

Curriculum Vitae

February 8, 2018

KC Sivaramakrishnan

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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

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

May 2011 – Dec 2014
Purdue University, USA

Master of Science — Computer Science

Aug 2008 – May 2011
Purdue University, USA

Bachelor of Engineering — Computer Science and Engineering

Aug 2004 – May 2008
PSG College of Technology
Anna University, India

❖ Experience

Senior Research Associate, University of Cambridge

Advisors: Alan Mycroft, Anil Madhavapeddy

Nov 2017 – present
Cambridge, UK

Research Fellow, Royal Commission for the Exhibition of 1851

Oct 2015 – present

Research Fellow, Darwin College, Cambridge

Oct 2015 – present

Research Associate, University of Cambridge

Dec 2014 – Oct 2017

Research Assistant, Purdue University

Advisor: Suresh Jagannathan

Aug 2008 – Dec 2014
West Lafayette, IN, USA

Teaching Assistant, Purdue University

Undergraduate C Programming (CS180)

Graduate Programming Languages (CS565)

West Lafayette, IN, USA

Aug 2012 – Dec 2012

Aug 2011 – Dec 2011

Research Intern, Microsoft Research, Cambridge

Advisors: Tim Harris, Simon Marlow, and Simon Peyton Jones

Feb 2012 – May 2012
Cambridge, UK

Research Intern, Samsung Information Systems America (R&D)

Advisor: Daniel Waddington

May 2010 – Aug 2010
San Jose, CA, USA

Intern, Advanced Numerical Research and Analysis Group

Advisor: Sankar Chnab

Dec 2007 – Apr 2008
Hyderabad, India

❖ Grants, Awards and Recognitions

- Co-I, Feasibility of an Operating System for Interspatial Networking in a Built Environment, Centre for Digital Built Britain (CDBB), Mar 2018, £24,000.
- Research Fellowship, Royal Commission for the Exhibition of 1851, 2015–2018, £102,000.
- Research Fellowship, Darwin College, Cambridge, 2015–2018, £900.

- Maurice H. Halstead Memorial Award for outstanding research in Software Engineering, Purdue University, 2014, \$4,000.
- Best paper award at Many-core Architecture Research Symposium at RWTH-Aachen, 2012, \$1,000.
- Glasgow Haskell Compiler (GHC) Committer.
- SIGPLAN PAC travel grant for PLDI 2012 and POPL 2014, \$1,500 each.
- NSF travel grant for ICFP 2013, \$2,000.

❖ Service

- Organizer, [Dagstuhl Seminar on "Algebraic Effect Handlers go Mainstream"](#), Apr 2018.
- Program Committee member: PMLDC@ECOOP 2017, Off-the-beaten track (OBT) 2017, OCaml Workshop 2016, SPLASH-MARC symposium, 2013.
- Artifact Evaluation Committee member: ICFP 2018, PLDI 2015, PPOPP/CGO 2016.
- Reviewer: ECOOP, TODS, JFP, POPL, ICFP, ASPLOS, TLDI, Concurrency and Computation: Practice and Experience, Software: Practice and Experience.
- Organizer for Darwin College Science Seminar Series, Oct 2015 – May 2017.

❖ Journal Publications

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| | Concurrent System Programming with Effect Handlers | Nov 2017 |
| J6 | Stephen Dolan, Spiros Eliopoulos, Daniel Hillerstrm, Anil Madhavapeddy, KC Sivaramakrishnan, Leo White
<i>Post-proceedings of the Symposium on Trends in Functional Programming (TFP) (accepted)</i> | |
| | Eff directly in OCaml | Oct 2017 |
| J5 | Oleg, Kiselyov, KC Sivaramakrishnan
<i>Post-proceedings of the ML Workshop (accepted)</i> | |
| | Composable Scheduler Activations for Haskell | Jun 2016 |
| J4 | KC Sivaramakrishnan, Tim Harris, Simon Marlow, Simon Peyton Jones
<i>Journal of Functional Programming (JFP)</i> | |
| | Representation without Taxation: A Uniform, Low-Overhead, and High-Level Interface to Eventually Consistent Key-Value Stores | Mar 2016 |
| J3 | KC Sivaramakrishnan, Gowtham Kaki, Suresh Jagannathan
<i>IEEE Data Engineering Bulletin</i> , 39(1): 52 – 64 | |
| | MultiMLton: A Multicore-aware Runtime for Standard ML | Nov 2014 |
| J2 | KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan
<i>Journal of Functional Programming (JFP)</i> , 24(6): 613 – 674 | |
| | Efficient Sessions | Feb 2013 |
| J1 | KC Sivaramakrishnan, Mohammad Qudeisat, Lukasz Ziarek, Karthik Nagaraj, Patrick Eugster
<i>Science of Computer Programming (SCP)</i> , 78(2): 147 – 167
Invited paper | |

❖ Conference Publications

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| | Continuation Passing Style for Effect Handlers | Sep 2017 |
| C9 | Daniel Hillerstrm, Sam Lindley, Robert Atkey, KC Sivaramakrishnan
<i>International Conference on Formal Structures for Computation and Deduction (FSCD)</i> | |
| | DaLi : Database as a Library | May 2017 |
| C8 | Gowtham Kaki, KC Sivaramakrishnan, Thomas Gazagnaire, Anil Madhavapeddy, Suresh Jagannathan
<i>The 2nd Summit on Advances in Programming Languages (SNAPL)</i>
Oral Presentation | |

C7	Declarative Programming over Eventually Consistent Data Stores KC Sivaramakrishnan, Gowtham Kaki, Suresh Jagannathan <i>International Conference on Programming Language Design and Implementation (PLDI)</i>	Jun 2015
C6	Rx-CML: A Prescription for Safely Relaxing Synchrony KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan <i>Symposium on Practical Aspects of Declarative Languages (PADL)</i>	Jan 2014
C5	A Coherent and Managed Runtime for ML on the SCC KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan <i>Many-core Architecture Research Community Symposium (MARC)</i> Best paper award	Nov 2012
C4	Eliminating Read Barriers through Procrastination and Cleanliness KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan <i>International Symposium on Memory Management (ISMM)</i>	Jun 2012
C3	Composable Asynchronous Events Lukasz Ziarek, KC Sivaramakrishnan, Suresh Jagannathan <i>International Conference on Programming Language Design and Implementation (PLDI)</i>	Jun 2011
C2	Efficient Session Type Guided Distributed Interaction KC Sivaramakrishnan, Karthik Nagaraj, Lukasz Ziarek, Patrick Eugster <i>International Conference on Coordination Models and Languages (COORDINATION)</i>	June 2010
C1	Partial Memoization of Concurrency and Communication Lukasz Ziarek, KC Sivaramakrishnan, Suresh Jagannathan <i>International Conference on Functional Programming (ICFP)</i>	Sep 2009

❖ Workshop Publications

W13	A Memory Model for Multicore OCaml Stephen Dolan and KC Sivaramakrishnan <i>OCaml Workshop</i>	Sep 2017
W12	Effectively Tackling the Awkward Squad Stephen Dolan, Spiros Eliopoulos, Daniel Hillerstrm, Anil Madhavapeddy, KC Sivaramakrishnan, Leo White <i>OCaml Workshop</i>	Sep 2017
W11	Mergeable Types Gowtham Kaki, KC Sivaramakrishnan, Samodya Abeyesiriwardane, Suresh Jagannathan <i>ML Workshop</i>	Sep 2017
W10	Concurrent System Programming with Effect Handlers Stephen Dolan, Spiros Eliopoulos, Daniel Hillerstrm, Anil Madhavapeddy, KC Sivaramakrishnan, Leo White <i>Symposium on Trends in Functional Programming (TFP)</i>	Jun 2017
W9	Eff directly in OCaml Oleg Kiselyov and KC Sivaramakrishnan <i>JSSST Workshop on Programming and Programming Languages</i>	Mar 2017
W8	Lock-free programming for the masses KC Sivaramakrishnan, Tho Laurent <i>OCaml Workshop</i>	Sep 2016
W7	Compiling Links Effect Handlers to the OCaml Backend Daniel Hillestrm, Sam Lindley, KC Sivaramakrishnan <i>ML Workshop</i>	Sep 2016

W6	Eff Directly in OCaml Oleg Kiselyov and KC Sivaramakrishnan <i>ML Workshop</i>	Sep 2016
W5	Effective Concurrency with Algebraic Effects Stephen Dolan, Leo White, KC Sivaramakrishnan, Jeremy Yallop and Anil Madhavapeddy <i>OCaml Workshop</i>	Sep 2015
W4	Migrating MultiMLton to the Cloud KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan <i>ML Workshop</i>	Sep 2013
W3	Scalable Lightweight Task Management Schemes for MIMD Processors Daniel G. Waddington, Chen Tian, KC Sivaramakrishnan <i>Workshop on Systems for Future Multi-Core Architectures (SFMA)</i>	Apr 2011
W2	The Design Rationale for MultiMLton Suresh Jagannathan, Armand Navabi, KC Sivaramakrishnan, Lukasz Ziarek <i>ML Workshop</i>	Sep 2010
W1	Lightweight Asynchrony using Parasitic Threads KC Sivaramakrishnan, Lukasz Ziarek, Raghavendra Prasad, Suresh Jagannathan <i>Workshop on Declarative Aspects of Multicore Programming (DAMP)</i>	Jan 2010

❖ Technical Reports and Drafts

T1	Featherweight Threads for Communication KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan <i>Purdue University Computer Science Technical Report – TR-11-018</i>	Nov 2011
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❖ Teaching/Advising

- Guest Lectures:
 - Arrows, Advanced Functional Programming, University of Cambridge, Lent '16.
 - Debugging, Programming in C and C++, University of Cambridge, Michaelmas '15.
- Supervisions at University of Cambridge:
 - Databases, Lent '17, Michaelmas '17, Lent '16.
 - Concurrent and Distributed Systems, Lent '17, Michaelmas '17, Lent '16, Michaelmas '16, Lent '15.
 - Algorithms, Lent '15.
 - Object-oriented Programming, Michaelmas 2015–16.
- Teaching assistantships at Purdue University
 - Undergraduate C Programming (CS180), Aug 2012 – Dec 2012.
 - Graduate Programming Languages (CS565), Aug 2011 – Dec 2011.
- Projects supervised:
 - Matevz Polijanc, University of Cambridge, A Reactive Programming model in OCaml, Oct 2017 – Present.
 - Charlie Crisp, University of Cambridge, A Blockchain in Pure OCaml, Oct 2017 – Present.
 - Henry Mercer, University of Cambridge, Systematic Concurrency Testing for Multicore OCaml, Oct 2017 – Present.
 - Nicolas Assouad, ENS Paris, Hardware Support for Composable Lock-free Transactions, Mar 2017 – Jun 2017.
 - Matt Harrison, University of Cambridge, Secure Decentralized Apps, Sep 2016 – present.
 - Maxime Lesourd, ENS de Lyon, Verified CPS translation of handlers, Sep 2016 – Mar 2017.

- Philip Dexter, Binghamton University, Approximate computing for OCaml, May 2016 – Aug 2016.
- James Wright, University of Cambridge, Mechanized semantics of Algebraic Effects in OCaml, Sep 2015 – Mar 2016.
- Armael Gueneau, ENS de Lyon, Algebraic Effects for js_of_ocaml, Sep 2015 – Mar 2016.
- Theo Laurent, ENS, Reagents for Multicore OCaml, May 2015 – Aug 2015.
- Guillain Potron, ENS de Lyon, Semantics of Irmin branch-consistent data store, March 2015 – Aug 2015.

❖ Talks

A deep dive into Multicore OCaml Garbage Collector System Research Group Seminar	<i>Jul 2017</i> Computer Laboratory, University of Cambridge
Multicore OCaml GC JaneStreet Group	<i>Jun 2017</i> New York, NYC
Composable lock-free programming for Multicore OCaml ABCD Meeting	<i>Nov 2016</i> University of Edinburgh
Practical Algebraic Effect Handlers in Multicore OCaml LFCS Seminar	<i>Nov 2016</i> University of Edinburgh
Effective Concurrency and Parallelism in Multicore OCaml PL Seminar	<i>Nov 2016</i> Indian Institute of Technology, Madras
Effective Concurrency and Parallelism in Multicore OCaml PL Seminar	<i>Nov 2016</i> Indian Institute of Technology, Bombay
Effective parallelism with Reagents Facebook Faculty Summit	<i>Sep 2016</i> London, UK
Multicore OCaml and Programming with Reagents LDN Functionals	<i>Aug 2016</i> Jane Street UK, London
Effect handlers in Multicore OCaml Dagstuhl Seminar	<i>Mar 2016</i> Dagstuhl, Germany
Arrows and Reagents Invited Lecture, Advanced Functional Programming	<i>Mar 2016</i> Cambridge, UK
Concurrent and Multicore OCaml: A deep dive Facebook Tech Talk	<i>Jan 2016</i> Menlo Park, CA
OCaml Platform: Update OCaml Consortium Meeting	<i>Nov 2015</i> Paris, France
Multicore OCaml: Update OCaml Developer's Meeting	<i>Nov 2015</i> Paris, France
Silence is Golden: Controlling Communication and Coordination in Distributed Databases Darwin College Science Seminar	<i>Oct 2015</i> Cambridge, UK
Effective Concurrency with Algebraic Effects OCaml Workshop 2015	<i>Sep 2015</i> Vancouver, Canada
Quelea: Declarative Programming over Eventually Consistent Data Stores Computer Laboratory, University of Cambridge	<i>Apr 2015</i> Cambridge, UK
Functional Programming Abstractions for Weakly Consistent Systems PhD Defense	<i>Dec 2014</i> Purdue University
Functional Abstractions for Practical and Scalable Concurrent Programming Invited Lecture	<i>Mar 2014</i> Microsoft Research, Cambridge, UK
Rx-CML: A Prescription for Safely Relaxing Synchrony PADL 2014	<i>Jan 2014</i> San Diego, CA

Migrating MultiMLton to the Cloud	<i>Sep 2013</i>
ML Workshop 2013	Boston, MA
A Coherent and Managed Runtime for ML on the SCC	<i>Nov 2012</i>
MARC 2012	RWTH Aachen
Eliminating Read Barriers through Procrastination and Cleanliness	
ISMM 2012, Beijing	<i>Jun 2012</i>
Wrestling Wednesdays, Microsoft Research, Cambridge	<i>May 2012</i>
Lightweight Concurrency in GHC	<i>May 2012</i>
Wrestling Wednesdays	Microsoft Research, Cambridge
Efficient Session Type guided Distributed Interaction	<i>Jun 2012</i>
COORDINATION 2012	CWI Amsterdam