

# Hardware design and Functional Languages

Braga, Portugal, 24–25 March 2007, with ETAPS

## CALL FOR ABSTRACTS

We plan to hold a two-day workshop on the topic *Hardware design and Functional Languages*. The workshop will be held on 24–25 March 2007 in Braga, Portugal—just before ETAPS, the group of conferences that includes TACAS.

It has become clear that more abstract representations and verification techniques are needed to keep up with the ever-increasing complexity and size of modern hardware designs. Today, the abstraction level of design descriptions is similar to the level in the mid 1980s. This is despite the fact that designs today are more than three orders of magnitude larger than the designs of the 1980s. To compound the problem, some traditional abstractions, e.g., that wires have negligible delays, are no longer valid. There are many challenging research problems in this domain. These start with language design and verification technology and go the whole way down to how subtle electrical and quantum physics effects should be modeled and represented in abstract models.

The intention of the workshop is to bring together researchers in modern functional languages, hardware description languages, high-level modeling and validation, and formal design environments. It will allow participants to learn about the current state of the art in these domains, and it is intended to spark debate about how more effective description and verification methods can be developed.

Much research in hardware design and verification now takes place in industry, rather than in academia. For the long term survival of the field and to create true breakthrough solutions, we must ensure that academics and industrial researchers continue to work together to help solve the real problems facing microprocessor developers and those developing System on a Chip solutions. We believe, particularly, that we need help from the functional programming community, and this is why we have organised a workshop that focuses on functional languages. A major aim of this workshop is to open the necessary communication channels both between research areas and between academia and industry. A successful workshop held at Intel in 2005 started the process, and now we want to continue it. This call invites you to submit a one page description of a talk that you would like to give at this workshop.

The workshop will be in the same spirit as the Designing Correct Circuits series, but with a clear focus on functional languages. We intend to try to arrange a special issue of a journal (with a separate reviewing process) to contain the best papers from the workshop.

## Abstracts due by 8 December 2006

If you would like to speak at this workshop, submit a one page abstract of your talk to the workshop email address ([hlf07@hflworkshop.org](mailto:hlf07@hflworkshop.org)) by 8 December 2006. The abstract should describe original work, and should indicate what distinguishes your work from other research on functional languages that is relevant to hardware design. Describe the status of your work (for example industrial experience with conclusions, new idea with prototype implementation, new theory, comparison of methods). Include a list of references on a second page if you wish. Researchers from both industry and academia are encouraged to submit talks. Speakers who would be willing to present research problems that they face (and with which they need help) would also be welcome.

The final programme will be agreed by the workshop committee no later than 10 January 2006. A final version of material for the participants' proceedings will be due on around 1 February 2007. This would preferably be a draft paper, but could also be slides.

## Workshop Committee for HFL 2007

Arvind (MIT)  
Jim Grundy (Intel Corporation)  
Warren A. Hunt, Jr. (University of Texas at Austin)  
Steven D. Johnson (Indiana University)  
Andy Martin (IBM Research)  
Tom Melham (University of Oxford)  
Simon Peyton Jones (Microsoft Research)  
Marc Pouzet (University of Paris-Sud)  
Brian Rogoff (ARM Physical IP, Inc.)  
Carl Johan Seger (Intel Corporation)  
Tim Sheard (Portland State University)  
Mary Sheeran (Chalmers)  
Satnam Singh (Microsoft Corporation)  
Joe Stoy (Bluespec, Inc.)  
Walid Taha (Rice University)  
Matthew Wilding (Rockwell Collins Advanced Technology Center)

## Web Pages

The HFL'07 web page is at <http://hfl07.hflworkshop.org/>.

The ETAPS'07 web page is at <http://www.di.uminho.pt/etaps07/>.

*Andy Martin, Carl Johan Seger, Mary Sheeran*