

Curriculum Vitae

February 11, 2019

KC Sivaramakrishnan

Computer Laboratory
University of Cambridge
sk826@cl.cam.ac.uk

<http://kcsrk.info>
15 JJ Thomson Avenue
Cambridge CB3 0FD
Tel: +44 79828 42499

❖ 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

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

❖ Conference Publications

- C10 [Bounding Data Races in Space and Time](#) Jun 2018
 Stephen Dolan, KC Sivaramakrishnan, Anil Madhavapeddy
International Conference on Programming Language Design and Implementation (PLDI)
- C9 [Continuation Passing Style for Effect Handlers](#) Sep 2017
 Daniel Hillerstrm, Sam Lindley, Robert Atkey, KC Sivaramakrishnan
International Conference on Formal Structures for Computation and Deduction (FSCD)

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

❖ Workshop Publications

	An Architecture for Interspatial Communication	Apr 2018
W14	Anil Madhavapeddy, KC Sivaramakrishnan, Gemma Gordon, Thomas Gazagnaire <i>Hot Topics in Pervasive Mobile and Online Social Networking (HotPOST), 2018</i>	
	A Memory Model for Multicore OCaml	Sep 2017
W13	Stephen Dolan and KC Sivaramakrishnan <i>OCaml Workshop</i>	
	Effectively Tackling the Awkward Squad	Sep 2017
W12	Stephen Dolan, Spiros Eliopoulos, Daniel Hillerstrm, Anil Madhavapeddy, KC Sivaramakrishnan, Leo White <i>OCaml Workshop</i>	
	Mergeable Types	Sep 2017
W11	Gowtham Kaki, KC Sivaramakrishnan, Samodya Abeysiriwardane, Suresh Jagannathan <i>ML Workshop</i>	
	Concurrent System Programming with Effect Handlers	Jun 2017
W10	Stephen Dolan, Spiros Eliopoulos, Daniel Hillerstrm, Anil Madhavapeddy, KC Sivaramakrishnan, Leo White <i>Symposium on Trends in Functional Programming (TFP)</i>	
	Eff directly in OCaml	Mar 2017
W9	Oleg Kiselyov and KC Sivaramakrishnan <i>JSSST Workshop on Programming and Programming Languages</i>	

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
----	---	----------

❖ 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, Michaelmas '18, 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:

- Simon Fowler, University of Edinburgh, `cmm_of_wasm`: An ahead-of-time compiler for WebAssembly, May 2018 – July 2018.
- Matevz Polijanc, University of Cambridge, A Reactive Programming model in OCaml, Oct 2017 – Mar 2018.
- Charlie Crisp, University of Cambridge, A Blockchain in Pure OCaml, Oct 2017 – Mar 2018.
- Henry Mercer, University of Cambridge, Systematic Concurrency Testing for Multicore OCaml, Oct 2017 – Mar 2018.
- 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, Binghampton 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

Retrofitting a Concurrent GC onto OCaml GLASS Seminar	<i>Oct 2018</i> University of Glasgow
Concurrent System Programming with Effect Handlers Department Seminar	<i>Oct 2018</i> University of Sussex
State of Multicore OCaml Multicore Meeting	<i>Jun 2018</i> INRIA Gallium, Paris
Bounding Data Races in Space and Time Department Seminar	<i>Feb 2018</i> Computer Science and Engineering, IIT Madras
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	Nov 2015 Paris, France
Multicore OCaml: Update OCaml Developer's Meeting	Nov 2015 Paris, France
Silence is Golden: Controlling Communication and Coordination in Distributed Databases Darwin College Science Seminar	Oct 2015 Cambridge, UK
Effective Concurrency with Algebraic Effects OCaml Workshop 2015	Sep 2015 Vancouver, Canada
Quelea: Declarative Programming over Eventually Consistent Data Stores Computer Laboratory, University of Cambridge	Apr 2015 Cambridge, UK
Functional Programming Abstractions for Weakly Consistent Systems PhD Defense	Dec 2014 Purdue University
Functional Abstractions for Practical and Scalable Concurrent Programming Invited Lecture	Mar 2014 Microsoft Research, Cambridge, UK
Rx-CML: A Prescription for Safely Relaxing Synchrony PADL 2014	Jan 2014 San Diego, CA
Migrating MultiMLton to the Cloud ML Workshop 2013	Sep 2013 Boston, MA
A Coherent and Managed Runtime for ML on the SCC MARC 2012	Nov 2012 RWTH Aachen
Eliminating Read Barriers through Procrastination and Cleanliness ISMM 2012, Beijing Wrestling Wednesdays, Microsoft Research, Cambridge	Jun 2012 May 2012
Lightweight Concurrency in GHC Wrestling Wednesdays	May 2012 Microsoft Research, Cambridge
Efficient Session Type guided Distributed Interaction COORDINATION 2012	Jun 2012 CWI Amsterdam