

Kimaya Bedarkar

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About Me

I am a final-year PhD student at MPI-SWS, working at the intersection of real-time systems and program verification. My research combines techniques from both fields to establish formally verified, end-to-end timing guarantees for concrete implementations of safety-critical systems.

My long-term goal is to make formal verification practical for large-scale production systems by combining formal methods with AI. Building on my experience with separation logic-based program verification, I am particularly interested in designing verification tools and abstractions that AI agents can use effectively.

Education

Max Planck Institute for Software Systems

PHD STUDENT

I work in the Foundations of Programming and Real-Time Systems labs.

I am co-advised by **Björn Brandenburg**, **Derek Dreyer**, and **Deepak Garg**.

Saarbrücken, Germany

Sep. 2022 – Present

Birla Institute of Technology and Science Pilani

B.E. IN COMPUTER SCIENCE ENGINEERING, M.Sc. IN MATHEMATICS

Goa, India

Aug. 2017 – Sep. 2022

Publications

From Estimates to Guarantees: Verified Exceedance Analysis on Commodity Hardware

RTSS 2026 (to appear)

KIMAYA BEDARKAR, BITE YE, DEEPAK GARG, DEREK DREYER, BJÖRN BRANDENBURG

[Supplementary material](#)

RefinedProsa: Connecting Response-Time Analysis with C Verification for Interrupt-Free Schedulers

PLDI 2025

KIMAYA BEDARKAR, LAILA ELBEHEIRY, MICHAEL SAMMLER, LENNARD GÄHER, BJÖRN BRANDENBURG, DEREK DREYER, DEEPAK GARG

[Project website](#) | [Supplementary material](#)

From Intuition to Coq: A Case Study in Verified Response-Time Analysis of FIFO Scheduling

RTSS 2022

KIMAYA BEDARKAR, MARIAM VARDISHVILI, SERGEY BOZHKO, MARCO MAIDA, BJÖRN BRANDENBURG

[Supplementary material](#)

Internships

Microsoft Research

RESEARCH INTERN

Verified parts of production C code using separation logic-based verification tools, specifically PAL in the RiSE group, under the supervision of Tahina Ramanand. Developed verification abstractions for complex programming patterns and applied them to real-world code.

Redmond, USA

Jun. 2023 – Aug. 2023

Max Planck Institute for Software Systems

RESEARCH INTERN

My main contribution was formalizing some real-time system analyses in the Rocq proof assistant. I was advised by **Björn Brandenburg**. I became a part of the core team and started contributing to the open source libraries of **PROSA**, which to-date is the largest machine-checked framework for real-time schedulability analysis.

Kaiserslautern, Germany

Sep. 2021 – May 2022

Microsoft

SOFTWARE DEVELOPMENT INTERN

I gained exposure to various development tools and technologies, such as ReactJS and OAuth. Using several of Microsoft's internal platforms, I built a Microsoft Teams web application that enables third-party users to securely share data with organizations.

Hyderabad, India

May 2021 – Jul. 2021

Skills

Research Areas

Separation logic, real-time systems

Verification Tools

Rocq, Iris, RefinedC

Programming & Tools

C, Git

Professional Service

- Secondary reviewer, CPP 2027
- Artifact Evaluation Committee member, OOPSLA 2026
- Student representative, MPI-SWS
- Student volunteer: PLDI 2025, POPL 2024, CAV 2021