

Shaurya Gomber

Education

- 2024–Present **Ph.D. in Computer Science**, *University of Illinois Urbana-Champaign*, USA
GPA: 4.0/4.0; Advisor: [Prof. Gagandeep Singh](#)
- 2022–2024 **M.S. in Computer Science**, *University of Illinois Urbana-Champaign*, USA
GPA: 4.0/4.0; Advisor: [Prof. Gagandeep Singh](#)
- 2016–2020 **B.Tech. in Computer Science**, *Indian Institute of Technology Guwahati*, India
GPA: 9.66/10.0 (Institute Rank 3)

Research Interest

My current research focuses on developing efficient and precise techniques for program analysis by leveraging the synergy between learning-based and symbolic methods. I'm also interested in automated reasoning tools (e.g., SAT/SMT solvers), and the analysis of neuro-symbolic systems.

Publications

Drafts & Preprints

Efficient Ranking Function-Based Termination Analysis with Bi-Directional Feedback
Yasmin Sarita, Avaljot Singh, [Shaurya Gomber](#), Mahesh Viswanathan, Gagandeep Singh
[Arxiv](#)

Workshops & Posters

- VerifAI ICLR'25 **Neural Abstract Interpretation**
SRC PLDI'24 Shaurya Gomber, Gagandeep Singh
[Paper](#) | [Poster](#)

Thesis

- MS CS UIUC **Neural Abstract Interpretation: Leveraging neural networks for automated, efficient and differentiable abstract interpretation**
Shaurya Gomber
🏆 [David J. Kuck Outstanding MS Thesis Award](#)
[Thesis Link](#)

Work Experience

- Summer 2023 **Applied Scientist Intern**, *Automated Reasoning Group @ Amazon Web Services*, Santa Clara, CA, USA
- Worked on [Zelkova](#), a tool for reasoning about AWS access policies via SMT-based verification.
 - Used [SMT0 \(SMT with Oracles\)](#) to design efficient SMT encodings for hard-to-model *type-casting semantics*, such as numeric comparisons over strings (e.g., allowing access if a string-valued attribute is less than 42).
 - Our technique solved ~30k previously-unsolved production queries, with average solving time of ~1 minute per query.
 - Contributed to [CVC5's SMT0 solver](#) by fixing bugs and improving the I/O interface for oracles.
 - Tech Stack: Java, Scala, Python, SMT Solvers (Z3, CVC5, etc.)

2020-2022 **Senior Member of Technical Staff, D.E. Shaw & Co.,** Hyderabad, India

- Enhanced the firm's low-latency trading system (processing terabytes of data daily) with on-demand data computation features to optimize trader workflows.
- Reviewed major projects, contributed to design discussions for core trading system components, and mentored two new SDE-1s.
- Tech Stack: Java & C++ (backend), React (frontend), Git, Bash, Grafana, Numpy, Matplotlib.

Summer 2019 **Software Engineering Intern, D.E. Shaw & Co.,** Hyderabad, India

Implemented a *type-safe low-latency API* in Java to read and write on the firm's database, achieving a 60x run-time improvement in production-critical scripts, leading to a Pre-Placement Offer.

Teaching Experience

Fall '23 Teaching Assistant, CS421 Programming Languages & Compilers, UIUC

Spring '23 Teaching Assistant, CS421 Programming Languages & Compilers, UIUC

Fall '22 Teaching Assistant, CS225 Data Structures & Algorithms, UIUC

Talks

Apr 2024	Neural Abstract Interpretation Formal Methods Seminar, Spring 2024, UIUC	Slides
Nov 2023	Verification and Certified Training of PINNs CS598 Scientific Machine Learning, Fall 2023, UIUC	Slides
Nov 2023	Satisfiability and Synthesis Modulo Oracles Formal Methods Seminar, Fall 2023, UIUC	Slides
May 2023	Neural Approximations of Abstract Transformers CS477 Formal Software Development Methods, Spring 2023, UIUC	Slides
Mar 2023	Synthesizing Abstract Transformers Formal Methods Seminar, Spring 2023, UIUC	Slides
Nov 2022	Monotonic Neural Networks CS521 Trustworthy AI Systems, Fall 2022, UIUC	Slides

Awards

2024	David J. Kuck Outstanding Master's Thesis Award, UIUC	Link
2024	Richard T. Cheng Endowed Fellowship, UIUC	Link
2019	Institute Merit Scholarship, IIT Guwahati	
2016	KVPY Government of India Scholarship	Link

Academic Service

Artifact
Evaluation
Committee

Mentorship

- **Mentored CSE freshers** under the Mentor-Mentee program of the [SAATHI Counselling Club](#) of IIT Guwahati.
- **Placement Lectures Coordinator, IITG:** Organized the lectures (content, schedule etc.) and taught Data Structures & Algorithms to the candidates appearing for placements.
- **Treasurer, CSEA (2019-20):** Served as the treasurer of the Computer Science and Engineering Association, IIT Guwahati, and was responsible for the fund management and allocation for the CSEA events.

Selected Distinctions

- **Microsoft Code.Fun.Do 2019:** National finalist (top 10 out of 300+ teams); project on Blockchain-based Voting System.
- **Inter IIT Tech Meet 2018:** Represented IIT Guwahati in the coding hackathon event held at IIT Bombay.
- **ACM ICPC 2018:** Qualified for India regionals; represented IITG at Amritapuri, Kerala.
- **KVPY 2015:** AIR 178 among 1.5 million candidates (top 0.01%) in the national science aptitude exam by IISc Bangalore.
- **IIT JEE Advanced 2016:** AIR 902 among 1.5 million candidates (top 0.06%) in the final phase of India's engineering entrance exam.
- **IIT JEE Mains 2016:** AIR 2323 among 1.5 million candidates (top 0.15%) in India's engineering entrance prelims.