Curriculum Vitae

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Gowtham Kaki

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❖ Research Interests

Programming Languages, Formal Methods, Distributed Systems, Databases, Software Security, Automated Reasoning, and Neuro-symbolic AI.

❖ Education

PhD — Computer Science — *Aug 2019*
Purdue University, USA

Thesis: **Automatic Reasoning Techniques for Non-Serializable Data-Intensive Applications**
Advisor: Suresh Jagannathan

Master of Science — Computer Science — *May 2016*
Purdue University, USA

Bachelor of Engineering (Hons.) — Computer Science — *Jul 2009*
BITS Pilani, India

❖ Experience

Assistant Professor, University of Colorado - Boulder — *Aug 2020 – present*

Post-Doctoral Researcher, Purdue University — *Jan 2020 – Jul 2020*

Visiting Assistant Professor, Purdue University — *Aug 2019 – Dec 2019*

Research and Teaching Assistant, Purdue University — *Aug 2011 – Apr 2018*

Research Intern, Microsoft Research, India — *May 2014 – Aug 2014, & Jun 2015 – Aug 2015*
Advisor: G Ramalingam

Software Engineer, Yahoo!, India — *Jul 2009 – Jul 2011*

❖ Major Recognitions

- Google PhD Fellowship 2018 for exceptional research in Computer Science and related disciplines.
- Maurice H. Halstead Memorial Award for outstanding research in Software Engineering, Purdue University, 2019.
- "30 under 30" award for outstanding accomplishments by a young alumnus, BITS Alumni Association (BITSAA), 2018.
- Amazon Research Award 2023 For Domain-Specific Solvers for Distributed System Verification (Declined)

❖ Journal Publications

Verifying Indistinguishability of Privacy-Preserving Protocols — *Oct 2023*
J4   Kirby Linvill, Gowtham Kaki, and Eric Wustrow
Proceedings of the ACM on Programming Languages (PACMPL), issue OOPSLA 2023

Historia: Refuting Callback Reachability with Message-History Logics — *Oct 2023*
J3   Shawn Meier, Sergio Mover, Gowtham Kaki, and Bor-Yuh Evan Chang
Proceedings of the ACM on Programming Languages (PACMPL), issue OOPSLA 2023

Mergeable Replicated Data Types — *Oct 2019*
J2   Gowtham Kaki, Swarn Priya, KC Sivaramakrishnan, Suresh Jagannathan
Proceedings of the ACM on Programming Languages (PACMPL), issue OOPSLA 2019

J1 **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

J0 **Alone Together: Compositional Reasoning and Inference for Weak Isolation** *Jan 2018*
Gowtham Kaki, Kartik Nagar, Mahsa Najafzadeh, Suresh Jagannathan
Proceedings of the ACM on Programming Languages (PACMPL), issue POPL 2018

J-1 **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

❖ Conference Publications[1]

C5 **RunTime-Assisted Convergence in Replicated Data Types** *June 2022*
Gowtham Kaki, Prasanth Prahladan, Nicholas Lewchenko
International Conference on Programming Language Design and Implementation (PLDI 2022)

C4 **Version Control Is For Your Data Too** *May 2019*
Gowtham Kaki, KC Sivaramakrishnan, Suresh Jagannathan
Summit on Advances in Programming Languages (SNAPL 2019)

C3 **Safe Transferable Regions** *Jul 2018*
Gowtham Kaki, G Ramalingam
European Conference on Object-Oriented Programming (ECOOP 2018)

C2 **Declarative Programming over Eventually Consistent Data Stores** *Jun 2015*
KC Sivaramakrishnan, Gowtham Kaki, Suresh Jagannathan
International Conference on Programming Language Design and Implementation (PLDI 2015)

C1 **A Relational Framework for Higher-Order Shape Analysis** *Sep 2014*
Gowtham Kaki, Suresh Jagannathan
International Conference on Functional Programming (ICFP 2014)

C0 **Novel adaptive scheduling algorithm for computational grid** *Jan 2010*
Sunita Bansal, Gowtham Kaki, Chittaranjan Hota
Internet Multimedia Services Architecture and Applications (IMSAA'09)

❖ Workshop Publications & Tech Reports

W5 **Distributed Consensus Algorithms as Replicated State Applications** *April 2023*
Nicholas Lewchenko and Gowtham Kaki
Principles and Practice of Consistency for Distributed Data (PaPoC 2023)

W4 **Bolt-On Convergence in Mergeable Replicated Data Types** *April 2022*
Gowtham Kaki, Prasanth Prahladan, Nicholas Lewchenko
Principles and Practice of Consistency for Distributed Data (PaPoC 2022)

W3 **Fine-grained distributed consistency guarantees with effect orchestration** *Apr 2018*
Kia Rahmani, Gowtham Kaki, Suresh Jagannathan
Principles and Practice of Consistency for Distributed Data (PaPoC 2018)

W2 **Mergeable Types** *Sep 2017*
Gowtham Kaki, KC Sivaramakrishnan, Samodya Abeysiriwardane, Suresh Jagannathan
ML Workshop (ML 2017)

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[1]Journal publications J2-J4 are also published in the corresponding conference proceedings. They are not repeated.

W1

DaLi : Database as a Library
May 2017
Gowtham Kaki, KC Sivaramakrishnan, Thomas Gazagnaire, Anil Madhavapeddy, Suresh Jagannathan
Summit on Advances in Programming Languages (SNAPL 2017)
Oral Presentation

W0

A Lightweight Symbolic Execution Framework for Ruby-on-Rails
Jun 2016
Gowtham Kaki
PLDI Student Research Competition (PLDI SRC 2016)

W-1

Safe Memory Regions for Big Data Processing
Jan 2016
Gowtham Kaki, G Ramalingam, Kapil Vaswani, Dimitrios Vytiniotis
Microsoft Tech Report

❖ Teaching

- CU Boulder
  - Principles of Programming Langauges (CSCI3155), Spring'21 & '22, Fall'23
  - Distributed Systems Verification (CSCI7000), Spring'21 & '24
  - Foundations of Programming Langauges (CSCI5535), Fall'21
  - Principles of Functional Programming (CSCI7000), Spring'23
- Purdue
  - Software Engineering (CS307), Fall 2019

❖ Research Grants

- Developing AI agents to Support Teaching Staff in Large Programming Classes, CU Boulder IRT seed grant (Co-PI)

❖ Service

- CS Dept., Graduate Committee (GradComm) Member, 2020-2021
- Program Committee (PC) Member: PLDI'23, OOPSLA'23, OOPSLA'22, ML'20
- Referee, TOPLAS 2022
- Artifact Evaluation Committee (AEC) Member: PLDI'16, ICFP'17, ICFP'18, ECOOP'19, and PLDI'19
- Organizer, Purdue PL (PurPL) Reading Group, Oct 2013 – Dec 2016.
- Expert Advisor, GradRight Inc., Oct 2018 – Aug 2019
- Student Volunteer, PLDI'16