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❖ Summary

I am interested in the design and implementation of concurrent programming languages targeting scalable platforms such as many-core processors and compute clouds. My research spans programming models, compilers, static analysis, schedulers, threading systems, and memory management.

❖ Education

PhD — Computer Science   *May 2011 – Dec 2014*
Purdue University, USA

   Thesis Title: **Functional Programming Abstractions for Weakly Consistent Systems**
   Advisor: Suresh Jagannathan

Master of Science — Computer Science   *Aug 2008 – May 2011*
Purdue University, USA

   GPA: 3.94/4

Bachelor of Engineering — Computer Science and Engineering   *Aug 2004 – May 2008*
PSG College of Technology
Anna University, India

   GPA: 9.55/10

❖ Experience

Research Associate, University of Cambridge   *Dec 2014 – present*
   Advisor: Anil Madhavapeddy   Cambridge, UK

   Developing Multicore OCaml under the OCaml Labs initiative in the Computer Laboratory.

Research Assistant, Purdue University   *Aug 2008 – Dec 2014*
   Advisor: Suresh Jagannathan   West Lafayette, IN, USA

   My research focused on discovering new language abstractions and developing runtime system techniques to ease programming weakly consistent systems. To this end, I have built MultiMLton, a parallel and distributed extension of MLton Standard ML compiler and runtime and Quelea, a shallow extension of Haskell for declarative programming over eventually consistent data stores.

Teaching Assistant, Purdue University   West Lafayette, IN, USA
   Undergraduate C Programming (CS180)   *Aug 2012 – Dec 2012*
   Graduate Programming Languages (CS565)   *Aug 2011 – Dec 2011*

   My tasks included designing and evaluating weekly projects, office hours for one-on-one instruction, and grading.

Research Intern, Microsoft Research, Cambridge   *Feb 2012 – May 2012*
   Advisors: Tim Harris, Simon Marlow, and Simon Peyton Jones   Cambridge, UK

   I developed a concurrency substrate for Glasgow Haskell Compiler (GHC) to allow programmers to modularly implement user-level schedulers and concurrency libraries for Haskell threads in Haskell, without having to re-engineer critical runtime system components. The concurrency substrate is built around one-shot continuations and uses transactional memory for coordination.

Research Intern, Samsung Information Systems America (R&D)   *May 2010 – Aug 2010*
   Advisor: Daniel Waddington   San Jose, CA, USA

   I was part of the core team that developed SNAPPLE programming language – a safe and concurrent extension of C++ targeted at many-core processors. The task involved designing language extensions for concurrency, compiler extensions for safety, and a runtime for executing large number of lightweight threads. SNAPPLE was implemented as a veneer on top of C++ using LLNL Rose source-to-source compiler.

Intern, Advanced Numerical Research and Analysis Group   *Dec 2007 – Apr 2008*
   Advisor: Sankar Chnab   *Hyderabad, India*

   As a part of the Compiler Engineering group, I ported Kaffe, an open source Java VM to an embedded microprocessor ANUPAMA and a desktop processor ABACUS. Developed a lightweight threading subsystem, and implemented a JIT backed for ABACUS.

❖ Journal Publications

MultiMLton: A Multicore-aware Runtime for Standard ML   *Nov 2014*
J2   KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan
Journal of Functional Programming (JFP), 24(6): 613 – 674

Efficient Sessions   *Feb 2013*
   KC Sivaramakrishnan, Mohammad Qudeisat, Lukasz Ziarek, Karthik Nagaraj, Patrick Eugster
J1   *Science of Computer Programming (SCP), 78(2): 147 – 167*
   Invited paper

❖ Conference Publications

Declarative Programming over Eventually Consistent Data Stores   *Jun 2015*
C7   KC Sivaramakrishnan, Gowtham Kaki, Suresh Jagannathan
International Conference on Programming Language Design and Implementation (PLDI)

Rx-CML: A Prescription for Safely Relaxing Synchrony   *Jan 2014*
C6   KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan
Symposium on Practical Aspects of Declarative Languages (PADL)

A Coherent and Managed Runtime for ML on the SCC   *Nov 2012*
   KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan
C5   *Many-core Architecture Research Community Symposium (MARC)*
   Best paper award

Eliminating Read Barriers through Procrastination and Cleanliness   *Jun 2012*
C4   KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan
International Symposium on Memory Management (ISMM)

Composable Asynchronous Events   *Jun 2011*
C3   Lukasz Ziarek, KC Sivaramakrishnan, Suresh Jagannathan
International Conference on Programming Language Design and Implementation (PLDI)

Efficient Session Type Guided Distributed Interaction   *June 2010*
C2   KC Sivaramakrishnan, Karthik Nagaraj, Lukasz Ziarek, Patrick Eugster
International Conference on Coordination Models and Languages (COORDINATION)

Partial Memoization of Concurrency and Communication   *Sep 2009*
C1   Lukasz Ziarek, KC Sivaramakrishnan, Suresh Jagannathan
International Conference on Functional Programming (ICFP)

❖ Workshop Publications

Migrating MultiMLton to the Cloud   *Sep 2013*
W4   KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan
ML Workshop

Scalable Lightweight Task Management Schemes for MIMD Processors   *Apr 2011*
W3   Daniel G. Waddington, Chen Tian, KC Sivaramakrishnan
Workshop on Systems for Future Multi-Core Architectures (SFMA)

W2 **The Design Rationale for MultiMLton**   *Sep 2010*
Suresh Jagannathan, Armand Navabi, KC Sivaramakrishnan, Lukasz Ziarek
ML Workshop

W1 **Lightweight Asynchrony using Parasitic Threads**   *Jan 2010*
KC Sivaramakrishnan, Lukasz Ziarek, Raghavendra Prasad, Suresh Jagannathan
Workshop on Declarative Aspects of Multicore Programming (DAMP)

❖ Technical Reports and Drafts

T2 **Composable Scheduler Activations for Haskell**   *Dec 2014*
KC Sivaramakrishnan, Tim Harris, Simon Marlow, Simon Peyton Jones
Under consideration for Journal of Functional Programming (JFP)

T1 **Featherweight Threads for Communication**   *Nov 2011*
KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan
Purdue University Computer Science Technical Report – TR-11-018

❖ Talks

Functional Programming Abstractions for Weakly Consistent Systems   *Dec 2014*
PhD Defense   Purdue University

Functional Abstractions for Practical and Scalable Concurrent Programming   *Mar 2014*
Invited Lecture   Microsoft Research, Cambridge, UK

Rx-CML: A Prescription for Safely Relaxing Synchrony   *Jan 2014*
PADL 2014   San Diego, CA

Migrating MultiMLton to the Cloud   *Sep 2013*
ML Workshop 2013   Boston, MA

A Coherent and Managed Runtime for ML on the SCC   *Nov 2012*
MARC 2012   RWTH Aachen

Eliminating Read Barriers through Procrastination and Cleanliness
ISMM 2012, Beijing   *Jun 2012*
Wrestling Wednesdays, Microsoft Research, Cambridge   *May 2012*

Lightweight Concurrency in GHC   *May 2012*
Wrestling Wednesdays   Microsoft Research, Cambridge

Efficient Session Type guided Distributed Interaction   *Jun 2012*
COORDINATION 2012   CWI Amsterdam

❖ Professional Service

- Program Committee member: SPLASH-MARC symposium, 2013.

- Artifact Evaluation Committee member: PLDI 2015.

- Reviewer: POPL, ICFP, ASPLOS, TLDI, Concurrency and Computation: Practice and Experience, Software: Practice and Experience.

❖ Awards and Recognitions

- Research Fellow, Darwin College, Cambridge, 2015–2018.

- Maurice H. Halstead Memorial Award for outstanding research in Software Engineering, Purdue University, 2014.

- Best paper award at Many-core Architecture Research Symposium at RWTH-Aachen, 2012.

- Invited paper in Science of Computer Programming, Vol. 78, Iss. 2 (Feb 2013).

- Glasgow Haskell Compiler (GHC) Committer.
- SIGPLAN PAC travel grant for PLDI 2012 and POPL 2014.
- NSF travel grant for ICFP 2013.