ARIJIT SHAW

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EDUCATION

Chennai Mathematical Institute, India *2020 - Present*
Ph.D. Candidate, Computer Science
Advisor : Dr. Kuldeep S. Meel
Funding Institute : IAI, TCG CREST, Kolkata

Chennai Mathematical Institute, India *2017 - 2019*
M.Sc., Computer Science

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

PUBLICATION

Model Counting in the Wild
Arijit Shaw, Kuldeep S. Meel
in KR Conference '24

CSB: A counting and sampling tool for bit-vectors
Arijit Shaw, Kuldeep S. Meel
in Proceedings of SMT Workshop '24

An Approximate Skolem Function Counter
Arijit Shaw, Brendan Juba, Kuldeep S. Meel
in AAAI '24, February 2024.

Explaining SAT Solving Using Causal Reasoning
Jiong Yang, Arijit Shaw, Teodora Baluta, Mate Soos, Kuldeep S. Meel
in SAT Conference '23, July, 2023.

Designing new Phase Selection Heuristics
Arijit Shaw, Kuldeep S.Meel
in SAT Conference '20, July, 2020.

A Deadline-partition Oriented Heterogeneous Multi-core Scheduler for Periodic Tasks
Sanjay Moulik, Rajesh Devaraj, Arnab Sarkar, Arijit Shaw
in IEEE PDCAT '17, Dec, 2017.

RESEARCH INTERESTS

Model Counting for SMT Theories
SAT and SMT Solvers
Software Verification

RESEARCH EXPERIENCE

University of Toronto January '24 - Present
Visiting Graduate Student

· Advisor : Dr. Kuldeep S. Meel, Department of Computer Science.

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

· Advisor : Dr. Kuldeep S. Meel, School of Computing.

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

· Using machine intelligence to build SAT solver for cryptography and other domains.
· Designing better general purpose SAT solvers. Designed solver won medals in SAT Competition 2020. with Dr. Kuldeep S. Meel, School of Computing. [Github] [News]

Chennai Mathematical Institute January - June 2019
M.Sc. Thesis

· Efficient Software Model Checking for program with Arrays within 2LS
with Prof. Mandayam Srivas.

Chennai Mathematical Institute, India August 2018 - November 2018
Project

· Development of a Trace Abstraction based Software Model Checker. [Github]
with Prof. Mandayam Srivas.

Tata Research Development and Design Centre, Pune, India June 2018 - July 2018
Research Internship

· Development of a CEGAR based algorithm for verification of concurrent systems.
with Anand Yeolekar, Verification and Validation Team.

IIT Guwahati May - July 2015
Summer Internship

· Development of DP-Fair Scheduling System for Heterogeneous multiprocessor systems
with Dr. Arnab Sarkar, Dept. of Computer Science and Engineering.

ACADEMIC EXPERIENCES

Organized

· Co-organized Model-counting Competition '24 *Jul '24*

Research Visits

· (Invited to) SRI Summer School on Formal Techniques *May '24*
· Dagstuhl Seminar on Automated Synthesis *April '24*
· Satisfiability Reunion, Simons Institute for Theory of Computing, UC Berkeley *April - May, '23*
· University of California, Santa Barbara *May, '23*

Conference Reviewing

· SAT '23
· CAV '23

Teaching Assistantship

· 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

· CSB: A counting and sampling tool for bit-vectors

1. Indian SAT-SMT School — *August 2024*
2. SMT workshop at CAV — *July 2024*

· An Approximate Skolem Function Counter

1. Model Counting Worshop at SAT Conference — *August 2024*
2. Dagstuhl Seminar on Automated Synthesis — *April 2024*
3. Modelling Meeting, University of Toronto — *February 2024*
4. The Eighth Indian SAT-SMT Winter School — *IIIT Hyderabad, Dec 2023*

· Towards Building A Scalable Bitvector Model Counter

1. Model Counting Workshop, SAT Conference '23 — *July 2023*
2. University of California, Santa Barbara — *May 2023*
3. Chennai Mathematical Institute — *January 2023*
4. ACMU, Indian Statistical Institute, Kolkata — *January 2023*
5. The Seventh Indian SAT-SMT Winter School — *IIT Madras, Dec 2022*

Posters Presented

· 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*

ACADEMIC ACHIEVEMENTS

Designed SAT solver wins at SAT Competition 2020, EDA Challenge 2021 [News]
Selected for admission in PhD program in National University of Singaore. (August '20 session)
Selected for admission in PhD program at Indian Statistical Institute. (August '19 session, '21 session)
Selected for JRF by UGC NET (Percentile 99.991) December 2018.
Ranked 11^{th} in JEST Theoretical Computer Science, 2017.
Selected for Interviews, TIFR Graduate Admissions, 2017.
Selected for Internship, R.C.Bose Centre for Cryptology, ISI, Kolkata (Summer 2018) .

PERSONAL DETAILS

Languages Proficient Bengali, English, Hindi.
Date of Birth July 14, 1995

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*