Constraint Programming and Decision Making Workshop, CoProD'08
Friday October, 3rd – Saturday October, 4th
Request for Event Funds

PROJECT DESCRIPTION

Organizer: Dr. Martine Ceberio
Computer Science Department
University of Texas at El Paso
mceberio@utep.edu

1. Introduction

Constraint programming techniques are important components of intelligent systems. They have been applied successfully to a number of fields, such as scheduling of air traffic, software engineering, and networks security. Despite the proven usefulness of these techniques, they are under-utilized in real-life projects, mainly due to the lack of knowledge of researchers and practitioners from other fields about constraints in general and their use in decision making in particular.

Constraint solving and optimization are my primary research areas. I have been on the program committees of several related international conferences. At the University of Texas at El Paso (UTEP), I am leading a research group on constraints; we have been successfully collaborating with researchers from UTEP and from other schools in the US and abroad. In order to build upon our success, I am organizing a workshop at UTEP that will be focused on constraint programming and decision making. The objectives of the workshop are: **1)** to draw together a network of researchers interested in constraint techniques, in particular researchers and practitioners that use numeric and symbolic approaches (or a combination) to solve constraints and optimization problems, and **2)** to address the gap between the great capacity of these techniques and their limited use.

An expected outcome of the workshop is the definition of new directions for combining numeric and symbolic approaches in solving constraints in particular and in decision making in general. From this respect, this workshop is aligned with the current effort of bringing together the numeric and symbolic communities, led by Dr. Lenore Mullin (Program Director for Theoretical Foundations in Numeric, Symbolic and Algebraic Computing and Optimization at NSF).

From a practical point of view, I have scheduled this workshop back-to-back with a large bi-annual international conference, SCAN'2008, on Scientific Computing, Computer Arithmetic and Verified Numerical Computations (http://www.scan2008.com) that will be held in El Paso on Sept. 29-Oct. 3, 2008. I am one of the main organizers of this conference. As an organizer, I have been actively encouraging the participation of the constraint community in this meeting. Out of 8 invited plenary talks, two talks will be given by leaders of the constraint community and we expect several dozens of constraint-related participants from all over the world at this meeting. This conference provides us with a unique opportunity to organize a workshop on constraints and decision.

I am requesting funds for this workshop. Section 2 describes the planned workshop with a tentative schedule and list of participants. An evaluation and assessment plan is provided in Section 3. The actual request and its justification are in Section 4.

2. Description of Workshop

The objectives of the workshop are to:
- Bring together the symbolic and numeric communities in constraint solving in particular, and decision making in general, to design new research directions for combining both approaches, and enhance the solving process of constraint problems;
- Promote awareness of the local, regional, national, and international community about the research in constraint programming and decision making, and its potential impact on their projects;
- Engage scientists in multi-disciplinary, national and international collaborations.

The workshop will gather a group of interested scientists in a series of invited talks during two half-day sessions: the afternoon of Friday October, 3rd, and the morning of Saturday October, 4th. In consultation with the constraint programming leaders who are coming to SCAN'2008, we plan to select invited researchers based on the relevance of the work with our symbolic-numeric emphasis, and the opportunities for multi-disciplinary applications of their research.

The tentative agenda is presented in Table 1.

Table 1: Tentative Agenda for the Constraint Programming and Decision Making Workshop (CoProD)

Time	Activity	Location	Facilitator
Friday October, 3rd 1:00-1:30 pm	Welcome	Meeting room	Martine Ceberio and Ann Gates / Dean
1:30-2:00 pm	Keynote Speech	Meeting room	To be announced
2:00-3:30 pm	Invited Talks	Meeting room	List of speakers provided later in this document
3:30-4:00 pm	Break	Lobby	
4:00-5:30 pm	Invited Talks	Meeting room	List of speakers provided later in the document
5:30-6:15 pm	Round table	Meeting room	All participants
Saturday October, 4th 08:00-08:30 am	Coffee	Lobby	
08:30-10:30 am	Invited Talks	Meeting room	List of speakers provided later in the document
10:30-10:45 am	Break	Lobby	
10:45-12:15 am	Invited Talks	Meeting room	List of speakers provided later in the document
12:15-12:25	Concluding Remarks	Meeting room	Martine Ceberio
12:25-12:40	Evaluation	Meeting Room	Hand-outs

The sessions will consist of a good balance of algorithms, emphasizing the potential of combining numeric and symbolic approaches, and applications, showing the success of such combinations. In each of the two sessions, the first part will be on constraint solving and decision making algorithms, and the second part on applications.

The schedule of the workshop is designed in such a way that researchers have plenty of time for interaction outside the talks. In particular, at the end of the first afternoon, we plan to organize a round table that will allow researchers to exchange ideas about their need for decision techniques and for applications. The discussion will be oriented towards combining numeric and symbolic algorithms for constraint solving and decision making, and their potential use for applications.

At the end of the workshop, the participants will complete a survey during the Evaluation part of the tentative schedule.

The workshop will result in the following:
- A report on the assessment of the workshop, participant's experience and reactions, and identification of scientist needs in terms of constraints and decision;
- The development of new collaborations, and the initiation with a mailing list and formalization of a web presence, of the CoProD (Constraint Programming and Decision Making) network.

The workshop will include scientists from several fields including Electrical and Computer Engineering, Civil Engineering, Computational Mathematics, Bioinformatics, and Computer Science. Table 2 presents a tentative list of invitees.

Table 2: Anticipated list of participants for the CoProD Workshop.

Name	Affiliation	Area
1. Dr. Martine Ceberio, organizer	UTEP	Computer Science
2. Dr. Michel Rueher	University of Nice-Sophia Antipolis, France	Computer Science
3. Dr. Gilles Trombettoni	University of Nice-Sophia Antipolis, France	Computer Science
4. Dr. Frederic Goualard	University of Nantes, France	Computer Science
5. Dr. Vladik Kreinovich	UTEP	Computer Science
6. Dr. Francois Modave	UTEP	Computer Science
7. Dr. Ann Gates	UTEP	Computer Science
8. Dr. David Novick	UTEP	Computer Science
9. Dr. Eric Freudenthal	UTEP	Computer Science
10. Dr. Yoonsik Cheon	UTEP	Computer Science
11. Dr. Pavel Solin	UTEP	Mathematics
12. Dr. Leticia Velasquez	UTEP	Computational Mathematics
13. Dr. Ming-Ying Leung	UTEP	Bio-informatics
14. Dr. Ricardo von Borries	UTEP	Electrical and Computer Engineering
15. Dr. Joseph Pierluissi	UTEP	Electrical and Computer Engineering
16. Dr. Patricia Nava	UTEP	Electrical and Computer Engineering
17. Dr. Parisa Shokouhi	UTEP	Civil Engineering
18. Dr. Soheil Nazarian	UTEP	Civil Engineering
19. Dr. Enrico Pontelli	NMSU	Computer Science
20. Dr. Son Tran Cao	NMSU	Computer Science
21. Dr. Hung Nguyen	NMSU	Computer Science
22. Dr. Yuanlin Zhang	Texas Tech University	Computer Science

23. about 10 students	Distributed from the above-mentioned institutions	Distributed from the above-mentioned areas
24. about 5 more faculty among the Colleges of Science and Engineering	UTEP	TBD

3. Assessment and Evaluation

The funded activity will include assessment and evaluation to examine the impact of the CoProD Workshop, and the value of the workshop.

At the **end of the workshop** (during what is called the Evaluation part of the workshop), participants will be asked to complete a **survey** that captures their background and knowledge of constraint programming and decision prior to the workshop. The survey will also inquire about the impact of the workshop, in terms of:
- New expected research collaborations;
- How much they learned; and
- Whether they plan to integrate more constraint-based intelligent systems in their projects.

By the **end of October**, a **report** will be written that will:
- Describe the attendance: to show how the workshop succeeded to unite the communities of symbolic and numeric researchers, as well as the practitioners;
- Summarize the presentations given at the workshop and their potential for impacting the communities;
- Describe the new directions for combined numeric-symbolic approaches discussed during the round table of the workshop;
- Highlight the potential research collaborations that sprung from the workshop.

Six months after the end of the workshop (early April 2009), another **survey** will be sent to the participants, to evaluate, with enough hindsight, the actual impact of the workshop on collaborations, and also to provide a preliminary assessment of the first months of the CoProD network. The compiled results of both surveys will be sent to all of the participants.

A significant impact is anticipated, as the workshop is expected to:
- Emphasize the potential of symbolic-numeric algorithms in solving constraints and their impact on applications;
- Help design new directions for promising new combinations of symbolic and numeric approaches to solving constraints;
- Enhance the visibility of constraint research and hence the potential collaborations among researchers;
- Encourage new scientists to attend similar workshops that we plan to organize in the future.

4. Intellectual Merit

This workshop will bring together preeminent researchers from the constraint and decision making communities, and to have them interact with practitioners in a very special setting, where the emphasis

is clearly to draw new research directions.

Such a workshop is much needed as there is very little connection between real practitioners and researchers in constraints and decision making, and also because it will be a unique opportunity to bring together researchers mainly focused on combining symbolic and numeric solving and decision methods. CoProD'08 has the potential to impact these communities by easing collaborations and creating a network of interest.

5. Broader Impact

Besides the impact on the researchers and practitioners communities of the attendees, CoProD'08 will benefit to a broader range of people by creating a web presence through the creation of the CoProD network mailing list and the design of a webpage for this network. At first, only the attendees of the conference will be members of the network, but access to the webpage will not be restricted to them, and joining the network will be made possible through this webpage.

Moreover, local students will be involved in the organization of the workshop: my undergraduate as well as graduate students will be part of the organizing team. They will also be given the opportunity to exhibit posters about their constraint-related work outside of the workshop room, and so will the students of the other attendees.

6. Timeline

July 2008	* Contact with the Constraint Programming researchers coming to SCAN 2008 to prepare the program of CoProD'08 * Design of the CoProD website and continue advertisement[*]
August 2008	* Send invitations
End of August 2008	* Finalize the program * Reservation of the room of the workshop
October 3rd-4th, 2008	* Workshop
October 2008	* Analysis of the evaluation of the workshop * Writing of the report * All presentations posted on the website of the workshop
End of October 2008	* Report is delivered and posted on the website of the workshop
April 2009	* The second survey is sent to the attendees of CoProD'08 * Analysis of the survey
October 2009	* CoProD'09

[*] CoProD'08 is already announced and jointly advertised on the website of SCAN'08 (http://www.scan2008.com).

7. Budget

Funds are requested to hold one workshop to be held in El Paso, Texas, at the University of Texas at El

Paso. The workshop will include local, regional, national and international participants, and is anticipated to gather approximately 30-35+ participants.

The workshop will be held during two half-day sessions. The funds will support the involvement of regional (1), national (1), and international participants (3), including transportation (except for the three international researchers), room and per diem.

The total estimated cost is: **$4,014** (direct cost). The breakdown of costs (predicted for 35 participants) is summarized as follows:

Table 3. Requested funds: summary of the cost breakdown.

Room reservation (2 half days + fee for Saturday)	$400
Coffee breaks (x4)	$715
Invited speakers (travel + hotel + per diem)	$2,528
Logistics costs	$371
TOTAL of direct costs:	**$4,014**

Indirect costs are 48% of the direct costs, which brings the total cost to **$5,941**.