

# Curriculum Vitae

March 4, 2024

**KC Sivaramakrishnan**

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## ❖ Summary

I build robust, secure and scalable systems using programming language technology.

## ❖ 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

### Chief Technology Officer, Tarides

Dec 2022 – Present

### Adjunct Professor, Indian Institute of Technology, Madras

Dec 2022 – Present

### Assistant Professor, Indian Institute of Technology, Madras

Jan 2019 – Dec 2022

### Senior Research Associate, University of Cambridge

Advisors: Alan Mycroft, Anil Madhavapeddy

Nov 2017 – Dec 2018  
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

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

## ❖ 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.

## ❖ Invited Seminars and Workshops

- Dagstuhl Seminar 23101: “Foundations of WebAssembly”, Mar 2023
- Dagstuhl Seminar 21292: “Scalable Handling of Effects”, Jul 2021
- Dagstuhl Seminar 16112: “From Theory to Practice of Algebraic Effects and Handlers”, May 2016

## ❖ 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**: TFP 2024, POPL 2024, 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 member**: ICFP 2019.
- **Artifact Evaluation Committee Chair**: ESOP 2022.
- **Artifact Evaluation Committee member**: ICFP 2018, PLDI 2015, PPOPP/CGO 2016.
- **Expert Reviewer**: POPL 2023, 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 Eliopoulos, 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

	<b>Certified Mergeable Replicated Datatypes</b>	Jun 2022
C15	Vimala Soundarapandian, Adharsh Kamath, Kartik Nagar, KC Sivaramakrishnan <i>International Conference on Programming Language Design and Implementation (PLDI), 2022</i>	
	<b>Retrofitting Effect Handlers to OCaml</b>	Jun 2021
C14	KC Sivaramakrishnan, Stephen Dolan, Leo White, Sadiq Jaffer, Tom Kelly, Anil Madhavapeddy <i>International Conference on Programming Language Design and Implementation (PLDI), 2021</i>	
	<b>ConFuzz: Coverage-guided Property Fuzzing for Event-driven Programs</b>	Jan 2021
C13	Sumit Padhiyar, KC Sivaramakrishnan <i>Proceedings of the 23rd International Symposium on Practical Aspects of Declarative Languages (PADL), 2021</i> <b>Distinguished paper</b>	
	<b>Banyan: Coordination-free Distributed Transactions over Mergeable Types</b>	Dec 2020
C12	Shashank Shakhra Dubey, KC Sivaramakrishnan, Thomas Gazagnaire, Anil Madhavapeddy <i>Proceedings of the 18th Asian Symposium on Programming Languages and Systems (APLAS), 2020</i>	
	<b>Version Control Is For Your Data Too</b>	May 2019
C11	Gowtham Kaki, KC Sivaramakrishnan, Suresh Jagannathan <i>The 3rd Summit on Advances in Programming Languages (SNAPL), 2019</i>	
	<b>Bounding Data Races in Space and Time</b>	Jun 2018
C10	Stephen Dolan, KC Sivaramakrishnan, Anil Madhavapeddy <i>International Conference on Programming Language Design and Implementation (PLDI)</i>	
	<b>Continuation Passing Style for Effect Handlers</b>	Sep 2017
C9	Daniel Hillerström, Sam Lindley, Robert Atkey, KC Sivaramakrishnan <i>International Conference on Formal Structures for Computation and Deduction (FSCD)</i>	
	<b>DaLi : Database as a Library</b>	May 2017
C8	Gowtham Kaki, KC Sivaramakrishnan, Thomas Gazagnaire, Anil Madhavapeddy, Suresh Jagannathan <i>The 2nd Summit on Advances in Programming Languages (SNAPL)</i> <b>Oral Presentation</b>	
	<b>Declarative Programming over Eventually Consistent Data Stores</b>	Jun 2015
C7	KC Sivaramakrishnan, Gowtham Kaki, Suresh Jagannathan <i>International Conference on Programming Language Design and Implementation (PLDI)</i>	
	<b>Rx-CML: A Prescription for Safely Relaxing Synchrony</b>	Jan 2014
C6	KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan <i>Symposium on Practical Aspects of Declarative Languages (PADL)</i>	
	<b>A Coherent and Managed Runtime for ML on the SCC</b>	Nov 2012
C5	KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan <i>Many-core Architecture Research Community Symposium (MARC)</i> <b>Best paper award</b>	
	<b>Eliminating Read Barriers through Procrastination and Cleanliness</b>	Jun 2012
C4	KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan <i>International Symposium on Memory Management (ISMM)</i>	
	<b>Composable Asynchronous Events</b>	Jun 2011
C3	Lukasz Ziarek, KC Sivaramakrishnan, Suresh Jagannathan <i>International Conference on Programming Language Design and Implementation (PLDI)</i>	
	<b>Efficient Session Type Guided Distributed Interaction</b>	June 2010
C2	KC Sivaramakrishnan, Karthik Nagaraj, Lukasz Ziarek, Patrick Eugster <i>International Conference on Coordination Models and Languages (COORDINATION)</i>	

- 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*
- W20 [Marrying Replicated and Functional Data Structures](#) May 2022  
Vimala Soundarapandian, Adharsh Kamath, Kartik Nagar, KC Sivaramakrishnan  
*9th Workshop on Principles and Practice of Consistency for Distributed Data (PaPoC), 2022*
- W19 [Parafuzz: Coverage-guided Property Fuzzing for Multicore OCaml programs](#) Aug 2021  
Sumit Padhiyar, Adharsh Kamath, KC Sivaramakrishnan  
*OCaml Workshop, 2021*
- W18 [Experiences with Effects](#) Aug 2021  
Thomas Leonard, Craig Ferguson, Patrick Ferris, Sadiq Jaffer, Tom Kelly, KC Sivaramakrishnan, Anil Madhavapeddy  
*OCaml Workshop, 2021*
- W17 [Adapting the OCaml ecosystem for Multicore OCaml](#) Aug 2021  
Sudha Parimala, Enguerrand Decorne, Sadiq Jaffer, Tom Kelly, KC Sivaramakrishnan  
*OCaml Workshop, 2021*
- W16 [Certified Mergeable Replicated Data Types](#) Apr 2021  
Vimala Soundarapandian, KC Sivaramakrishnan, Kartik Nagar  
*8th Workshop on Principles and Practice of Consistency for Distributed Data (PaPoC), 2021*
- W15 [Handlers.js](#) Apr 2018  
Daniel Hillerström, Sam Lindley, Robert Atkey, KC Sivaramakrishnan, Jeremy Yallop  
*Programming Technology for the Future Web (ProWeb), 2019*
- 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, 2017*
- W12 [Effectively Tackling the Awkward Squad](#) Sep 2017  
Stephen Dolan, Spiros Eliopolous, Daniel Hillerström, Anil Madhavapeddy, KC Sivaramakrishnan, Leo White  
*OCaml Workshop, 2017*
- 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 Hillerström, Anil Madhavapeddy, KC Sivaramakrishnan, Leo White  
*Symposium on Trends in Functional Programming (TFP)*
- W9 [Eff directly in OCaml](#) Mar 2017  
Oleg Kiselyov and KC Sivaramakrishnan  
*JSSST Workshop on Programming and Programming Languages*

W8	<a href="#">Lock-free programming for the masses</a> KC Sivaramakrishnan, Théo Laurent <i>OCaml Workshop, 2016</i>	Sep 2016
W7	<a href="#">Compiling Links Effect Handlers to the OCaml Backend</a> Daniel Hilleström, Sam Lindley, KC Sivaramakrishnan <i>ML Workshop</i>	Sep 2016
W6	<a href="#">Eff Directly in OCaml</a> Oleg Kiselyov and KC Sivaramakrishnan <i>ML Workshop</i>	Sep 2016
W5	<a href="#">Effective Concurrency with Algebraic Effects</a> Stephen Dolan, Leo White, KC Sivaramakrishnan, Jeremy Yallop and Anil Madhavapeddy <i>OCaml Workshop, 2015</i>	Sep 2015
W4	<a href="#">Migrating MultiMLton to the Cloud</a> KC Sivaramakrishnan, Lukasz Ziarek, Suresh Jagannathan <i>ML Workshop</i>	Sep 2013
W3	<a href="#">Scalable Lightweight Task Management Schemes for MIMD Processors</a> Daniel G. Waddington, Chen Tian, KC Sivaramakrishnan <i>Workshop on Systems for Future Multi-Core Architectures (SFMA)</i>	Apr 2011
W2	<a href="#">The Design Rationale for MultiMLton</a> Suresh Jagannathan, Armand Navabi, KC Sivaramakrishnan, Lukasz Ziarek <i>ML Workshop</i>	Sep 2010
W1	<a href="#">Lightweight Asynchrony using Parasitic Threads</a> 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	<a href="#">Featherweight Threads for Communication</a> 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 – 2023
  - Sumit Padhiyar, MS, 2019 – 2021
  - Shashank Shekhar Dubey, MS, 2019 – 2021
  - Atul Dhiman, MTech, 2019 – 2020
- Undergraduate Students
  - Sooraj Srinivasan, UGRC, 2023
  - Mantra Trambadia, UGRC, 2023
  - Narasimha, UGRC, 2023
  - Anirudh Sunder Raj, Dual Degree Project, 2020 – 2021
  - Arnhav 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