



Prince Mathew
 Ph.D. Scholar
 Theoretical Computer Science
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CAREER PROFILE

I am pursuing my Ph.D. in Theoretical Computer Science under the guidance of Dr. Sreejith A.V. in the School of Mathematics and Computer Science at Indian Institute of Technology Goa. My research interests lie at the intersection of automata theory and formal verification. During my PhD, I have focused on the equivalence and learning of one-counter systems.

EDUCATION

- Indian Institute of Technology Goa** January 2019 to at present
Ph.D. in Theoretical Computer Science CPI: 8.45
 –Chennai Mathematical Institute, Tamil Nadu January 2020 to April 2020
Ph.D. Coursework
- College of Engineering Trivandrum, Kerala** August 2014 to April 2016
M.Tech in Computer Science and Engineering CGPA: 9.11
- Saintgits Engineering College, Kerala** July 2010 to April 2014
B.Tech in Computer Science and Engineering CGPA: 7.62
- Don Bosco Higher Secondary School, Kottayam, Kerala** 2008 to 2010
Class 12 Aggregate: **86.36** %
- Don Bosco Higher Secondary School, Kottayam, Kerala** 2007 to 2008
Class 10 CGPA: **10/10**

EXPERIENCE

- Indian Institute of Technology Goa** February 2018 to December 2018
Junior Research Fellow
- Tata Elxsi, Trivandrum** January 2017 to January 2018
Senior Engineer
- Central Polytechnic College, Trivandrum** June 2016 to October 2016
Guest Lecturer

PUBLICATIONS

- Learning Real-time One-Counter Automata Using Polynomially Many Queries** [\[Link\]](#) Feb 14, 2024
Co-authors: Dr. Vincent Penelle, Dr. Sreejith A.V. arXiv
- Equivalence of Deterministic Weighted Real-time One-Counter Automata** [\[Link\]](#) Feb 3, 2025
Co-authors: Dr. Vincent Penelle, Dr. Prakash Saivasan, Dr. Sreejith A.V. ICLA (to appear)
- Weighted One-Deterministic-Counter Automata** [\[Link\]](#) December 12, 2023
Co-authors: Dr. Vincent Penelle, Dr. Prakash Saivasan, Dr. Sreejith A.V. FSTTCS
- CAP: A Cellular Automata Based Fuzzy Classifier** [\[Link\]](#) February 26, 2022
Co-authors: Dr. Abdul Nizar M Materials Today Proceedings
- Optical Music Recognition Using Image Processing and Machine Learning** [\[Link\]](#) August 11, 2018
Co-authors: Rahul Vijayakumar, Aju Tom Kuriakose, Jesmy Sunny, Dr. Ramani Bai V IJCSE
- Survey on Fuzzy Logic & Fuzzy Classifiers Based on Continuous Cellular Automata** August 20, 2016
Co-authors: Dr. Abdul Nizar M NCTT

🏛 RESEARCH VISITS

- University of Antwerp, Belgium *Sep 9 to 13, 2024*
- RWTH Aachen Univeristy, Germany *Sep 4 to 6, 2024*
- The Institute of Mathematical Sciences, HBNI, India *June 1 to 30, 2022*

👥 PROJECTS

- MoES - River Width Extraction Project** *February 2018 to December 2018*
Web application for MoES for calculating water discharge in rivers from satellite images.
 - Tools & technologies used: Python, Django
 - This work was done as a part of a joint project with Dr. Sreejith A.V (IIT Goa) and Dr. Gaurav Kumar (IISER Bhopal).
- Skill Center - Tata Elxsi** *January 2017 - February 2018*
Web application to manage employee profiles of Tata Elxsi.
 - Tools & technologies used: C#, MVC, .NET
 - The application manages skills, project allocation, training, funnel management, performance evaluations, and resume creation. It helps assign projects based on employee skills, plan and track training, search for employees, assess performance, and create resumes.
- Fuzzy Classifier using Continuous Cellular Automata** [\[Report\]](#)[\[Code\]](#) *June 2015 - September 2016*
Continuous Cellular Automata based fuzzy classifier in Java using Weka.
 - Tools & technologies used: Java, Weka
 - Project done as part of Masters degree thesis.
- Open Image Transcriptor** [\[Report\]](#)[\[Code\]](#) *June 2013 - June 2014*
Image processing tool to recognise musical notes from sheet music and convert it into MIDI file.
 - Tools & technologies used: Java, Python
 - Project done as part of Undergraduate project.

🏢 POSITIONS OF RESPONSIBILITY

- Member: Senate Students Advisory Committee, IIT Goa *2019 – 2021*
- Class Representative, College of Engineering Trivandrum, MTech Batch of 2016 *2014 – 2016*
- Class Representative, Saintgits College of Engineering Trivandrum, BTech Batch of 2014 *2013 – 2014*
- Troop Leader, 101-st Kottayam Scout Group *2005 – 2007*

🏆 OTHER ACTIVITIES

- Reviewed NPTEL transcripts for the course “Theory of Computation” by Prof. Somenath Biswas
- Sub-reviewer for the International Conference on Concurrency Theory (CONCUR), 2023
- Volunteered and contributed towards the successful organisation of FSTTCS 2021 and FSTTCS 2022
- Volunteered in organising FM Update Meeting 2023
- Successfully cleared the UGC NET examination and have met the eligibility criteria for lectureship
- Passed BEC vantage conducted by University of Cambridge
- Passed grade 5 vocals with merit conducted by Trinity College London
- Passed grade 3 piano with merit conducted by Trinity College London
- Earned the “Rashtrapathi Scout” award

🎤 IMPORTANT TALKS

- Learning one-counter automata using SAT solver, Highlights 2024 [\[Talk\]](#) *Sep 19, 2024*
- Weighted one deterministic-counter automata, FSTTCS 2023 [\[Talk\]](#) (starts at 2:45:00) *July 2023*
- One deterministic-counter automata, Highlights 2023 [\[Talk\]](#) (starts at 18:50) *July 2023*
- Weighted one-deterministic-counter automata, FM Update Meeting [\[Talk\]](#) *June 2023*
- CAP: A cellular automata based fuzzy classifier, AIES *December 2021*
- Learning regular sets from queries and counterexamples, CS research talk, IIT Goa *September 2021*
- Equivalence of deterministic one-counter automata, Automata series talk, IIT Goa *June 2020*
- Optical music recognition using image processing and machine learning, IJCSE *August 2018*

🎤 TEACHING ASSISTANCE

- Introduction to Computing *Spring 2020 – 21, Autumn 2023 – 24*
- Randomised Algorithms *Spring 2022 – 23*
- Software Tools *Spring 2022 – 23*
- Data Structures and Algorithms *Autumn 2022 – 23, Summer 2022, Autumn 2021 – 22, Autumn 2020 – 21*
- Automata Theory *Spring 2020 – 21, Spring 2018 – 19*
- Logic in Computer Science *Autumn 2019 – 20*
- Advanced Algorithms *Spring 2018 – 19*