ARIJIT SHAW

arijitsh.github.io ⋄ arijit.shaw@tcgcrest.org

EDUCATION

Chennai Mathematical Institute, India *2020 - Present*
Ph.D. Candidate, Computer Science
Advisor : Kuldeep S. Meel
Committee Members: Armin Biere, B. Srivathsan
Funding Institute : IAI, TCG CREST, Kolkata

Chennai Mathematical Institute, India *2017 - 2019*
M.Sc., Computer Science
Thesis: Efficient Software Model Checking for program with Arrays
Thesis Advisor: Mandayam Srivas.

Jadavpur University, Kolkata, India *2013 - 2017*
B.E., Computer Science and Engineering

RESEARCH INTERESTS

My research focuses on designing and developing scalable automated-reasoning techniques to enable the construction of resilient, dependable, and secure systems. I am currently investigating the quantitative dimensions of Satisfiability Modulo Theories (SMT), with particular emphasis on extending SMT solvers to support quantitative queries and on devising efficient methods for sampling from their solution spaces.

PUBLICATIONS

Covering-based Approximate Model Counting for Statistical Model Checking
Arijit Shaw, Sebastian Junges, Kuldeep S. Meel
Under Submission

Efficient Volume Computation for SMT Formulas
Arijit Shaw, Uddalok Sarkar, Kuldeep S. Meel
Proceedings of International Conference on Knowledge Representation and Reasoning (KR), 2025.
(Awarded the Best Student Paper Award)

Approximate SMT Counting Beyond Discrete Domains
Arijit Shaw, Kuldeep S. Meel
Proceedings of Design Automation Conference (DAC) 2025

Model Counting in the Wild
Arijit Shaw, Kuldeep S. Meel
Proceedings of International Conference on Knowledge Representation and Reasoning (KR) 2024

CSB: A counting and sampling tool for bit-vectors
Arijit Shaw, Kuldeep S. Meel
Proceedings of International Workshop on Satisfiability Modulo Theories,(SMT) 2024

An Approximate Skolem Function Counter
Arijit Shaw, Brendan Juba, Kuldeep S. Meel
Proceedings of AAAI Conference on Artificial Intelligence (AAAI) 2024

Explaining SAT Solving Using Causal Reasoning
Jiong Yang, Arijit Shaw, Teodora Baluta, Mate Soos, Kuldeep S. Meel
Proceedings of the Theory and Applications of Satisfiability Testing (SAT) 2023

Designing new Phase Selection Heuristics
Arijit Shaw, Kuldeep S.Meel
Proceedings of the Theory and Applications of Satisfiability Testing (SAT) 2020

A Deadline-partition Oriented Heterogeneous Multi-core Scheduler for Periodic Tasks
Sanjay Moulik, Rajesh Devaraj, Arnab Sarkar, Arijit Shaw
Proceedings of international conference on parallel and distributed computing, applications and technologies (PDCAT) 2017

RESEARCH EXPERIENCE

Georgia Institute of Technology August '25 - Present
Visiting Research Scholar

University of Toronto January '24 - July '25
Visiting Graduate Student

National University of Singapore September '22 - December '23
Visiting Scholar

National University of Singapore July '19 - August '20
Research Internship

Tata Research Development and Design Centre, Pune, India June 2018 - July 2018
Research Internship, Verification and Validation Team.

IIT Guwahati May - July 2015
Summer Internship

ACADEMIC EXPERIENCES

Tool Recognition

- 2nd place in EDA Challenge '21
- 3rd place (Main Track) in SAT Competition, 2020.

Organized

- Model-counting Competition '25 *August '25*
- Model-counting Competition '24 *July '24*

Research Visits

- Shonan Meeting on Model Counting *Japan, February '26*
- Dagstuhl Seminar on Automated Synthesis *Germany, April '24*
- Simons Institute for Theory of Computing, UC Berkeley *USA, April - May, '23*
- University of California, Santa Barbara *USA, May, '23*

Conference Reviewing

- *Program Committee:* AAAI-26
- *Artifact Evaluation Committee:* ATVA-25, iFM-25
- *Reviewer:* TACAS-26, SAT-25, CAV-23, SAT-23
- *Doctoral Forum Reviewer:* SAT/CP-25, CP-23

Teaching Assistantship

- Introduction to AI *at GaTech* — *Instructor: Kuldeep S. Meel*
- Introduction to AI *at UofT* — *Instructor: Kuldeep S. Meel*
- Data Mining and Machine Learning *at CMI* . — *Instructor: Prof. Madhavan Mukund*
- Model Checking and Software Verification *at CMI* — *Instructor: Prof. Mandayam Srivas*

Invited Talks

- Efficient Volume Computation for SMT Formulas
  1. Shonan Meeting on Model Counting — *Shonan, Japan, February 2026*
  2. KR Conference — *Melbourne, Australia, November 2025*
- Quantitative Reasoning in SMT: Counting, Sampling, and Volume Estimation
  1. PLSE Seminar, Georgia Tech — *Atlanta, USA, September 2025*
  2. Formal Methods Update Meeting 2025 — *Gandhinagar, India, July 2025*
- Approximate SMT Counting Beyond Discrete Domains
  1. SMT Workshop at CAV — *Glasgow, UK, August 2025*
  2. Design Automation Conference — *San Francisco, USA, June 2025*
- CSB: A counting and sampling tool for bit-vectors
  1. Indian SAT-SMT School — *Pune, India, August 2024*
  2. SMT workshop at CAV — *Montreal, Canada, July 2024*
- An Approximate Skolem Function Counter
  1. Model Counting Worshop at SAT Conference — *Pune, India, August 2024*
  2. Dagstuhl Seminar on Automated Synthesis — *Dagstuhl, Germany, April 2024*
  3. Modelling Meeting, University of Toronto — *Toronto, Canada, February 2024*
  4. The Eighth Indian SAT-SMT Winter School — *Hyderabad, India, Dec 2023*
  5. AAAI Conference — *Vancouver, Canada, February 2024*
- Towards Building A Scalable Bitvector Model Counter
  1. Model Counting Workshop, SAT Conference '23 — *Alghero, Italy, July 2023*
  2. University of California, Santa Barbara — *Santa Barbara, USA, May 2023*
  3. Chennai Mathematical Institute — *Chennai, India, January 2023*
  4. ACMU, Indian Statistical Institute, Kolkata — *Kolkata, India, January 2023*
  5. The Seventh Indian SAT-SMT Winter School — *Chennai, India, Dec 2022*

Posters Presented

- Remarkable AI — *Vector Institute, Toronto, Jan 2025*
- 7th Indian SAT-SMT School — *IIT Madras, Dec 2022*
- Computer Science Research Week, NUS — *National University of Singapore, Jan 2020*
- 4th Indian SAT-SMT School — *IIT Bombay, Dec 2019*

REFERENCE

Kuldeep S. Meel
Associate Professor, University of Toronto *meel@cs.toronto.edu*

Mandayam Srivas
Adjunct Professor, Chennai Mathematical Institute *mksrivas@cmi.ac.in*

B Srivathsan
Associate Professor, Chennai Mathematical Institute *sri@cmi.ac.in*