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Soumodev Mal

Research Interests

Theory B enthusiast. Currently working on string constraint satisfiability. I am also interested in the verification of infinite-state systems and logic over string constraints. I am looking forward to implementing tools for string constraints.

Education

2021 -	**PhD in Computer Science**, *Chennai Mathematical Institute* , Chennai, India. Supervisors: Prof. C. Aiswarya, CMI and Prof. Prakash Saivasan, IMSc
2019 - 2021	**M.Sc. in Computer Science**, *Chennai Mathematical Institute* , Chennai, India. CGPA - 8.52
2016 - 2019	**B.Sc. in Computer Science**, *Scottish Church College, University of Calcutta*, Kolkata, India. Percentage - 76.375
2015 - 2016	**Class 12th ISC**, *Methodist School, Dankuni*, West Bengal, India. Percentage - 90.75
2013 - 2014	**Class 10th ICSE**, *Methodist School, Dankuni*, West Bengal, India. Percentage - 87.25

Publications

August 2022	**On the Satisfiability of Context-free String Constraints with Subword-Ordering** joint work with Prof. C. Aiswarya, CMI and Prof. Prakash Saivasan, IMSc *LICS 2022, Haifa, Israel*

Talks

On the Satisfiability of Context-free String Constraints with Subword-Ordering
joint work with Prof. C. Aiswarya, CMI and Prof. Prakash Saivasan, IMSc

June 2022	*Online talk at Highlights 2022, Paris, France*
August 2022	*FM Update 2022, IIT Delhi, India*
December 2022	*Online Student talk series: OFCOURSE, MPI-SWS, Germany*
	Indian SAT+SMT School, co located with FSTTCS 2022 at IIT Madras
February 2023	*invited talk at ARCS 2023, OIST, Bhopal, India*

Academic Projects and Internships

Jan-April 2021 Worked on my Master's Thesis titled **On the Satisfiability of Straight-Line String Constraints over Sub-Word Ordering**

supervised by Prof. C. Aiswarya, CMI and Prof. Prakash Saivasan, IMSc

Nov-Dec 2020 A Bounded Model Checker for arbitrary LTL formulas using K-induction for safety, liveness property

As a fulfillment of the course Model Checking and Systems Verification under Prof. M. Srivas, CMI

Nov-Dec 2020 A Report on the paper "Computing Accumulated Delays in Real-Time Systems"-Alur,Courcoubetis,Henzinger

As a fulfillment of the course Timed Automata under Prof. B. Srivathsan, CMI

Nov-Dec 2020 Implementing a Neural Network that predicts the frequency of a given signal and Verifying some properties of the neural network with Z3-solver

As a fulfillment of the course SMT for Deep Learning under Prof. M. Srivas, CMI

May- Aug 2020 Studied about **Regular Separability** of Various Automata under Prof. C. Aiswarya, CMI and Prof. Prakash Saivasan, IMSc (remote internship due to pandemic).

Dec - Jan 2017 A motion sensing camera using PIR sensor and Arduino implemented with a motorized base (Servo Motor) for rotation, presented at Bigyan o Projukti Mela 2017 held at Hedua Park, Kolkata

Dec 2017 A community Blog to stop violent extremism presented at Digital Masala Challenge organised by Facebook and Youth ki Awaaz.

Scholarships

August 2019-2021 Cognizant Foundation Scholarship

September 2021- CMI PhD Stipend

Teaching Assistant

Aug-Nov 2021 Mathematical Logic

Courseworks

Completed (PhD) Concurrency Theory, Algebraic Automata Theory

Completed (MSc) Infinite State Verification,Timed Automata, Model Checking and Systems verification, SMT for Deep Learning, Design and Analysis of Algorithms

Logic Automata and Games, Weighted Automata, Complexity theory, Linear Optimization, Programming Languages Concepts

Theory of Computation, Mathematical Logic, Theoretical foundations of Computer Science, Programming in Haskell

Completed (BSc) Microprocessors, Computer Organization and Architecture-2, Object Oriented Programming, Software Engineering, Computer Graphics, Database Management System, UNIX Shell Programming

Discrete Mathematics, Numerical Methods and Algorithms, Formal Languages and Automata Theory, Data Structure-2, Programming in C

Computer fundamentals, Basic Electronics, Digital System Design,Computer Organization and Architecture-1, Operating Systems and System Software, Data Structure-1

Computer Science Skills

Basic Knowledge	MySQL, Haskell, HTML, CSS, Bash, Z3-Solver, NuSMV
Intermediate Knowledge	Python, Java, C, C++,LaTeX

Languages

English	Professional Working Proficiency
Bengali	Bilingual Proficiency
Hindi	Limited Working Proficiency

Other Interest

Music, Painting, Swimming and Solving puzzles