

Curriculum Vitae

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KC Sivaramakrishnan

Department of Computer Science and Engineering
Indian Institute of Technology, Madras
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❖ Summary

I am interested in applying programming language techniques to improve concurrent, parallel, distributed and operating systems.

❖ 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

Assistant Professor, Indian Institute of Technology, Madras

Jan 2019 – present

Senior Research Associate, University of Cambridge

Nov 2017 – Dec 2018

Advisors: Alan Mycroft, Anil Madhavapeddy

Cambridge, UK

Research Fellow, Royal Commission for the Exhibition of 1851

Oct 2015 – Oct 2018

Research Fellow, Darwin College, Cambridge

Oct 2015 – Oct 2018

Research Associate, University of Cambridge

Dec 2014 – Oct 2017

Research Assistant, Purdue University

Aug 2008 – Dec 2014

Advisor: Suresh Jagannathan

West Lafayette, IN, USA

Teaching Assistant, Purdue University

West Lafayette, IN, USA

Undergraduate C Programming (CS180)

Aug 2012 – Dec 2012

Graduate Programming Languages (CS565)

Aug 2011 – Dec 2011

Research Intern, Microsoft Research, Cambridge

Feb 2012 – May 2012

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

Cambridge, UK

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

May 2010 – Aug 2010

Advisor: Daniel Waddington

San Jose, CA, USA

Intern, Advanced Numerical Research and Analysis Group

Dec 2007 – Apr 2008

Advisor: Sankar Chnab

Hyderabad, India

❖ Grants, Awards and Recognitions

- PI, Qilin: Scalable Concurrent Unikernels with Effect Handlers, Jan 2019, INR 500,000.
- 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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| | Safe Replication through Bounded Concurrency Verification | Nov 2018 |
| J7 | Gowtham Kaki, Kapil Earanky, KC Sivaramakrishnan, Suresh Jagannathan
<i>Proceedings of the ACM on Programming Languages (PACMPL)</i> , issue OOPSLA 2018 | |
| | 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)</i> (accepted) | |
| | Eff directly in OCaml | Oct 2017 |
| J5 | Oleg, Kiselyov, KC Sivaramakrishnan
<i>Post-proceedings of the ML Workshop</i> (accepted) | |
| | 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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| | Bounding Data Races in Space and Time | Jun 2018 |
| C10 | Stephen Dolan, KC Sivaramakrishnan, Anil Madhavapeddy
<i>International Conference on Programming Language Design and Implementation (PLDI)</i> | |

- 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)
- C8 [DaLi : Database as a Library](#) May 2017
Gowtham Kaki, KC Sivaramakrishnan, Thomas Gazagnaire, Anil Madhavapeddy, Suresh Jagannathan
The 2nd Summit on Advances in Programming Languages (SNAPL)
Oral Presentation
- C7 [Declarative Programming over Eventually Consistent Data Stores](#) Jun 2015
KC Sivaramakrishnan, Gowtham Kaki, Suresh Jagannathan
International Conference on Programming Language Design and Implementation (PLDI)
- C6 [Rx-CML: A Prescription for Safely Relaxing Synchrony](#) Jan 2014
KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan
Symposium on Practical Aspects of Declarative Languages (PADL)
- C5 [A Coherent and Managed Runtime for ML on the SCC](#) Nov 2012
KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan
Many-core Architecture Research Community Symposium (MARC)
Best paper award
- C4 [Eliminating Read Barriers through Procrastination and Cleanliness](#) Jun 2012
KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan
International Symposium on Memory Management (ISMM)
- C3 [Composable Asynchronous Events](#) Jun 2011
Lukasz Ziarek, KC Sivaramakrishnan, Suresh Jagannathan
International Conference on Programming Language Design and Implementation (PLDI)
- C2 [Efficient Session Type Guided Distributed Interaction](#) June 2010
KC Sivaramakrishnan, Karthik Nagaraj, Lukasz Ziarek, Patrick Eugster
International Conference on Coordination Models and Languages (COORDINATION)
- C1 [Partial Memoization of Concurrency and Communication](#) Sep 2009
Lukasz Ziarek, KC Sivaramakrishnan, Suresh Jagannathan
International Conference on Functional Programming (ICFP)

❖ Workshop Publications

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

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, Michelmas '15.
- Supervisions at University of Cambridge:
 - Databases, Michelmas '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	<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 ML Workshop 2013	<i>Sep 2013</i> Boston, MA
A Coherent and Managed Runtime for ML on the SCC MARC 2012	<i>Nov 2012</i> RWTH Aachen
Eliminating Read Barriers through Procrastination and Cleanliness ISMM 2012, Beijing Wrestling Wednesdays, Microsoft Research, Cambridge	<i>Jun 2012</i> <i>May 2012</i>
Lightweight Concurrency in GHC Wrestling Wednesdays	<i>May 2012</i> Microsoft Research, Cambridge
Efficient Session Type guided Distributed Interaction COORDINATION 2012	<i>Jun 2012</i> CWI Amsterdam

❖ References

Suresh Jagannathan

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Anil Madhavapeddy

University Lecturer
Computer Laboratory
University of Cambridge
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Cambridge, CB3 0FD, UK
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Simon Peyton Jones

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Programming Principles and Tools
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Cambridge CB1 2FB, UK
simonpj@microsoft.com