RACES 2012 –
The SPLASH 2012 Workshop on Relaxing Synchronization
for Multicore and Manycore Scalability

Co-located with SPLASH in Tucson, Arizona
Workshop date: Sunday, October 21
Submission date: Monday, August 6
Workshop website: http://soft.vub.ac.be/races/

CALL FOR PARTICIPATION

Massively-parallel systems are coming: core counts keep rising – whether conventional cores as in multicore and manycore systems, or specialized cores as in GPUs. Conventional wisdom has been to utilize this parallelism by reducing synchronization to the minimum required to preserve determinism – in particular, by eliminating data races. However, Amdahl's law implies that on highly-parallel systems even a small amount of synchronization that introduces serialization will limit scaling. Thus, we are forced to confront the trade-off between synchronization and the ability of an implementation to scale performance with the number of processors: synchronization inherently limits parallelism. This workshop focuses on harnessing parallelism by limiting synchronization, even to the point where programs will compute inconsistent or approximate rather than exact answers.

Organizers:
Andrew P. Black, Portland State University
Theo D'Hondt, Vrije Universiteit Brussel
Doug Kimelman, IBM Thomas J. Watson Research Center
Martin Rinard, MIT CSAIL
David Ungar, IBM Thomas J. Watson Research Center

Theme and Topics

A new school of thought is arising: one that accepts and even embraces nondeterminism (including data races), and in return is able to dramatically reduce synchronization, or even eliminate it completely. However, this approach requires that we leave the realm of the certain and enter the realm of the merely probable. How can we cast aside the security of correctness, the logic of a proof, and adopt a new way of thinking, where answers are good enough but not certain, and where many processors work together in parallel without quite knowing the states that the others are in? We may need some amount of synchronization, but how much? Or better yet, how little? What mental tools and linguistic devices can we give programmers to help them adapt to this challenge? This workshop focuses on these questions and related ones: harnessing parallelism by limiting synchronization, even to the point where programs will compute inconsistent or approximate rather than exact answers.

This workshop aims to bring together researchers who, in the quest for scalability, have been exploring the limits of how much synchronization can be avoided. We invite submissions on any topic related to the theme of the workshop, *pro or con*. We want to hear from those who have experimented with formalisms, algorithms, data structures, programming languages, and mental models that push the limits. In addition, we hope to hear from a few voices with wilder ideas: those who may not have reduced their notions to practice yet, but who have thoughts that can inspire us as we head towards this yet-uncertain future. For example, biology may yield fruitful insights. The ideal presentation for this workshop will focus on a grand idea, but will be backed by some experimental result.

Submission

Authors are invited to submit short position papers, technical papers, or experience reports. Submissions may range from a single paragraph to as long as desired, but the committee can only commit to reading one full page. Nonetheless, we expect that in many cases reviewers will read farther than that. Submissions should be formatted according to the ACM SIG Proceedings style at http://www.acm.org/sigs/publications/proceedings-templates and should be submitted via EasyChair at http://www.easychair.org/conferences/?conf=races2012 in PDF format.

PLEASE NOTE: All submissions (except for those retracted by their authors) will be posted on the workshop website, along with reviews, which will be signed by the reviewers, and a rating assigned by the program committee. Further, the submissions to be presented at the workshop will be selected by a vote of all registered attendees. As well, submissions to be published in an official proceedings will be selected by the program committee. Please see the sections below concerning the rationale and details for this process.

Program Committee

– TBA –

Important Dates

August 6	Submission deadline.
August 29	Reviews sent to authors.
September 3	Last date for retraction by authors.
September 4	Papers, reviews, ratings posted on web site. Voting opens.
September 11	Voting closes.
September 14	Notification of papers accepted for presentation and/or publication.
August 21	SPLASH early registration deadline.
October 21	Workshop.
mid-November	Camera-ready copy due for papers selected for proceedings.

Goals and Outcomes

We will consider the workshop a success if attendees come away with new insights into fundamental principles, and new ideas for algorithms, data structures, programming languages, and mental models, leading to improving scaling by limiting synchronization, even to the point where programs will compute inconsistent or approximate rather than exact answers. The goal of this workshop is both to influence current programming practice and to initiate the coalescence of a new research community giving rise to a new subfield within the general area of concurrent and parallel programming. Results generated by the workshop will be made persistent via the workshop website and possibly via the ACM Digital Library.

The RACES 2012 Review Process and Workshop Presentation Selection Process

David Ungar
IBM Thomas J. Watson Research Center
PC Chair for Workshop Presentations

Technology has changed the economic tradeoffs that once shaped the reviewing process. It has become cheap and easy to share submissions, reviews and the preferences of the attendees. What remains scarce is the number of hours in a day, and as a consequence the time we have in our workshop in which to learn and share with each other. I believe that this change in the balance of factors affords us the opportunity to significantly improve the review and selection processes.

Sadly, all too often, those who spend their precious time attending a workshop are not served as well they could be with respect to enlightenment, thought provoking discussions, and being challenged by new ideas. The fault lies not in the people who generously donate their time to serve on program committees and do external reviews. Rather, the fault lies in the process itself. The very notion of acceptance by committee forces us to boil a rich stew of reactions, insights, and opinions, down to a single carrot. As a result, it is common for PC members to come away from a meeting feeling that either some fraud will be perpetrated on the audience by a fundamentally flawed paper, or, more often, feeling that a sin of omission will be committed on the audience by the suppression of a significant but controversial new idea. Sometimes instead of a carrot we get a lump of gristle.

There are other, lesser, flaws in this process. Although reviewer anonymity protects negative reviewers from resentment and reprisal, all too often it prevents an open debate that would promote mutual understanding. Further, in some cases anonymity allows a reviewer to cast aspersions on authors without being accountable. Finally, we fail to take maximal advantage of the time and effort spent in creating insightful reviews when we withhold them from the audience. Attendees and readers could benefit from expert reactions as they try to glean the wisdom embedded in the authors' papers.

In this workshop, we have an opportunity to try a different process, one that we hope will serve all parties better: All reviews will be signed, all submissions and reviews will be posted on the web (unless an author chooses to retract a submission), and the attendees will be the ones selecting which papers will be presented.

Here are the details:

At least three committee members will review each submission, and each review will be signed. Once all the reviews for a submission are in, they will be sent to the author, who can decide to retract the paper if so desired. Then, all submissions (except any that are retracted) will be posted on the workshop website, along with all reviews and a net score determined for each submission by the program committee.

At this point, prior to the workshop, all registered attendees will be invited to read the submissions and the reviews, and vote on which of the papers they want to see presented. Of course, an attendee who so wishes will be free to merely vote according to the recommendation of the PC, or to not vote and to accept the wisdom of the rest of the attendees. But the important point remains: it will be those who will be spending the time in the room who get to decide how that time is spent. Please note that a submission being posted on the workshop website and/or presented at the workshop are not intended to constitute prior publication for purposes of publishing in other workshops, major conferences, or journals.

This process is a grand experiment, designed to exploit the technologies we Computer Scientists have created, in order to better serve the advancement of Computer Science. We hope that its potential excites you as much as it excites us!

The RACES 2012 Published Proceedings Paper Selection Process

Theo D'Hondt
Vrije Universiteit Brussel
PC Chair for Proceedings Papers

We understand that many submitters may want to publish their paper in an official proceedings in addition to having it posted on the workshop website. In order to satisfy that desire, we will publish a proceedings via the ACM Digital Library. To satisfy ACM DL selectivity requirements, a separate and more conventional process will be employed for selecting papers to be included in the published proceedings: Even though all submissions will be posted on the workshop website (unless retracted by the author), the program committee will select a smaller number of papers to be included in the published proceedings based on the signed and posted reviews. Authors of the selected papers will be asked to submit revised and extended papers mid-November, taking into account the reviews and the publisher's guidelines. Page limits for the revised and extended papers to be included in the published proceedings are anticipated to be 10 pages for research papers, and 5 pages for position papers. Please note that inclusion in the ACM Digital Library published proceedings may well be considered to be a prior publication for purposes of publication in other workshops, major conferences, or journals. For that reason, authors may choose to decline to have their submission included in the published proceedings, even if it was presented at the workshop.