ADITYA ANAND

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Mumbai, Maharashtra - 400076, India

Research Interest

My research area is compilers, programming languages, and program analysis. I am interested in developing efficient and precise static+dynamic program-analysis techniques, with a current emphasis on developing a speculation-based static+dynamic technique for Java-like languages.

Education

- **Indian Institute of Technology Bombay** *May 2023 - Ongoing*
  Doctor of Philosophy (Ph.D.), Computer Science and Engineering Mumbai, India
  ◦ GPA: 8.82/10.00
- **Indian Institute of Technology Mandi** *September 2020 - April 2023*
  Doctor of Philosophy (Ph.D.), Computer Science and Engineering – (Transfer to IIT B) Mandi, India
  ◦ GPA: 8.82/10.00
- **Visvesvaraya Technological University** *August 2015 - June 2019*
  Bachelor of Engineering (B.E), Computer Science and Engineering Belagavi, India
  ◦ GPA: 9.52/10.00

Publications

C=Conference, J=Journal

[J3] : **Aditya Anand**, Vijay Sundaresan, Daryl Maier and Manas Thakur. **CoSSJIT: Combining Static Analysis and Speculation in JIT Compilers" (To appear)**. In *Proceedings of the ACM on Programming Languages (OOPSLA), Singapore, October 16-18, 2025.*

[J2] : **Aditya Anand** and Manas Thakur. **Partial Program Analysis for Staged Compilation Systems**. In *Formal Methods in System Design (FMSD)*, Springer, 2024. DOI: 10.1007/s10703-024-00458-x

[J1] : **Aditya Anand**, Solai Adithya, Swapnil Rustagi, Priyam Seth, Vijay Sundaresan, Daryl Maier, V. Krishna Nandivada, and Manas Thakur. **Optimistic Stack Allocation and Dynamic Heapification for Managed Runtimes**. In *Proceedings of the ACM on Programming Languages (PLDI)*, Copenhagen, Denmark, June 24-28, 2024. DOI: 10.1145/3656389

[C1] : **Aditya Anand** and Manas Thakur. **Principles of Staged Static+Dynamic Partial Analysis**. In *Proceedings of the 29th Static Analysis Symposium (SAS 2022)*, Auckland, New Zealand, December 5th-10th, 2022. DOI: 10.1007/978-3-031-22308-2_4

Invited to appear in Formal Methods in System Design (FMSD)

Posters

P=Posters

[P3] : **Aditya Anand et. al**. **CoSSJIT: Combining Static Analysis and Speculation in JIT Compilers (To appear)**. Poster in the Object-Oriented Programming, Systems, Languages & Applications (OOPSLA) co-located with SPLASH 2025, Singapore, October 16-18, 2025.

[P2] : **Aditya Anand et. al**. **Optimistic Stack Allocation and Dynamic Heapification for Manged Runtimes**. Poster in the Academic Research and Careers for Students (ARCS), ACM India, Coimbatore, India Feburary 27th-28th, 2025.

[P1] : **Aditya Anand**. **A Study of the Impact of Callbacks in Staged Static+Dynamic Partial Analysis**. In *Companion Proceedings of the 2022 ACM SIGPLAN International Conference on Systems, Programming, Languages, and Applications: Software for Humanity (SPLASH Companion)*, Auckland, New Zealand, December 5th-10th, 2022. DOI: 10.1145/3563768.3563957

Work Experience

- **PLATO LAB, IIT Bombay** *May 2023 - Present*
  Doctoral Assistant
  ◦ Working on developing a framework for "Precise speculation-based static+dynamic analysis for managed runtimes.".
- **SAT LAB, IIT Mandi** *September 2020 - April 2023*
  Doctoral Assistant
  ◦ Formalized the idea of "Staging the analysis across static and dynamic time for managed runtimes".

Teaching Experience

- **Teaching Assistant, CS339+CS355: Abstractions and Paradigms for Programming, IIT Bombay** *Fall 2025*
- **Teaching Assistant, CS614: Advanced Compilers, IIT Bombay** *Spring 2025*
- **Teaching Assistant, CS339+CS355: Abstractions and Paradigms for Programming, IIT Bombay** *Fall 2024*
- **Teaching Assistant, CS6004: Code Optimization for Object-Oriented Languages, IIT Bombay** *Spring 2024*
- **Teaching Assistant, CS614: Advanced Compilers, IIT Bombay** *Fall 2023*
- **Teaching Assistant, CS515: Advanced Computer Science Practicum, IIT Mandi** *Fall 2022*
- **Teaching Assistant, CS611: Program Analysis, IIT Mandi** *Spring 2022*
- **Teaching Assistant, CS502: Compiler Design, IIT Mandi** *Fall 2022*
- **Teaching Assistant, CS302: Paradigms of Programming, IIT Mandi** *Spring 2021*

Professional Experience

- **Artifact Evaluation Committee Member:**
  - European Conference on Object-Oriented Programming (ECOOP 2025)
  - Programming Language Design and Implementation (PLDI 2024).
  - European Conference on Object-Oriented Programming (ECOOP 2024)

Awards

- **ACM/IARCS Travel Grant.** *2025*
- **George B. Fernandes Award, Excellence in PhD Research Progress, IIT Bombay.** *2025*
- **Excellence in Teaching Assistantship, IIT Bombay.** *Spring 2024*
- **ACM/IARCS Travel Grant.** *2024*
- **SIGPLAN Fellowship, PLMW and PLDI 2024.** *2024*
- **Poster Presentation winner RISC 24, IIT Bombay.** *2024*
- **Excellence in Teaching Assistantship, IIT Bombay.** *Fall 2023*
- **GATE Fellowship,Government of India.** *2020*
- **4th rank in B.E, Department of Computer Science, VTU, Belgavi, Karnataka.** *2019*
- **1st rank in Inter College Technical Quiz Competition.** *2018*
- **Awarded Rajya Puraskar in Bharat Scouts and Guides.** *2013*

Skills

- **Programming Languages:** C, C++, Java, Scheme, Haskell.
- **Web Technologies:** HTML 5, CSS, Flask, and W3 CSS framework.
- **Scripting:** Bash and Awk.
- **Other Tools & Technologies:** Git, Docker.
- **Compiler frameworks/tools:** JavaCC/JTB, Soot, OpenJ9 VM.

Relevant Courses

- Compiler Design
- Reactive Design Patterns
- Program Analysis
- Data Structure and Algorithm - II
- Verification of Reactive Systems
- Computer Architecture
- Discrete Mathematics
- Language Engineering for Complex Programs: A C++ Perspective

Talks

- **Talk on "Program Analysis for Managed Runtimes in Presence of Dynamic Features" at IICT 2024.**
- **Talk on "Optimistic Stack Allocation and Dynamic Heapification for Managed Runtimes." at ComputerSysTalks@India.**
- **Talk on "Optimistic Stack Allocation and Dynamic Heapification for Managed Runtimes." at SERI 2024.**
- **Presented "Optimistic Stack Allocation and Dynamic Heapification for Managed Runtimes." at PLDI 2024.**
- **Talk on "Staged Static+Dynamic Partial Analysis for Java-like languages" at SERI 2023.**
- **Presented "Principles of Staged Static+Dynamic Partial Analysis at SAS 2022".**