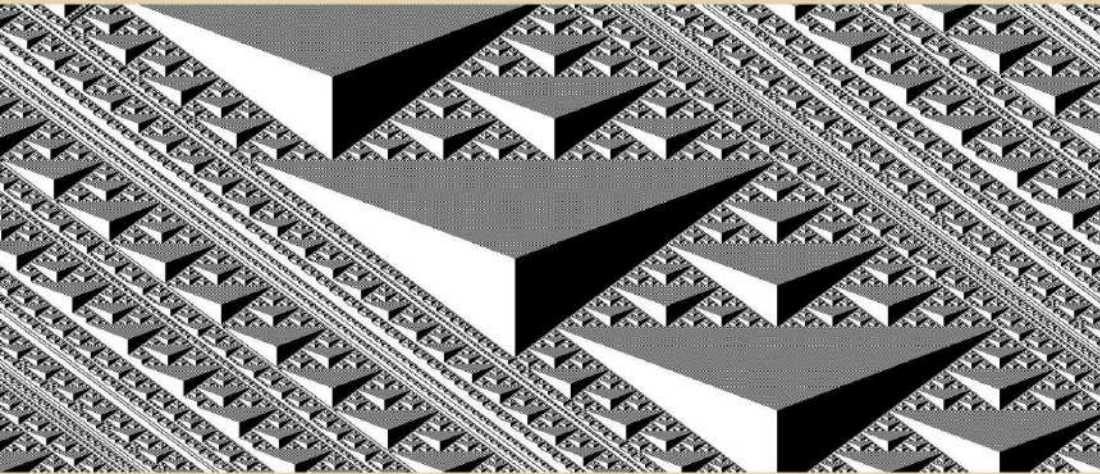


First Asian Symposium on Cellular Automata Technology (ASCAT 2022)

March 3-5, 2022
(Virtual)



Organized by

Sponsored by

Publisher

Special Issues



ABOUT THE SYMPOSIUM

The objective of this symposium is to promote fundamental research on automata theory and cellular automata based unconventional design approaches in the state-of-the-art technological solutions for different emergent areas and challenges. It can also popularize research on unconventional computing among the academicians, scientists and engineers of Asian countries and promote international collaboration between Computer Scientists, Mathematicians and Technologists of Asia and the other parts of the world. This platform has been extended to start a new series of symposiums as a meeting place of the international intelligentsia to share, review, discuss and collaborate on CAs. Extended versions of a selected number of papers presented at the conference is planned to be published in a special issue of Journal of Cellular Automata and Complex Systems.

Hosted By:

Indian Institute of Engineering Science and Technology (IIST), Shibpur, Howrah, West Bengal, India - 711103

Mode of Conference: Online

Symposium Webpage:

<https://www.cellularautomata.in/ascats2022>

For participants, delegate [registration](#) is mandatory (no registration fees)

ASCAT 2022

ABOUT THE INSTITUTE

Founded on 24 November 1856, the Indian Institute of Engineering Science and Technology (IIST), Shibpur is the 2nd oldest Engineering Institute of India. Undergoing 6 different names in its 163 years of heritage, this institute is well recognized worldwide due to its huge alumni base and is reputed for offering high calibre students in every aspect of Engineering. The institute offers sixteen academic departments, eight schools of excellence, and two multidisciplinary centers. It is also one of the premier institutes for carrying out research in India and its contributions are recognized all over the country. This place beholds a serene and calm environment which helps students to work more passionately towards their dreams and aspirations.



Sponsored by SPARC (Scheme for Promotion of Academic and Research Collaboration), Ministry of Human Resource Development, Government of India, under the project titled “Exploring Cellular Automata Model for Hardware Security”
Indian Part: Sukanta Das and Biplab K Sikdar
IIST, Shibpur
Foreign Part: Jarkko Kari, Hannu Tenhunen and Pasi Liljeberg
University of Turku

ASCAT 2022

CHIEF PATRON

Parthasarathi Chakrabarti (Director, IEST, Shibpur)

PATRON

Dipanwita Roy Chowdhury (IIT Kharagpur)

GENERAL CO-CHAIRS

Biplab K Sikdar (IEST, Shibpur)
Jarkko Kari (University of Turku, Finland)

PROGRAMME CO-CHAIRS

Sukanta Das (IEST, Shibpur)
Genaro Juarez Martinez (National Polytechnic Institute, Mexico)

ORGANIZING COMMITTEE

Biplab K. Sikdar (IEST, Shibpur)
Abhik Mukherjee (IEST, Shibpur)
Amit Roy Chowdhury (IEST, Shibpur)
Chandan Giri (IEST, Shibpur)
Surajit Roy (IEST, Shibpur)
Ashish Layek (IEST, Shibpur)
Kamalika Bhattacharjee (NIT Tiruchirappalli)
Souvik Roy (IEST, Shibpur)
Sumit Adak (IEST, Shibpur)
Sukanta Das (IEST, Shibpur)

REGISTRATION Co-CHAIRS

Supreeti Kamilya (BIT Mesra)
Sukanya Mukherjee (IEM, Kolkata)

INVITED TALKS



Stephen Wolfram
Wolfram Research, USA

Title: The Ruliological View of Cellular Automata



Jarkko J Kari
University of Turku, Finland

Title: Algorithms for Group Cellular Automata



Mihir K. Chakraborty
Jadavpur University, India

Title: Church-Turing Thesis and Gödel

INVITED TALKS



Kenichi Morita
Hiroshima University

Title: Computing in a Simple Reversible and Conservative Cellular Automaton



Craig S Lent
University of Notre Dame, US

Title: Quantum-dot Cellular Automata: Computing from the Ground Up



Debadeep Mukhopadhyay
IIT Kharagpur

Title: Revisiting Logic Obfuscation Using Cellular Automata

PROGRAM SCHEDULE (ALL TIMES IN IST)

Day 1: 03 March 2022	
09:00 - 09:30	Inauguration
09:30 - 10:30	<i>Invited Talk</i> The Ruliological View of Cellular Automata Stephen Wolfram Founder & CEO of Wolfram Research
10:30 - 11:00	Tea Break
11:00 - 11:30	<i>Contributed Talk</i> Grade Estimation of Mineral Resources: An Application of Cellular Automata Soumyadeep Paty and Supreeti Kamilya
11:30 - 12:00	<i>Contributed Talk</i> Shape Generation using Cellular Automata with Clustering Lynette Van Zijl and Caleb Zeeman
12:00 - 12:30	<i>Contributed Talk</i> Evolution Patterns of Some One-Dimensional Non-uniform Cellular Automata Sreeya Ghosh and Sumita Basu

PROGRAM SCHEDULE (ALL TIMES IN IST)

Day 1: 03 March 2022

12:30 - 14:30	Lunch Break
14:30 - 15:30	<i>Invited Talk</i> Church-Turing Thesis and Gödel Mihir K. Chakraborty School of Cognitive Science, Jadavpur University, Kolkata, India
15:30 - 16:00	<i>Contributed Talk</i> Relationship of Two Discrete Dynamical Models: One-dimensional Cellular Automata and Integral Value Transformations Sreeya Ghosh, Sudhakar Sahoo, Sk. Sarif Hassan, Jayanta Kumar Das and Pabitra Pal Choudhury
16:00 - 16:30	<i>Contributed Talk</i> Emulating Mersenne Twister with Cellular Automata Kamalika Bhattacharjee, Nitin More, Shobhit Kumar Singh and Nikhil Verma

PROGRAM SCHEDULE (ALL TIMES IN IST)

Day 2: 04 March 2022

09:30 - 10:30	<p><i>Invited Talk</i></p> <p>Computing in a Simple Reversible and Conservative Cellular Automaton Kenichi Morita Hiroshima University, Japan</p>
10:30 - 11:00	<p>Tea Break</p>
11:00 - 11:30	<p><i>Contributed Talk</i></p> <p>Defining Reachability Tree under Adiabatic and Reflexive Boundary Condition Cellular Automata Nazma Naskar and B K Sivaraj</p>
11:30 - 12:00	<p><i>Contributed Talk</i></p> <p>First Degree Cellular Automata as Pseudo-random Number Generators Kamalika Bhattacharjee</p>
12:00 - 12:30	<p><i>Contributed Talk</i></p> <p>Asynchronous Cellular Automata as Randomness Enhancer Souvik Roy and Sumit Adak</p>

PROGRAM SCHEDULE (ALL TIMES IN IST)

Day 2: 04 March 2022

12:30 - 14:30	Lunch Break
14:30 - 15:30	<i>Invited Talk</i> Algorithms for Group Cellular Automata Jarkko Kari Department of Mathematics and Statistics, University of Turku, Finland
15:30 - 16:00	<i>Contributed Talk</i> Cellular-automata based simulation of dynamic recrystallization and statistical analysis of resulting grain growth Subramanian R S, Sai Shree Ramadev and Prince Gideon Kubendran Amos
16:00 - 16:30	<i>Contributed Talk</i> A new notion of universality in respect of logic gates generation capability of ECAs Raju Hazari

PROGRAM SCHEDULE (ALL TIMES IN IST)

Day 3: 05 March 2022

09:30 - 10:30	<p><i>Invited Talk</i></p> <p>Quantum-dot Cellular Automata: Computing from the Ground Up Craig S Lent Department of Electrical Engineering, University of Notre Dame, United States</p>
10:30 - 11:00	<p>Tea Break</p>
11:00 - 11:30	<p><i>Contributed Talk</i></p> <p>Impact of Genetic Algorithm on Low power QCA Logic Circuit with Regular Clocking Amit K Pramanik, Jayanta Pal, and Bibhash Sen</p>
11:30 - 12:00	<p><i>Contributed Talk</i></p> <p>Cellular automata based model for finding minimum spanning tree in wireless sensor networks Parijat Sen and Debopriya Barman</p>
12:00 - 12:30	<p><i>Contributed Talk</i></p> <p>A Novel Hash Function based on Hybrid Cellular Automata and Sponge Functions Anita John, Alan Reji, Ajay P Manoj, Atul Premachandran, Basil Zachariah and Jimmy Jose</p>

PROGRAM SCHEDULE (ALL TIMES IN IST)

Day 3: 05 March 2022

12:30 - 14:30	Lunch Break
14:30 - 15:30	<i>Invited Talk</i> Revisiting Logic Obfuscation Using Cellular Automata Debdeep Mukhopadhyay Indian Institute of Technology, Kharagpur, West Bengal, India
15:30 - 16:00	<i>Contributed Talk</i> Synthesis of Single Length Cycle Two Attractor CA using NSRT Diagram. Suvadip Hazra and Mamata Dalui
16:00 - 16:30	Valedictory
ASCAT 2022 Closes	