

Sustainable C[★]omputing

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Monthly bulletin of the IEEE Computer Society Special Technical Community on Sustainable Computing
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Volume 2 Issue 4

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Community Highlights: Luiz André Barroso

In this feature we ask a prominent researcher in the field of sustainable computing to share their journey and lessons along the way with the broader community. In this issue we have the privilege to sit down with Dr. Luiz André Barroso, perhaps most known for his research on large-scale systems and his highly influential work on energy proportional computing.



Luiz André Barroso

Google Fellow, Google Inc.

Education:

University of Southern California

Pontifícia Universidade Católica, Rio de Janeiro

Currently working on:

Building very very very large computers that run useful Internet services.

Favorite memory as a student/advisor/researcher:

Two phone calls were big: getting a phone call from Norm Jouppi in my grad student office on a Saturday afternoon in 1995 asking me if I would like to interview for a research position at DEC WRL; and calling my friend Jeff Dean in 2001 asking him to convince me to accept the offer to join Google (his winning argument was "have you considered our crème brûlées?"). As a researcher, being asked to write the Foreword to the 5th edition of Hennessy & Patterson's book over a year ago still seems unreal today.

Could you share a research contribution from your research, and explain why this is something that you are particularly proud?

Our 2007 article on energy proportional computing has probably had the most impact. It's a really obvious concept that perhaps Urs and I were the first to articulate clearly enough in a wide distribution venue (IEEE Computer). I believe that if I have any talent that is above average it is my keen appreciation for the obvious. I am also proud of my first research publication in a top tier conference, a paper at ISCA 1993 on cache-coherent ring-based interconnects.

Explain one thing that makes your work exciting for you?

Brilliant colleagues. In that category I may be one of the luckiest guys in our field. I've had the chance to work with people like Kourosh Gharachorloo, Andreas Nowatzky, Susan Eggers, Jeff Dean, Sanjay Ghemawat, Mike Burrows, Dick Sites, Urs Hölzle, Alan Eustace, Amin Vahdat, Eric Brewer, Sean Quinlan, David Presotto, and many others at Google as talented but perhaps less known (yet). I've also had an insanely great list of interns over the years, including Partha Ranganathan (HP Fellow), Rob Stets and Gautham Thambidorai (both Distinguished Engineers at Google), Ed Buginon (co-founder of VMware), Jack Lo (Sr. Director at VMware), Alex Ramirez (UPC Professor) and recently David Meisner (just graduated and joined Facebook).

What do you think is (are) the important problem(s) to be solved in the next 10 years within sustainable computing?

I think the world needs more useful, intelligent computing. The greatest potential for computing to contribute to a sustainable planet is more than simply making computing more energy efficient. Although those improvements are absolutely necessary, their impact is dwarfed by the smart application of computing technology in increasing efficiencies in other industries (transportation, manufacturing, etc.). We forget how much computers already make our daily lives more efficient. For example, in 2009 the computer that controlled traffic lights in Montgomery County, Maryland went down. Even though all traffic lights were still working, the system lost its ability to make subtle adjustments to the timing of multiple lights and to adapt to the flow of commute patterns. That little computer was the difference between normal busy traffic and a 40 hour long national news story about traffic chaos.

What courses and skills are most important for students wanting to work in this area?

Not sure what to say regarding academic courses. A good skill to develop early on is the ability to pick good problems. Developing that kind of judgment is the single most important ability bounding how much impact you can have. Pick a mediocre problem and you are bound to have mediocre impact, regardless of the brilliance of your solution. Pick a big important problem, solve 10% of it, and you have something to be proud of.

STC Updates

By Danilo Ardagna, Politecnico di Milano



Membership: 528

Officers reports from July 31, 2013 to October 31, 2013

Report from Secretary/Treasurer (Danilo Ardagna):

- Collected officers' activity reports and prepared monthly STC report

Report from Conferences Chair (Diwakar Krishnamurthy):

- Solicited collaborations from Middleware 2013, MICRO 2013, CloudCom 2013, and HiPC 2013 conference organizers.
- Continued to update and expand list of conferences related to the STC

Report from Academic Chair (Niklas Carlsson):

- Working with the industry chair on the next community highlight feature(s)

Report from Membership Chair and vice-Chair (Sergey Blagodurov, Matthew Forshaw):

- Counted the number of members every week for the past month and updated the STC-SC dashboard of our website. As of October 27th 2013, we have 528 members
- Gradually sent invitations to the potential STC-SC members and continues to work on the new invitation list

Report from Communications Chair (Abhishek Chandra):

- Working with the communications vice-chair to compile the list of upcoming events and deadlines for inclusion in the newsletter

Report from Industry Chair (Canturk Isci):

- Finalizing the next community highlights feature with the Academic Chair

Report from Information Officers (Danilo Ardagna, David Carrera, Fan Dongrui, Guillaume Jourjon):

- Contributed material for newsletter and blogs

Report from the Newsletter Editor (Christopher Stewart):

- Put out October newsletter
- Devising more sustainable model for article contributions

Upcoming Events

By Abhishek Chandra, University of Minnesota
and Bhuvan Urgaonkar, Penn State University

Conference, Workshop & Symposium Call For Papers

Short Name	Main Topic	Location	Dates	Papers Due	Notification
Smart Greens	Smart Grids and Green IT systems	Barcelona, Spain	Apr. 3-4, 2014 May 19-23,	Oct. 3, 2013	Jan. 29, 2014
IPDPS	Parallel and Distributed Processing	Phoenix, Arizona	2014	Oct. 18, 2013	Dec. 09, 2013
ICDCS	Distributed Computing	Madrid, Spain	June/July 2014	Nov. 15, 2013	Feb. 24, 2014
Sigmatrics	Performance Modeling and Simulation	Austin, Texas	June 16-20,	Dec. 2, 2013	Feb. 17, 2014
eEnergy	Future Energy Systems	Cambridge, UK	2014	Jan 15, 2014	Mar. 21, 2014

Journal and Special Issue Call For Papers

Journal	Papers Due	Notification
Sustainable Computing		

Conference, Workshop & Symposium Call for Participation

Short Name	Main Topic	Location	Dates
HotPower	Power management of computer systems	Farmington, PA	Nov. 3, 2013
SOSP	Operating Systems	Farmington, PA	Nov. 3-6, 2013

Visit <http://stc-sustainable-computing.ieee.net/venues> for more information.

STC-SC Officers

Chair: Anirban Hahanti, NICTA	Policies and Procedures: Stephen Dawson, SAP
Secretary/Treasurer: Danilo Ardagna, Politecnico di Milano	Industry Chair: Canturk Isci, IBM
Conferences: Diwakar Krishnamurthy, University of Calgary	Editor: Christopher Stewart, Ohio State University
Conferences: Amarjeet Singh, IIIT-Delhi	Editor: David Chiu, Washington State University Vancouver
Academics: Niklas Carlsson, Linköping University	Information: David Carrera, UPC BarcelonaTech
Membership: Sergey Blagodurov, Simon Fraser University	Information: Danilo Ardagna, Politecnico di Milano
Membership: Matthew Forshaw, Newcastle University	Information: Fan Dongrui, Inst. of Computing Technology
Communication: Abhishek Chandra, University of Minnesota	Information: Guillaume Jourjon, NICTA
Communication: Bhuvan Urgaonkar, Penn State	Web Master: Yan Shvartzshnaider, University of Sydney