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Kiran Gopinathan

Computer Science Researcher working on Proof Maintenance.

Fluent in OCaml, Lean and Rocq.

Education & Qualifications

2025 Jan - Present	Working as a Postdoctoral Researcher at the University of Illinois Urbana-Champaign under the Thomas M. Siebel Center for Computer Science.
2024 August - Sept	Awarded a Doctor of Philosophy in Computer Science from the National University of Singapore under the School of Computing Dept.
	Awarded the 2024 NUS' Dean's Graduate Research Excellence Award.
	Given to senior PhD students who have made significant advancements in their PhD study.
2019 May - June	Achieved a First Class Honours Bachelor's Degree in Computer Science from UCL
	Graduated from University College London
	Awarded Goldsmid Medal for the top graduating student of the Faculty of Engineering
2016 May - June	Achieved 4 A* A level grades in Physics, Chemistry, Further Maths and Maths
	Graduated from Magdalen College School
2014 May - June	Achieved A* GCSE grade in Maths, Biology, Chemistry, Physics, French, English language and literature, Geography & Art

Publications

2025   K. Gopinathan, D. Spiliopoulos, V. Goyal, P. Müller, M. Püschel, and I. Sergey. Accelerating Automated Program Verifiers by Automatic Proof Localization. *CAV*, 2025

Y. Ling, G. Rajiv, K. Gopinathan, and I. Sergey. Sound and efficient generation of Data-Oriented exploits via programming language synthesis. In *34th USENIX Security Symposium (USENIX Security 25)*. USENIX Association, 2025

2024   C. Le, K. Gopinathan, K. W. Lee, S. Gilbert, and I. Sergey. Concurrent data structures made easy. *OOPSLA*, 2024

2023   K. Gopinathan, M. Keoliya, and I. Sergey. Mostly automated proof repair for verified libraries. *PLDI*, 2023
Awarded ACM SIGPLAN Distinguished Paper Award

S. Thy, A. Costea, K. Gopinathan, and I. Sergey. Adventure of a lifetime: Extract method refactoring for rust. *OOPSLA*, 2023

M. Flatt, T. Allred, N. Angle, S. D. Gabrielle, R. B. Findler, J. Firth, K. Gopinathan, B. Greenman, S. Kasivajhula, A. Knauth, J. A. McCarthy, S. Phillips, S. Porncharoenwase, J. A. Søgaard, and S. Tobin-Hochstadt. Rhombus: A new spin on macros without all the parentheses. *OOPSLA*, 2023

2021   Y. Watanabe, K. Gopinathan, G. Pîrlea, N. Polikarpova, and I. Sergey. Certifying the synthesis of heap-manipulating programs. (ICFP), 2021

2020   K. Gopinathan and I. Sergey. Certifying Certainty and Uncertainty in Approximate Membership Query Structures. *CAV*, 2020
Awarded Second Place Medal for the PLDI 2020 Student Research Competition

2019   K. Gopinathan and I. Sergey. Towards mechanising probabilistic properties of a blockchain. *CoqPL*, 2019

2018   K. Gopinathan, N. A. Kaloumenos, K. Ajmera, A. Matei, I. Williams, and A. Davis. FHIR FLI: an open source platform for storing, sharing and analysing lifestyle data. *ICT4AWE*, 2018

Work Experience

2019   **Aetna International Research Internship,** London

- Researched the use of Deep Learning techniques for the processing of FHIR insurance data in collaboration with the Aetna International Health Insurance company.

- As part of the internship, designed and implemented several industrial-scale machine learning pipelines, gaining experience with the processes of large scale data mining.

2018   **UCL PPLV Research Internship - Probchain,** London

- Performed research into the mechanisation of the paper "Analysis of the Blockchain Protocol in Asynchronous Networks", the results of which were presented at the COQPL 2019 Conference.

2017   **Nuffield Health Internship,** London

- Developed a proof of concept Alexa skill at an internship at Nuffield Health. As part of the project, gained experience in developing under the constraint of a legacy codebases.
- Over the course of the intership, became familiar with development and testing cycles.

Honors & Awards

2024   **NUS' Dean's Graduate Research Excellence Award**

2023   **PLDI 2023 ACM SIGPLAN Distinguished Paper Award**

2020   **PLDI 2020 Student Research Competition Silver Medal**

2019   **UCL Faculty of Engineering Goldsmid Medal**

Mentoring, Volunteering & Event Organisation

2025   **OCaml Workshop 2025**
Chaired and organised the OCaml Workshop to be co-located with ICFP 2025

2022 - Present   **SIGPLAN-M Long Term Mentoring Service** - Member of operations team.

2022 - 2024   **NUS Programming Languages & Software Engineering (PLSE) Website**
Developed and maintained website for NUS' PLSE groups.
Designed Logo for the NUS PLSE's Social Media Account.

2022   **Asean Symposium on Programming Languages and Systems**
Designed the badges for the artefact evaluation results.

2021   **NUS Programming Langauges Mentoring Workshop (PLMW)**
Served as a Panellist on the PhD Life Panel.

2021   **NUS Computing Research Week 2021**
Chaired and organised NUS' internal research week conference.

2019   **Symposium on Implementation and Application of Functional Languages**
Served as a Student Volunteer.

Reviewing and Program Committees

- **PC Member** - OOPSLA'26, ICFP'25, AIPLANS'21

- **External Reviewer** - ICSE'24, OOPSLA'23, POPL'22, ESOP'22, CPP'21, CPP'20

- **Artefact Evaluation Committee** - PLDI'21, ICPF'21, PLDI'20

Teaching

2023   **CS6217: Topics in Programming Languages & Software Engineering** - Guest Lecturer
Gave seminar on "Program Logics for Functional Languages"

CS5232: Formal Specification and Design Techniques - Guest Lecturer
Gave seminar on Dafny and "Introduction to Floyd-Hoare Logic"

2020-2023   **CS5223: Distributed Systems** - Teaching Assistant

2020-2022   **CS4215: Programming Languages Implementation** - Teaching Assistant

2021   **CS5218: Principles and Practice of Program Analysis** - Teaching Assistant

References

- Dr. Talia Ringer (Postdoc advisor) - `tringer@illinois.edu`
- Dr. Ilya Sergey (PhD advisor) - `ilya@nus.edu.sg`