

ARIJIT SHAW

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EDUCATION

Chennai Mathematical Institute

Ph.D. Candidate, Computer Science

Advisor : Dr. Kuldeep S. Meel

Funding Institute : IAI, TCG CREST, Kolkata

2020 - Present

Chennai Mathematical Institute

M.Sc., Computer Science

2017 - 2019

Current GPA: 8.60/10

Jadavpur University, Kolkata

B.E., Computer Science and Engineering

2013 - 2017

Overall GPA: 7.10/10

PUBLICATION

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

Model Checking and Software Verification

Automata Theory and Logic

RESEARCH EXPERIENCE

University of Toronto

Visiting Graduate Student

January '24 - Present

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

National University of Singapore

Visiting Scholar

September '22 - December '23

· 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

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

June 2018 - July 2018

Research Internship

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

Jadavpur University

September 2016 - March 2017

Undergraduate Project

- Use of game theory to find influential node in big data of Social Network with Dr. Subhadip Basu, Dept. of Computer Science and Engineering.

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 ACHIEVEMENTS

Designed SAT solver wins at SAT Competition 2020, EDA Challenge 2021 [\[News\]](#)

Selected for admission in PhD program in National University of Singapore. (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 11th in JEST Theoretical Computer Science, 2017.

Selected for Interviews, TIFR Graduate Admissions, 2017.

GATE CS 2017 score 721 (All India Rank - 576).

Selected for Internship, R.C.Bose Centre for Cryptology, ISI, Kolkata (Summer 2018) .

ACADEMIC EXPERIENCES

Research Visits

- (Invited to) 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
- Data Mining and Machine Learning at CMI .
- Model Checking and Software Verification at CMI

Instructor: Kuldeep S. Meel
Instructor: Prof. Madhavan Mukund
Instructor: Prof. Mandayam Srivas

Posters Presented

- 7th Indian SAT-SMT School
- Computer Science Research Week, NUS
- 4th Indian SAT-SMT School

IIT Madras, Dec 2022
National University of Singapore, Jan 2020
IIT Bombay, Dec 2019

Talks

- An Approximate Skolem Function Counter
 1. Modelling Meeting, University of Toronto
 2. The Eighth Indian SAT-SMT Winter School
- Towards Building A Scalable Bitvector Model Counter
 1. Model Counting Workshop, SAT Conference '23
 2. University of California, Santa Barbara
 3. Chennai Mathematical Institute
 4. ACMU, Indian Statistical Institute, Kolkata
 5. The Seventh Indian SAT-SMT Winter School

February 2024
IIT Hyderabad, Dec 2023
July 2023
May 2023
January 2023
January 2023
IIT Madras, Dec 2022

RELEVANT COURSES

Graduate Courses

Computational Complexity Theory
Advanced Algorithms
Logic, Automata, Games
Model Checking and Software Verification
Concurrency Theory
Symbolic Analysis with SMT Solvers
Games on Graphs
Interactive Theorem Proving

Undergraduate Courses

Operating Systems
Computer Networks
Compiler Design
Computer Organization & Architecture
Cryptography
Machine Learning

TECHNICAL STRENGTHS

Computer Languages

C/C++, Python, Haskell, Java

Tools and Solvers

NuSMV, CUDD, CBMC, Z3, MathSAT

Theorem Provers

Coq, PVS

Others

L^AT_EX, Shell Script.

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

Sanjoy Kumar Saha

Professor, Dept. of Comp. Sc. & Engg., Jadavpur University, Kolkata

sks_ju@yahoo.co.in