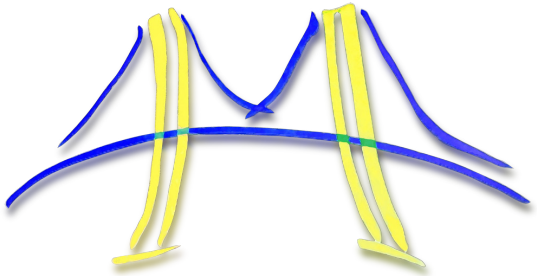
Save the Date! May 30, 2013



We write to ask you **to save the date of May 30, 2013** to attend the celebration of the end of the Par Lab project. The day will be filled with demonstrations of new parallel technology.

By way of background, in *The Landscape of Parallel Computing Research: A View from Berkeley*, we wrote

> "Since real world applications are naturally parallel and hardware is naturally parallel, what we need is a programming model, system software, and a supporting architecture that are naturally parallel. Researchers have the rare opportunity to re-invent these cornerstones of computing, provided they simplify the efficient programming of highly parallel systems."

We soon formed the Parallel Computing Laboratory, or Par Lab, which is a multidisciplinary research project exploring the future of parallel processing. The Universal Parallel Computing Research Center (UPCRC), announced in March 2008, is the foundation of the Par Lab. It is a five-year, $10M award from Intel and Microsoft that is a result of a competition between the 25 top Computer Science departments.

In our proposal we said the Par Lab has no pre-conceived ideas that we were trying to prove, but that we would let applications drive the development of good ideas to advance parallel computing. The celebration will consist largely of demonstrations of those good ideas, including these highlights, most of which did not appear in our proposal:

- *Our Pattern Language (OPL),* which describes the underlying atoms of computation (computational patterns) and the molecular bonds which allow these atoms to be composed into more complex structures (structural patterns).
- *Communication avoiding-algorithms (CAA),* which demonstrate order of magnitude performance improvements in both theoretical lower bounds and actual performance of programs composed of nested loops and arrays that are a linear function of the indices.
- *Selective Embedded Just-In-Time Specialization (SEJITS),* which allows domain experts to write in highly productive languages like Python yet achieve performance close to that of expert programmers writing in efficiency-oriented languages like C++.
- *Tessellation Operating System,* which supports isolation to allow programmers to deliver more predictable performance on interactive applications.
- *Chisel Hardware Description Language,* which improves the productivity of hardware designers by raising the level of abstraction by offering modern programming language features and thereby more easily exploring the design space, leading to several new parallel architectures and chips.
- We will also demonstrate advances in parallel testing, parallel debugging, and parallel program synthesis.

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The ideas above led to dramatic changes to several fields as a result of successfully applying parallelism, including pediatric MRI, online speech understanding, and music composition and performance.

RSVP: parlab.eecs.berkeley.edu/endofproject

**Register for on-site or online attendance. Registration opens Monday, April 15, 2013. The deadline to register is Friday, May 17, 2013.*

See you next May,
David Patterson,
Director, Parallel Computing Laboratory

Questions? contact: parlab-admin@eecs.berkeley.edu