechanical assembly, or different alternatives of shapes for the components of a kinematic chain. These alternatives must be identified as completely and rigorously as possible.

Moreover, constraint propagation techniques can flexibly incorporate relaxation techniques and the handling of preferences. This is also an important feature since many applications lead to over-constrained problems.

However, while constraint propagation solvers have proven particularly efficient in solving challenging instances of numerical problems with nonlinear constraints, they do not yet have enough appeal in many practical problem areas.

One of the reasons is that they generally provide representation of the solution set that are either prohibitively verbose or poorly informative. Recent advances have shown however that this matter of fact was not an intrinsic limitation and that constraint propagation can be considerably improved by incorporating techniques from interval analysis and global optimization.

One of the goals of this workshop is to explore the complementarity of different approaches and how it can be used to produce _practical_ powerful solvers. Other topics often relevant in applications are:

- * integrating uncertainty that can, for example, be modeled, by logical quantifiers,
- * exploiting specific problem structure, for example in the case of discrete

time, continuous state systems,

* handling mixture of discrete and continuous problem variables,

* developing specific techniques for inequality constraints or problems with a

huge number of discrete solutions,

* improving solution selection by means of preferences or solution space

"browsing"

We seek contributions that address such questions, and present relevant software

tools, algorithms, theoretical results, or applications of constraint propagation and interval analysis techniques oriented toward real-world problems.

* Workshop format:

This is a half-day workshop, open to the entire community . Its aim is to

provide a forum where researchers currently working in this area can discuss

their most recent ideas and developments and think together about the most

promising new directions. We particularly encourage the presentation of work

that bridge the gap between theory and practice.

* Submissions:

People wishing to give a talk should submit an extended abstract of at least 2

pages. Submissions must be formatted using LNCS packages (see CP formatting

instructions). The title page should include the name, address, telephone number

and electronic mailing address for each author. Please, email all submissions in

postscript or pdf format to :

intcp-sub@xxxxxxxxxxxxx

by July 04th 2005, specifying the name of the contact author in the message.

At least one author of each accepted submission must attend the workshop to present the paper.

The accepted papers will appear in the workshop proceedings, which will be

distributed to the participants.

* Reviewing process:

Submissions will be reviewed by at least one committee member, and will be selected on the basis of their contribution to the topic of the workshop. Authors will receive feedback in the form of reviewers' comments.

* Accomodation/Registration:

Accomodation is provided by the hosting conference CP 2005. All workshop attendees must pay the workshop fee. It is however possible to attend the workshop without paying the CP 2005 regular registration fee.

Please note that a single registration fee provides entry to all CP and ICLP workhops.

* Committee:

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- Frédéric Goualard, University of Nantes, France.
 - Tim Hickey, Brandeis University, USA.
 - Luc Jaulin, ENSIETA Brest, France.
 - Christophe Jermann, University of Nantes, France (co-organizer).
 - Jean-Pierre Merlet, National Institute for Informatics and Control, France.
 - Stefan Ratschan, Max-Planck Institut für Informatik, Germany (co-organizer).
 - Djamila Sam-Haroud, EPFL, Switzerland (co-organizer).
 - Josep Vehi, University of Girona, Spain.

* Contacts:

Send questions about the workshop to : intcp-oc@xxxxxxxxxxxxxx

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