

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

PUBLICATIONS

C=CONFERENCE, J=JOURNAL

- [J3]: **Aditya Anand**, Vijay Sundaresan, Daryl Maier and Manas Thakur. **CoSSJIT: Combining Static Analysis and Speculation in JIT Compilers**. In *Proceedings of the ACM on Programming Languages (OOPSLA)*, Singapore, October 16-18, 2025. DOI: 10.1145/3763149
- [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**. 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

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

TALKS

- Presented “CoSSJIT: Combining Static Analysis and Speculation in JIT Compilers.” at OOPSLA 2025.
- Talk on “Combining Static Analysis and Speculations in JIT Compilers” at IICT 2025.
- 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”.