Dr. Uday P. Khedker

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BioData

- **Qualifications**

  - Ph.D. in Computer Science & Engineering, IIT Bombay (1995).
    Title of the thesis : *A Generalised Theory of Bit Vector Data Flow Analysis*.

  - M.Tech. in Computer Science from Department of Computer Science, University of Pune (1989).

  - B.E. in Electronics & Telecommunication Engineering from Government Engineering College, Jabalpur (1986).

  - H.S.S.C. from M. P. Board of Secondary Education with 6th *rank in merit* (1981).

- **Areas of Interests**

  - Programming Languages and Compilers, Program Analysis.

- **Experience**

  - Department of Computer Science and Engineering, IIT Bombay. Assistant Professor (2001-2003), Associate Professor (2003 to 2009), Professor (since 2009).
    Head of the department from Apr 2016 to Apr 2019.

  - Department of Computer Science, University of Pune. Lecturer (1994-1995), Reader (1995-2001).

- **Honours and Distinctions**

  - Prof. S. P. Sukhatme Excellence in Teaching Award, 2023.
  - Excellence in Teaching Award (CSE Dept), 2020.
  - IBM Faculty Award 2007.

Teaching and Research

- **Courses Taught**

  Have taught the following regular courses: Design and Implementation of Gnu Compiler Generation Framework, Program Analysis, Compiler Construction, Advanced Compilers, Advanced Data Flow Analysis (at University of Cambridge, UK), Systems Programming, Software Laboratory, Programming Paradigms, Introduction to Programming etc.

  Have also taught courses to the industry based on their specific needs. Have organized one week courses on compiler construction for college teachers and workshops on GCC for industry and academia.

- **Research Areas**

    Have been working in the area of program analysis for over two decades and have explored topics on Interprocedural Data Flow Analysis, Heap Reference Analysis, Pointer Analysis, Automatic construction of program analysers, and Increasing the precision of program analyses.

    My major current research has three strands all related to precise and scalable analysis

    - The first strand explores precise pointer analysis of C/C++ programs in its full glory where precision is with respect to non-deterministic branching in programs. While the rest of the world tried to begin with scalable and imprecise methods and tries to increase their precision heuristically (and hence without precision guarantees), we begin with precise but non-scalable methods and try to increase their scalability heuristically (thereby preserving and hence guaranteeing, precision modulo non-deterministic branching).
    - The second strand explores precise and scalable interprocedural analysis where precision requires maintaining full flow- and context-sensitivity.
    - The third strand of my research proposes CoS-SSA (context-sensitive SSA) which extends the default intraprocedural SSA (which is restricted to local non-address taken variables) to global variables at the interprocedural level without any compromise on context-sensitivity even in presence pointers and recursion.

    An overview of my work can be found in this presentation:
    `http://www.cse.iitb.ac.in/~uday/soft-copies/pa-research-at-iitb.pdf`.

- **GCC Resource Center**.

    We had set up GCC Resource Center (`http://www.cse.iitb.ac.in/grc`) to explain our findings to GCC community. This center was funded by the Department of Electronics and Information Technology, Ministry of Communication and Information Technology, Government of India.

    With our studies, we were able to bring down the ramp up period in GCC internals from six months to less than a month. Three important research goals in GCC are (a) To support automatic construction of machine dependent optimizers, (b) To support flow and context sensitive pointer analysis, and (c) to simplify the machine descriptions.

    We have conducted workshops on *Essential Abstractions in GCC* for training participants in GCC internals. The workshops included lectures as well as programming assignments. Our latest training material can be found at
    `http://www.cse.iitb.ac.in/grc/gcc-workshop-13/index.php?page=slides`.

    With the funding drying away, the center is not active any more.

- **Publications**

    - ***Books***

    - *Excursions in Pointer Analysis*.
      Uday P. Khedker and Pritam M. Gharat. ACM Books (under preparation).

    - *Data Flow Analysis: Theory and Practice*.
      Uday P. Khedker, Amitabha Sanyal, and Bageshri Karkare. CRC Press, USA, 2009. An Indian edition of this book has been published by Ane books in 2013.

Teaching material accompanying this book can be found at the book page:
`http://www.cse.iitb.ac.in/~uday/dfaBook-web/`.

– ***Book Chapters***

1. Amitabha Sanyal and Uday P. Khedker. *Garbage Collection Techniques.* In "The Compiler Design Handbook : Optimizations & Machine Code Generation." (2nd Ed.) CRC Press USA. 2007.

2. Uday P. Khedker. *Data Flow Analysis.* In "The Compiler Design Handbook : Optimizations & Machine Code Generation." (1st Ed.) CRC Press USA. 2002.

– ***Journal Papers***

1. Komal Pathade, Uday P. Khedker. *Computing maximum fixed point solutions over feasible paths in data flow analyses.* Science of Computer Programming (In Press) 2023.

2. Swati Jaiswal, Uday P. Khedker, and Alan Mycroft. *A Unified Model for Context-Sensitive Program Analysis: The Blind Men and the Elephant.* ACM Computing Surveys. 54 (6), July 2021.

3. Pritam Gharat, Uday P. Khedker, and Alan Mycroft. *Generalized Points-to Graphs: A Precise and Scalable Abstraction for Points-to Analysis.* ACM Transactions on Programming Languages and Systems. 42(2), May 2020.

4. Swati Jaiswal, Uday P. Khedker, and Supratik Chakraborty. *Bidirectionality in Flow-Sensitive Demand-Driven Analysis.* Science of Computer Programming. Volume 190, Pages 1-49, Jan 2020.

5. Vini Kanvar, Uday P. Khedker. *Heap Abstractions for Static Analysis.* ACM Computing Surveys. 49(2): 29:1-29:47, 2016.

6. Benjamin Livshits, Manu Sridharan, Yannis Smaragdakis, Ondrej Lhoták, José Nelson Amaral, Bor-Yuh Evan Chang, Samuel Z. Guyer, Uday P. Khedker, Anders Møller, Dimitrios Vardoulakis. *In Defense of Soundiness: A Manifesto.* Communications of ACM 58(2): 44-46, 2015.

7. Aditya Kanade, Amitabha Sanyal, and Uday P. Khedker. *Validation of GCC optimizers through trace generation.* Software Practice and Experience 39(6): 611-639, 2009.

8. Uday P. Khedker, Amitabha Sanyal, and Amey Karkare. *Heap reference analysis using access graphs.* ACM Transactions on Programming Languages & Systems. Vol. 30, Issue 1, Nov. 2007.

9. Bageshri Sathe and Uday P. Khedker. *An improved bound for call-Strings based interprocedural data flow analysis.* ACM Transactions on Programming Languages & Systems. Vol. 29, Issue 6 (Oct. 2007).

10. Uday P. Khedker, D. M. Dhamdhere, and Alan Mycroft. *Bidirectional data flow analysis for type inferencing.* Computer Languages, 29(1-2), Pages 15-44, 2003.

11. Rahul Joshi, Uday P. Khedker, Vinay Kakade, and Medha Trivedi. *Some interesting results about applications of graphs in compilers.* CSI Journal, 31(4), 2002.

12. Uday P. Khedker and D. M. Dhamdhere. *Bidirectional data flow analysis: Myths and reality.* SIGPLAN Notices, June 1999.

13. Uday P. Khedker and D. M. Dhamdhere. *A generalized theory of bit vector data flow analysis.* ACM Transactions on Programming Languages & Systems, 16(5):1472–1511, 1994.

– **Conference and Workshop Papers**

1. Komal Pathade, Uday P. Khedker. *Path-sensitive MFP solutions in presence of intersecting infeasible control flow path segments.* International Conference on Compiler Construction (CC 2019). USA 2019.

2. Komal Pathade, Uday P. Khedker. *Computing partially path-sensitive MFP solutions in data flow analyses.* International Conference on Compiler Construction (CC 2018). Austria 2018.

3. Vini Kanvar, Uday P. Khedker. *"What's in a name?" Going beyond allocation site names in heap analysis.* International Symposium on Memory Management (ISMM 2017). Spain 2017.

4. Anushri Jana, Uday Khedker, Advaita Datar, R Venkatesh and Niyas C. *Scaling Bounded Model Checking By Transforming Programs With Arrays.* Logic-Based Program Synthesis and Transformation (LOPSTR 2016). UK 2016.

5. Pritam M. Gharat, Uday P. Khedker, Alan Mycroft. *Flow and Context Sensitive Points-to Analysis using Generalized Points-to Graphs*. International Static Analysis Symposium (SAS 2016). UK 2016.

6. Tukaram Muske, Uday P. Khedker. *Cause Points Analysis for Effective Handling of Alarms.* ISSRE International Symposium on Software Reliability Engineering (ISSRE) 2016: 173-184.

7. Tukaram Muske, Uday P. Khedker. *Efficient Elimination of False Positives Using Static Analysis*. International Symposium on Software Reliability Engineering (ISSRE) 2015: 270-280.

8. Shrawan Kumar, Amitabha Sanyal, Uday P. Khedker. *Value Slice: A New Slicing Concept for Scalable Property Checking*. International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS) 2015: 101-115.

9. Rohan Padhye and Uday P. Khedker. *Interprocedural Data Flow Analysis in Soot using Value Contexts.* ACM SIGPLAN International Workshop on the State Of the Art in Java Program Analysis (SOAP 2013). Seattle, USA.
   The resulting tool is called VASCO and is available for download from the following URL
   `https://github.com/rohanpadhye/vasco`.

10. Uday P. Khedker, Alan Mycroft, and Prashant Singh Rawat. *Liveness Based Pointer Analysis.* International Static Analysis Symposium (SAS 2012). France 2012.
    An GCC based implementation called LFCPA is available for download from the following URL
    `http://www.cse.iitb.ac.in/grc/index.php?page=l-fcpa`.

11. Uday P. Khedker and Ankita Mathur. *specRTL: A language for GCC Machine Descriptions.* 3rd International Workshop on GCC Research Opportunities (GROW 2011). Chamonix, France.
    An initial version of the implementation is available for download from the following URL
    `http://www.cse.iitb.ac.in/grc/index.php?page=specRTL`.

12. Rupesh Nasre, Kaushik Ranjan, R. Govindrajan, and Uday P. Khedker. *Scalable context-sensitive points-to analysis using multi-dimensional bloom filters.* Asian Symposium on Programming Languages and Symposium (APLAS 2009). Korea.

13. Uday Khedker and Bageshri Sathe. *Efficiency, precision, simplicity, and generality in interprocedural data flow analysis: resurrecting the classical call strings method*. International Conference on Compiler Construction (CC 2008), Budapest, Hungary.

14. Sameera Deshpande and Uday P. Khedker. *Incremental machine descriptions for GCC.* International Workshop on GCC for Research in Embedded Parallel Systems (GREPS'07) held in

conjunction with International Conference on Parallel Architectures and Compilation Techniques (PACT 2007). Brasov, Romania.

15. Amey Karkare, Uday P. Khedker and Amitabha Sanyal. *Liveness of heap data for functional programs,* Heap Analysis and Verification Workshop. In the European joint conferences on Theory And Practice of Software (ETAPS'07), Vienna, Austria.

16. Aditya Kanade, Amitabha Sanyal, and Uday P. Khedker. *A PVS based framework for validating compiler optimizations.* The 4th IEEE International Conference on Software Engineering and Formal Methods (SEFM'06), Pune, India, 2006.

17. Bageshri Sathe and Uday P. Khedker. *Complexity of data flow analysis for non-separable frameworks.* The 2006 International Conference on Programming Languages and Compilers (PLC'06), 2006, Las Vegas, USA.

18. Bageshri Sathe and Uday P. Khedker. *Static Program partitioning for embedded processors.* The 2006 International Conference on Embedded Systems and Applications. (ESA'06), 2006, Las Vegas, USA.

19. Aditya Kanade, Amitabha Sanyal, and Uday P. Khedker. *Structuring optimizing transformations and proving them sound.* The 5th International Workshop on Compiler Optimization meets Compiler Verification (COCV'06), Pages 105-121. In the European joint conferences on Theory And Practice of Software (ETAPS'06), Vienna, Austria.

20. Aditya Kanade, Uday P. Khedker and Amitabha Sanyal. *Heterogeneous fixed points with applications to points-to analysis.* 3rd Asian Symposium on Programming Languages and Systems (ASPLAS'05), Tsukuba, Japan, 2005. Volume 3780 of Lecture Notes in Computer Science, Springer-Verlag.

21. Uday P. Khedker and R. Govindrajan. *Compiler analysis and optimizations : What is new?* Invited paper. Proceedings of the Workshop on Cutting Edge Computing (New Frontiers in High Performance Computing). Pages 59-69. International Conference on High Performance Computing (HiPC03), Hyderabad, 2003.

22. D. M. Dhamdhere and Uday P. Khedker. *Complexity of bidirectional data flow analysis.* In Proceedings of the 20th Annual ACM SIGACT/SIGPLAN Symposium on Principles of Programming Languages, Charleston, South Carolina, (USA), 1993.

— *Miscellaneous Papers*

1. Aditya Kanade, Amitabha Sanyal, Uday P. Khedker. *A Logic for Correlating Temporal Properties across Program Transformations.* ACM Computing Research Repository CoRR abs/1209.5152, 2012.

2. Amey Karkare, Amitabha Sanyal, and Uday P. Khedker. *Effectiveness of garbage collection in MIT/GNU Scheme.* ACM Computing Research Repository CoRR abs/cs/0611093, 2006.

GRADUATE LEVEL STUDENT SUPERVISION

- Have advised over forty M.Tech. students.

- Graduated Ph.D. students and their thesis titles.

– Barnali Basak (co-advised with Prof. S Biswas). *Optimizing Computations of Sparse Data*, 2024.

(Currently at TCS Research, Kolkata)

– Komal Pathade. *Scalable and precise program analysis*, 2021.

(Currently at Synopsys, Bangalore)

– Swati Jaiswal. *Bidirectionality in flow-sensitive demand-driven analysis*, 2019.

(Currently Assistant Professor, VNIT, Nagpur)

– Shrawan Kumar (co-advised with Amitabha Sanyal). *Scaling up property checking*, 2019.

(Currently at Tata Research, Design, and Development, Pune)

– Pritam Gharat. *Generalized points-to graph: A new Abstraction for memory in presence of pointers*, 2018.

(Currently at Microsoft Research India, Bangalore)

– Vini Kanvar. *Increasing the precision of static analysis of heap*, 2018.

(Currently at IBM India Research Lab, Delhi)

– Amey Karkare (with Prof. Amitabha Sanyal). *Heap Reference Analysis*, 2009.

(Currently Professor, Dept. of Computer Science and Engineering, IIT Kanpur)

– Bageshri Sathe. *Complexity and Efficiency Issues in Data Flow Analysis*, 2008.

(Currently at NVIDIA, Pune)

– Aditya Kanade (with Prof. Amitabha Sanyal). *SPOTS: A system for proving optimizing transformations sound*, 2007.

(Currently at Microsoft Research India, Bangalore)

• Current Ph.D. students and their proposed topics.

– Supriya Bhide. *Context-Sensitive Interprocedural SSA*.

– Anshuman Dhuliya (with Prof. K. V. Raghavan, IISc). *Synergistic Program Analysis*.

– Aditi Raste. *Precise Pointer Analysis*. Registered at Department of Technology, Savitribai Phule Pune University (SPPU).

– Anushri Jana. *Incremental Data Flow Analysis*. Registered at Department of Technology, Savitribai Phule Pune University (SPPU).

– Raseek C (with Prof. K. V. Raghavan, IISc). *Program difference and integration*. Registered at IISc Bangalore.

PROJECTS AND CONSULTANCY ASSIGNMENTS

Have been a consultant to many companies. The work usually involves training and grooming compiler groups, advising on design issues for compiler related projects etc.

• **Trainings**

- *GCC Internals for Parallelization and Vectorization*. (With Prof. Supratim Biswas). HP Bangalore. (July 2015).

- *Program Analysis*. TCS (TRDDC) Pune. (August 2011 to Jan 2012).

- *Advanced Data Flow Analysis*. NVIDIA, Pune. (December 2011).

- *Workshop on Compiler Construction with Introduction to GCC*. IIT Bombay, Mumbai. (Dec 2009).

- *Compiler Back Ends*. (With Prof. Amitabha Sanyal). TCS, Hyderabad. (Sept. 2009).

- *Compiler Construction: From Practice to Theory*. A workshop under Faculty Development Program of TCS at Pune. (Feb 2009).

- *Compiler Construction: From Practice to Theory*. IITDM, Jabalpur. (Dec 2008).

- *Compiler Construction: From Practice to Theory*. A TEQIP (Technical Quality Improvement Program) workshop at College of Engineering, Pune. (Sept 2007).

- *Automatic Construction of Scanners and Parsers*. Blue Star Infotech Ltd. (Mumbai). (Feb 2007)

- *Getting Started with Porting GCC*. (With Prof. Amitabha Sanyal and Prof. Supratim Biswas). Infineon (Bangalore). (Feb 2004)

- *Compiler Construction*. (with Prof. Amitabha Sanyal and Prof. Supratim Biswas). ANURAG, a DRDO lab (Hyderabad). (December 2003)

- *Compiler Back Ends*. (With Prof. Amitabha Sanyal). Synopsys India (Pvt.) Ltd. (December 2002).

- *Ada Programming Language*. (With Prof. H. V. Sahasrabuddhe). Jopasana Software & Systems Pvt. Ltd. (May 2001)

- *Data Flow Analysis*. Tata Infotech Ltd. (December 1999).

- *Language Processing*. Tata Infotech Ltd. (December 1998).

- *Low Level Language Processing Tools*. Cirrus Logic Software (I) Pvt. Ltd. (November 1998).

- *Language Design and Compiler Construction*. Mastek, Pune. (Dec 1996 to May 1997).

- *Bidirectional Data Flow Analysis*. TRDDC, Pune (May 1996 to July 1996).

- **Sponsored Projects**

  - *Precise and Scalable Program Analysis*. ANI Technologies Pvt Ltd. (from March 2022).

  - *Precise and Scalable Pointers Analysis*. Science and Engineering Research Board, DST, (Apr 2019 to March 2022).

  - *Scalable and Precise Program Analysis*. Tata Consultancy Services. (Sep 2013 to Aug 2016).

  - *Parallel Computing Research Prospects*. (With Prof. S. Biswas). Sponsored by Intel (Jan 2012 to June 2013).

  - *GCC Resource Center*. (With Prof. Amitabha Sanyal and Prof. S. Biswas). Sponsored by the Department of Electronics and Information Technology, Ministry of Communication and Information Technology, Government of India. (June 2009 to March 2013).

  - *Trusted Translation Systems*. (With Prof. Amitabha Sanyal and Prof. S. Biswas). Center for Formal Design and Verification of Software. (December 2003 to Dec 2008).

- *Improving GCC port for ANUPAMA and ABACUS processors.* (With Prof. Amitabha Sanyal and Prof. S. Biswas). Sponsored by ANURAG, DRDO. (December 2004 to March 2006).

- *Heap reference analysis for improved garbage collection.* Sponsored by Synopsys India (Pvt.) Ltd. (May 2003 to June 2004).

- *Retargeting of GNU C/C++ compiler and associated tools for ARC100 and ARC200 RISC cores.* Sponsored by ARCUS Technologies Pvt. Ltd., Bangalore (May 1994 to November 1994).

- **Consultancy Projects**

  - *Code Similarity in Games*. Gameberry Labs, Bangalore. (May 2018).

  - *Formalizing Program Analyses*. Tata Consultancy Services. (May 2017 to Aug 2018).

  - *Code Similarity in Games*. Gameberry Labs, Bangalore. (Nov 2017).

  - *Automatic Vectorization*. Imagination Technologies, Pune. (Sep 2015 to Jan 2016).

  - *Porting GCC*. Algotochip Corporation, USA. (Aug 2010).

  - *PL/I to C++ Translation.* (With Prof. Amitabha Sanyal). Patni Computer Systems, Pune (March 2009 to April 2009).

  - *Efficient programming with GCC for Tricore.* (With Prof. Amitabha Sanyal and Prof. S. Biswas). Sponsored by Infineon Technologies Ltd., Bangalore (July 2005 to January 2006).

  - Tuning of *lcc* for better code generation for UMS chip of Cradle Technologies Ltd. (December 2000 to May 2001).

  - Was the chief designer of VxC designed by Tata Infotech Ltd. This is a variant of C for embedded systems applications of Intel (September 2000 Jan 2002).

  - Was the principal architect of an optimizing compiler for VxC designed and implemented by Tata Infotech Ltd. for Intels's IXS 1000 Media Signal Processor (September 2000 Jan 2002).

    Some features of this instruction set architecture are : Asymmetric vector and scalar units, generalization of MAC operation concept, predicated instructions, restricted VLIW architecture with short as well as long instructions, manipulation of data during memory reads and writes, parallel loads and stores, local customization of execution semantics etc.

  - Have carried out the feasibility study for design and implementation of an optimizing compiler for Intel's DSP chip on behalf of Tata Infotech Ltd. (June 2000)

  - Have carried out a feasibility study on rapid software development for DSP chips for Cirrus Logic Software (I) Pvt. Ltd. (May 1998 to June 1998).

TALKS AND TUTORIALS

- Have conducted tutorials at PLDI 2014 (Edinburgh, UK), PPoPP 2012 (New Orleans, USA), CGO 2011 (Chamonix, France), PPoPP 2010 (Bangalore, India), ETAPS 2008 (Budapest, Hungary), SEFM 2006 (Pune, India).

- Have organized and taught at the national level instructional workshops on *Essential Abstractions in GCC* at IIT Bombay in 2007, 2009, 2010, 2011, 2012, and 2013.

- Have been a regular instructor at the ACM (India) Summer Schools on Compilers. Coordinated the ACM Summer School on Compilers for AI (2024) held a PCCOE Pune.

- Have also delivered research and invited talks at many companies, institutions and conferences.

    - The institutions and organization where I have delivered research talks include

      IISc Bangalore, IIT Delhi, IIT Kanpur, IIT Kharagpur, IIT Madras,

      CWI (Amsterdam), Dagstuhl Seminars, ETH Zurich, Heinz Nixdorf Institute (University of Paderborn), INRIA, Max Planck Institute for Software Systems, Technical University of Vienna,

      Imperial College London, Oxford University, University of Cambridge, University of Edinburgh, Princeton University, Rutgers University, Stanford University, University of California at Berkeley, University of Texas at Dallas, University of Lousiana at Lafayette etc.

    - The companies where I have delivered research talks include ARM (Cambridge UK), HP (Bangalore), IBM (Delhi, Bangalore), KPIT Cummins Infosystems (Pune), NVIDIA (Pune), Motorola (Bangalore), Oracle (Hyderabad), Persistent Systems (Pune), Symantec (Pune), Synopsys (Bangalore), Tata Infotech (Mumbai), TCS (Pune, Hyderabad) etc.

- Have given numerous motivational, popular, technical talks at over 50 colleges and institutions in India. These talks try to explain what research is in general, what are its implications and requirements etc. A partial list of talks that I have delivered is as follows:

    - *General Talks*

        ○ What is research.
          Available on YouTube at `https://www.youtube.com/watch?v=m2iHgmaDAxQ`. A more recent version can be found at `https://tinyurl.com/4chrbeay`.

        ○ How to write a good research paper.

        ○ So you want to do Ph.D.?

        ○ How to make good presentations.

        ○ Thinking about thinking: An introduction to critical thinking.

        ○ Higher Education: Myths and Reality.

    - *Talks on GCC*

        ○ Demystifying GCC: Or what the GCC manuals should tell you, but they don't.

        ○ Essential abstractions in GCC.

        ○ Demystifying GCC through graybox probing.

        ○ specRTL: A language for GCC machine descriptions.

    - *Talks on Compilers*

        ○ Early history of FORTRAN: The making of a wonder.
          Available on YouTube at `https://www.youtube.com/watch?v=yNR-ODv9cOg`.

        ○ Why and what of compiler research.

        ○ Introduction to compilation.

        ○ Challenges in Compiling: Past, Present, and Future.

    - *Talks on Data Flow Analysis*

- ○ Bidirectional data flow analysis: Myths and reality.
- ○ Liveness analysis of heap.
  (A compucast podcast of an interview on this talk can be found at
  `http://www.computersciencepodcast.com/podcasts.html`. while a YouTube promotional
  video can be found at `http://www.youtube.com/watch?v=BuFowbhPsVY`).
- ○ Static analysis of programs: A heap centric view.
- ○ Liveness based pointer analysis.
- ○ Generalized points-to graphs: A new abstraction of memory in presence of pointers.
- ○ The mathematics, science, and engineering of pointer analysis.
- ○ The abstraction and approximation dilemma in pointer analysis.
- ○ Simplicity, generality, and efficiency of interprocedural data flow analysis: Resurrecting the classical call strings method.
- ○ The story of blind men and the elephant: Understanding context sensitivity.

OTHER PROFESSIONAL ACTIVITIES

- Have served on many program committees such as CGO (2024), BAR (2023), Onward! (2022), PLDI-SRC (2022), APLAS (2021), ECOOP (2021), SOAP (2014, 2020), LCTES (2020), HIPS (2019), ISEC(2016, 2017, 2019, 2020), ForMABs (2016) etc.

- Reviewer for TOPLAS, TOSEM, POPL, PLDI, SAS, Computing Surveys, ECOOP, ISMM, Software Practice and Experience, CC, CGO, OOPSLA etc.

- Organized (with Manas Thakur) a novel workshop titled "PL and Compilers in Industry Day (PLACID)" on 30 March 2024. The goal of the workshop was to expose the students to challenging opportunities in the field of PL and compilers in the industry in India. The following companies made technical presentations on the work being done by them: AMD, IBM, MSR, NVIDIA, Quadric, Qualcomm, Saankhya Labs, TCS.

- Member of Board of Studies, Board of Governors, Senate, etc. for many universities and institutions.

- Member of selection committees for faculty selection in various colleges including IITs.

- Administrative responsibilities at both the department and institute level at IIT Bombay.