

Curriculum Vitae

September 9, 2022

KC Sivaramakrishnan

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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

❖ Awards and Recognitions

- Invited keynote speaker at ICFP 2022.
- Invited keynote speaker at OCaml Workshop 2022.
- Distinguished paper at PADL 2021.
- Distinguished paper award at ICFP 2020.

- Class of 1991 Award for Young Faculty in Computer Science and Engineering, IIT Madras, 2019.
- Research Fellowship, Royal Commission for the Exhibition of 1851, 2015–2018.
- Research Fellowship, 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.
- SIGPLAN PAC travel grant for PLDI 2012 and POPL 2014.
- NSF travel grant for ICFP 2013.

❖ Grants

- PI, Multicore Support for Tezos blockchain, Tezos Foundation, 2019 – 2023, £194,000.
- PI, Qilin: Scalable Concurrent Unikernels with Effect Handlers, IIT Madras, 2019 – 2021, INR 500,000.
- Co-I, Feasibility of an Operating System for Interspatial Networking in a Built Environment, Centre for Digital Built Britain (CDBB), 2018, £24,000.
- PI, Quelea: Safe Declarative Programming over Heterogeneous Parallel Systems, Royal Commission for the Exhibition of 1851, 2015–2018, £102,000.

❖ Academic Service

- **Organizer**, [Dagstuhl Seminar on “Algebraic Effect Handlers go Mainstream”](#), Apr 2018.
- **Organizer**, [Shonan Meeting No.143 on “Programming Language Support for Data-intensive Applications”](#), June 2019.
- **Editor**, Special Issue of the Journal of Functional Programming (JFP) on the Theory and Practice of Algebraic Effects and Handlers, 2019.
- **Program Committee Chair**: PaPoC 2022, ML Workshop 2019.
- **Program Committee member**: PLDI 2023, ML Workshop 2022, OCaml Workshop 2022, PLDI 2022, PEPM 2022, TyDe 2021, GPCE 2021, PADL 2021, PaPoC 2021, ICFP 2020, PAPOC@EuroSys 2020, OCaml Workshop 2019, PMLDC@ECOOP 2017, Off-the-beaten track (OBT) 2017, OCaml Workshop 2016, SPLASH-MARC symposium, 2013.
- **External Review Committee**: ICFP 2019.
- **Artifact Evaluation Committee Chair**: ESOP 2022.
- **Artifact Evaluation Committee member**: ICFP 2018, PLDI 2015, PPoPP/CGO 2016.
- **Reviewer**: JFP 2021, PLDI 2020, ESOP 2020, JPDC 2020, LICS 2019, ECOOP 2019, TODS 2019, JFP 2018, POPL 2014, ICFP 2013, ASPLOS 2013, TLDI 2013, Concurrency and Computation: Practice and Experience 2013, Software: Practice and Experience 2012.

❖ Institutional Service

- Technical Committee Member, Department of School Education, Government of Tamil Nadu, 2020 – 2022.
- Board Member, Industrial Consultancy and Sponsored Research (ICSR), IIT Madras, 2021 – 2023.
- Department Vision Committee, Computer Science and Engineering, IIT Madras, 2021.
- Department Website Revamp Committee, Computer Science and Engineering, IIT Madras, 2021.
- Faculty Advisor, BTech batch, Computer Science and Engineering, IIT Madras, 2021.
- Organizer for Darwin College Science Seminar Series, Oct 2015 – May 2017.
- Interviewer for Undergraduate Admissions to Computer Science, Christ’s College, Cambridge, 2016, 2017 and 2018

❖ Edited Publications

E2 [Special Issue on the Theory and Practice of Algebraic Effects and Handlers](#) Jan 2021
 KC Sivaramakrishnan, Andrej Bauer (eds.)
Journal of Functional Programming

E1 [Algebraic Effect Handlers go Mainstream](#) Apr 2018
 KC Sivaramakrishnan, Daan Leijen, Matija Pretnar, Tom Schrijvers
Dagstuhl Reports, Volume 8, Issue 4, 2018

❖ Journal Publications

J9 [Retrofitting Parallelism onto OCaml](#) Aug 2020
 KC Sivaramakrishnan, Stephen Dolan, Leo White, Sadiq Jaffer, Tom Kelly, Anmol Sahoo, Sudha Parimala, Atul Dhiman, Anil Madhavapeddy
Proceedings of the ACM on Programming Languages (PACMPL), issue ICFP 2020
Distinguished paper

J8 [Mergeable Replicated Data Types](#) Oct 2019
 Gowtham Kaki, Swarn Priya, KC Sivaramakrishnan, Suresh Jagannathan
Proceedings of the ACM on Programming Languages (PACMPL), issue OOPSLA 2019

J7 [Safe Replication through Bounded Concurrency Verification](#) Nov 2018
 Gowtham Kaki, Kapil Earanky, KC Sivaramakrishnan, Suresh Jagannathan
Proceedings of the ACM on Programming Languages (PACMPL), issue OOPSLA 2018

J6 [Concurrent System Programming with Effect Handlers](#) Nov 2017
 Stephen Dolan, Spiros Eliopolous, Daniel Hillerström, 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

❖ Conference Publications

C15 [Certified Mergeable Replicated Datatypes](#) Jun 2022
 Vimala Soundarapandian, Adharsh Kamath, Kartik Nagar, KC Sivaramakrishnan
International Conference on Programming Language Design and Implementation (PLDI), 2022

C14 [Retrofitting Effect Handlers to OCaml](#) Jun 2021
 KC Sivaramakrishnan, Stephen Dolan, Leo White, Sadiq Jaffer, Tom Kelly, Anil Madhavapeddy
International Conference on Programming Language Design and Implementation (PLDI), 2021

- ConFuzz: Coverage-guided Property Fuzzing for Event-driven Programs** Jan 2021
Sumit Padhiyar, KC Sivaramakrishnan
- C13 **Proceedings of the 23rd International Symposium on Practical Aspects of Declarative Languages (PADL), 2021**
Distinguished paper
- C12 **Banyan: Coordination-free Distributed Transactions over Mergeable Types** Dec 2020
Shashank Shakhar Dubey, KC Sivaramakrishnan, Thomas Gazagnaire, Anil Madhavapeddy
Proceedings of the 18th Asian Symposium on Programming Languages and Systems (APLAS), 2020
- C11 **Version Control Is For Your Data Too** May 2019
Gowtham Kaki, KC Sivaramakrishnan, Suresh Jagannathan
The 3rd Summit on Advances in Programming Languages (SNAPL), 2019
- 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 Hillerström, 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

- W21 **Composing Schedulers using Effect Handlers** Sep 2022
Deepali Ande, KC Sivaramakrishnan
OCaml Workshop, 2022

	Marrying Replicated and Functional Data Structures	May 2022
W20	Vimala Soundarapandian, Adharsh Kamath, Kartik Nagar, KC Sivaramakrishnan <i>9th Workshop on Principles and Practice of Consistency for Distributed Data (PaPoC), 2022</i>	
	Parafuzz: Coverage-guided Property Fuzzing for Multicore OCaml programs	Aug 2021
W19	Sumit Padhiyar, Adharsh Kamath, KC Sivaramakrishnan <i>OCaml Workshop, 2021</i>	
	Experiences with Effects	Aug 2021
W18	Thomas Leonard, Craig Ferguson, Patrick Ferris, Sadiq Jaffer, Tom Kelly, KC Sivaramakrishnan, Anil Madhavapeddy <i>OCaml Workshop, 2021</i>	
	Adapting the OCaml ecosystem for Multicore OCaml	Aug 2021
W17	Sudha Parimala, Enguerrand Decorne, Sadiq Jaffer, Tom Kelly, KC Sivaramakrishnan <i>OCaml Workshop, 2021</i>	
	Certified Mergeable Replicated Data Types	Apr 2021
W16	Vimala Soundarapandian, KC Sivaramakrishnan, Kartik Nagar <i>8th Workshop on Principles and Practice of Consistency for Distributed Data (PaPoC), 2021</i>	
	Handlers.js	Apr 2018
W15	Daniel Hillerström, Sam Lindley, Robert Atkey, KC Sivaramakrishnan, Jeremy Yallop <i>Programming Technology for the Future Web (ProWeb), 2019</i>	
	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, 2017</i>	
	Effectively Tackling the Awkward Squad	Sep 2017
W12	Stephen Dolan, Spiros Eliopoulos, Daniel Hillerström, Anil Madhavapeddy, KC Sivaramakrishnan, Leo White <i>OCaml Workshop, 2017</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 Hillerström, 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>	
	Lock-free programming for the masses	Sep 2016
W8	KC Sivaramakrishnan, Théo Laurent <i>OCaml Workshop, 2016</i>	
	Compiling Links Effect Handlers to the OCaml Backend	Sep 2016
W7	Daniel Hilleström, Sam Lindley, KC Sivaramakrishnan <i>ML Workshop</i>	

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, 2015</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

- Lecturer:
 - Compiler Design, IIT Madras, Monsoon '22
 - Programs and Proofs, IIT Madras, Spring '20, Spring '21.
 - Paradigms of Programming, IIT Madras, Monsoon '19, Monsoon '20.
- 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.

❖ Advising

- PhD Students

- Sai Venkata Krishnan, 2021 – present
- Vimala Soundarapandian, 2020 – present
- Sheera Shamsu, 2019 – present
- Master's Students
 - Deepali Ande, MS, 2020 – present
 - Sumit Padhiyar, MS, 2019 – 2021
 - Shashank Shekhar Dubey, MS, 2019 – 2021
 - Atul Dhiman, MTech, 2019 – 2020
- Undergraduate Students
 - Anirudh Sunder Raj, Dual Degree Project, 2020 – 2021
 - Arnnav Datar, UGRC, 2021
 - Matevz Polijanc, Part II, University of Cambridge, 2017 – 2018
 - Charlie Crisp, Part II, University of Cambridge, 2017 – 2018
 - Henry Mercer, Part II, University of Cambridge, 2017 – 2018
 - Matt Harrison, Part II, University of Cambridge, 2016 – 2017
 - James Wright, Part II, University of Cambridge, 2015 – 2016
- Project Staff
 - Sudha Parimala, RSDE, IITM, 2019 – 2021
 - Shubham Kumar, RSDE, IITM, 2019 – 2021
 - Shakthi Kannan, RSDE, IITM, 2020 – 2021
 - Shubhendra Singhal, RSDE, IITM, 2020 – 2021
 - Anmol Sahoo, RSDE, IITM, 2019 – 2020
- Interns
 - Aadharsh Kamath, NITK, 2021
 - Shagun Goel, Stanford University, 2020
 - Pratap Singh, Harvard University, 2019
 - Nicolas Assouad, ENS Paris, 2017
 - Maxime Lesourd, ENS Lyon, 2017
 - Philip Dexter, Binghamton University, 2016
 - Armael Gueneau, ENS Lyon, 2016
 - Theo Laurent, ENS Lyon, 2015
 - Guillain Potron, ENS Lyon, 2015

❖ References

Suresh Jagannathan
 Professor
 Department of Computer Science
 Purdue University
 305 N University St
 West Lafayette, IN 47906, USA
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Anil Madhavapeddy
 University Lecturer
 Computer Laboratory
 University of Cambridge
 15 JJ Thomson Av
 Cambridge, CB3 0FD, UK
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Jan Vitek

Professor of Computer Science
College of Computer & Information Science
Northeastern University
440 Huntinton Av
Boston, MA 02115, USA
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Simon Peyton Jones

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