

# ICFP 2009 Final Program

## Monday, August 31, 2009

### Invited Talk (Chair: Andrew Tolmach)

9:00 **Organizing Functional Code for Parallel Execution; or, foldl and foldr Considered Slightly Harmful**  
*Guy L. Steele, Jr.*; Sun Microsystems

### 10:00 Break

### Session 1 (Chair: Shin-Cheng Mu)

10:25 **Functional Pearl: La Tour D'Hanoi**  
*Ralf Hinze*; University of Oxford

10:50 **Purely Functional Lazy Non-deterministic Programming**  
*Sebastian Fischer<sup>1</sup>, Oleg Kiselyov<sup>2</sup>, Chung-chieh Shan<sup>3</sup>*;  
<sup>1</sup>Christian-Albrechts University, <sup>2</sup>FNMO, <sup>3</sup>Rutgers University

### 11:15 Break

### Session 2 (Chair: Koen Claessen)

11:40 **Safe Functional Reactive Programming through Dependent Types**  
*Neil Sculthorpe and Henrik Nilsson*; University of Nottingham

12:05 **Causal Commutative Arrows and Their Optimization**  
*Hai Liu, Eric Cheng, Paul Hudak*; Yale University

### 12:30 Lunch break

### Session 3 (Chair: Manuel Chakravarty)

14:00 **A Functional I/O System or, Fun for Freshman Kids**  
*Matthias Felleisen<sup>1</sup>, Robert Bruce Findler<sup>2</sup>, Matthew Flatt<sup>3</sup>, Shriram Krishnamurthi<sup>4</sup>*; <sup>1</sup>Northeastern University, <sup>2</sup>Northwestern University, <sup>3</sup>University of Utah, <sup>4</sup>Brown University

14:25 **Experience Report: Embedded, Parallel Computer-Vision with a Functional DSL**  
*Ryan R. Newton<sup>1</sup> and Teresa Ko<sup>2</sup>*; <sup>1</sup>MIT, <sup>2</sup>UCLA

14:45 **Runtime Support for Multicore Haskell**  
*Simon Marlow, Simon Peyton Jones, Satnam Singh*; Microsoft Research

### 15:10 Break

### Session 4 (Chair: Amal Ahmed)

15:35 **Effective Interactive Proofs for Higher-Order Imperative Programs**  
*Adam Chlipala, Gregory Malecha, Greg Morrisett, Avraham Shinnar, Ryan Wisnesky*; Harvard University

16:00 **Experience Report: seL4: Formally Verifying a High-Performance Microkernel**  
*Gerwin Klein<sup>1</sup>, Philip Derrin<sup>2</sup>, Kevin Elphinstone<sup>1</sup>*; <sup>1</sup>NICTA & UNSW, <sup>2</sup>NICTA

16:20 **Biorthogonality, Step-Indexing and Compiler Correctness**  
*Nick Benton<sup>1</sup> and Chung-Kil Hur<sup>2</sup>*; <sup>1</sup>Microsoft Research, <sup>2</sup>University of Cambridge

### 16:45 Break

### Session 5 (Chair: Stephanie Weirich)

17:10 **Scribble: Closing the Book on Ad Hoc Documentation Tools**  
*Matthew Flatt<sup>1</sup>, Eli Barzilay<sup>2</sup>, Robert Bruce Findler<sup>3</sup>*;  
<sup>1</sup>Univ. of Utah, <sup>2</sup>Northeastern University, <sup>3</sup>Northwestern University

17:35 **PC Chair's Report**  
*Andrew Tolmach*; Portland State University

17:55 **Close**

## Tuesday, September 1, 2009

### Invited Talk (Chair: Graham Hutton)

9:00 **Lambda, the Ultimate TA: Using a Proof Assistant to Teach Programming Language Foundations**  
*Benjamin C. Pierce*; University of Pennsylvania

### 10:00 Break

### Session 6 (Chair: Xavier Leroy)

10:25 **A Universe of Binding and Computation**  
*Daniel Licata and Robert Harper*; Carnegie Mellon University

10:50 **Non-Parametric Parametricity**  
*Georg Neis, Derek Dreyer, Andreas Rossberg*; MPI-SWS

### 11:15 Break

### Session 7 (Chair: Robby Findler)

11:40 **Finding Race Conditions in Erlang with QuickCheck and PULSE**

*Koen Claessen<sup>1</sup>, Michal Patka<sup>1</sup>, Nicholas Smallbone<sup>1</sup>, John Hughes<sup>2</sup>, Hans Svensson<sup>2</sup>, Thomas Arts<sup>2</sup>, Ulf Wiger<sup>3</sup>*;  
<sup>1</sup>Chalmers University of Technology, <sup>2</sup>Chalmers University of Technology and Quviq AB, <sup>3</sup>Erlang Training and Consulting

12:05 **Partial Memoization of Concurrency and Communication**

*Lukasz Ziarek, KC Sivaramakrishnan, Suresh Jagannathan*; Purdue University

### 12:30 Lunch break

### Session 8 (Chair: Conor McBride)

14:00 **Free Theorems Involving Type Constructor Classes**  
*Janis Voigtländer*; Technische Universität Dresden

14:25 **Experience Report: Haskell in the "Real World" : Writing a Commercial Application in a Lazy Functional Language**

*Curt J. Sampson*; Starling Software

14:45 **Beautiful Differentiation**  
*Conal M. Elliott*; LambdaPix

### 15:10 Break

### Session 9 (Chair: Jim Hook)

15:35 **OXenstore: An Efficient Hierarchical and Transactional Database using Functional Programming with Reference Cell Comparisons**  
*Thomas Gazagnaire and Vincent Hanquez*; Citrix Systems

16:00 **Experience Report: Using Objective Caml to Develop Safety-Critical Embedded Tools in a Certification Framework**

*Bruno Pagano<sup>1</sup>, Olivier Andrieu<sup>1</sup>, Thomas Moniot<sup>1</sup>, Benjamin Canou<sup>2</sup>, Emmanuel Chaillou<sup>3</sup>, Philippe Wang<sup>3</sup>, Pascal Manoury<sup>4</sup>, Jean-Louis Colago<sup>5</sup>*; <sup>1</sup>Esterel Technologies, <sup>2</sup>LIP6 - PPS - UPMC, <sup>3</sup>LIP6 - UPMC, <sup>4</sup>PPS - UPMC, <sup>5</sup>Prover Technology S.A.S

16:20 **Identifying Query Incompatibilities with Evolving XML Schemas**

*Pierre Genevès<sup>1</sup>, Nabil Layaïda<sup>2</sup>, Vincent Quint<sup>2</sup>*; <sup>1</sup>CNRS, <sup>2</sup>INRIA

### 16:45 Break

### Session 10 (Chair: Mark Jones)

17:10 **Report on the Twelfth ICFP Programming Contest**  
*Andy Gill*; University of Kansas

17:55 **Close**

## Wednesday, September 2, 2009

### Invited Talk (Chair: Lennart Augustsson)

9:00 **Commutative Monads, Diagrams and Knots**  
*Dan Piponi*; Industrial Light & Magic

### 10:00 Break

### Session 11 (Chair: Ralf Hinze)

10:25 **Generic Programming with Fixed Points for Mutually Recursive Datatypes**

*Alexey Rodriguez Yakushev<sup>1</sup>, Stefan Holdermans<sup>2</sup>, Andres Löb<sup>2</sup>, Johan Jeuring<sup>3</sup>*; <sup>1</sup>Vector Fabrics B.V., <sup>2</sup>Utrecht University, <sup>3</sup>Utrecht University, Open University of the Netherlands

10:50 **Attribute Grammars Fly First-Class: How to do Aspect Oriented Programming in Haskell**

*Marcos Viera<sup>1</sup>, S. Doaitse Swierstra<sup>2</sup>, Wouter S. Swierstra<sup>2</sup>*; <sup>1</sup>Universidad de la Republica, Montevideo, <sup>2</sup>Utrecht University, <sup>3</sup>Chalmers University of Technology

### 11:15 Break

### Session 12 (Chair: Norman Ramsey)

11:40 **Parallel Concurrent ML**

*John Reppy<sup>1</sup>, Claudio V. Russo<sup>2</sup>, Yingqi Xiao<sup>1</sup>*; <sup>1</sup>University of Chicago, <sup>2</sup>Microsoft Research

12:05 **A Concurrent ML Library in Concurrent Haskell**  
*Avik Chaudhuri*; University of Maryland, College Park

### 12:30 Lunch break

### Session 13 (Chair: Kathleen Fisher)

14:00 **Awards and Memorials: Most Influential ICFP'99 Paper Award (Phil Wadler) In Memoriam Peter Landin**

*Olivier Danvy*; University of Aarhus  
**SIGPLAN Programming Languages Achievement Award: Rod Burstall (Phil Wadler)**

14:25 **Experience Report: OCaml for an Industrial-strength Static Analysis Framework**  
*Pascal Cuoq and Julien Signoles*; CEA LIST

14:45 **Control-Flow Analysis of Function Calls and Returns by Abstract Interpretation**  
*Jan Midtgaard<sup>1</sup> and Thomas P. Jensen<sup>2</sup>*; <sup>1</sup>Roskilde University, <sup>2</sup>CNRS

### 15:10 Break

### Session 14 (Chair: Phil Wadler)

15:35 **Automatically RESTful Web Applications: Marking Modular Serializable Continuations**  
*Jay A. McCarthy*; Brigham Young University

16:00 **Experience Report: Ocsigen, a Web Programming Framework**  
*Vincent Balat, Jérôme Vouillon, Boris Yakobowski*; PPS - Université Paris Diderot (Paris 7), CNRS

16:20 **Implementing First-Class Polymorphic Delimited Continuations by a Type-Directed Selective CPS-Transform**  
*Tiark Rompf, Ingo Maier, Martin Odersky*; EPFL

### 16:45 Break

### Session 15 (Chair: Daan Leijen)

17:05 **A Theory of Typed Coercions and its Applications**  
*Nikhil Swamy<sup>1</sup>, Michael Hicks<sup>2</sup>, Gavin M. Bierman<sup>1</sup>*;  
<sup>1</sup>Microsoft Research, <sup>2</sup>University of Maryland, College Park

17:30 **Complete and Decidable Type Inference for GADTs**  
*Tom Schrijvers<sup>1</sup>, Simon Peyton Jones<sup>2</sup>, Martin Sulzmann<sup>3</sup>, Dimitrios Vytiniotis<sup>2</sup>*; <sup>1</sup>Katholieke Universiteit Leuven, <sup>2</sup>Microsoft Research, <sup>3</sup>Intaris Software GmbH

17:55 **Close**