



# Third Asian Symposium on Cellular Automata Technology (ASCAT-2024)

February 29-March 2, 2024  
National Institute of Technology, Durgapur, India



**Aims and Scope of the Conference:** Aim of the symposium is two-fold: to nurture the theories of cellular automata, and to explore the cellular automata as technology. So all the theoretical aspects of cellular automata and their applications in any domain are within the scope of this symposium. In particular, the topics of interest include (but is not limited to) the following:

## A: Algebraic and Theoretical aspects of CA

- Algorithmic and Complexity issues in Cellular Automata
- Formal Language Processing
- Cellular Automata and Logic
- Randomness
- Reversibility and Cycle structure
- Algebraic properties of Cellular Automata and Discrete Systems
- Characterization tools for Cellular Automata
- Conservation Laws and Cellular Automata

## C. Non-uniformity in Cellular Automata

- Non-uniform or Hybrid CA
- Asynchronous Cellular Automata
- Stochastic Cellular Automata
- Network Automata

## D. Cellular Automata, Hardware Design and Security

- Circuit Design and Computer Architecture
- Memristor Design
- Security and Encryption
- Cryptography
- Secured Hardware Design

## G. Emerging Applications of Cellular Automata

- Ecological issues
- Urban development
- Graph Colouring
- Sensor network applications

## B. Cellular Automata Models and Computation

- Traffic models and Crowd dynamics
- Models for Distributed and Parallel Systems
- Lattice Gas and Lattice Boltzmann model
- Environmental, Social and Economical Modeling and Simulation
- Natural Computing
- Reversible and Quantum Computing
- Cellular Automata Architecture for Computation
- Cellular Automata for Computing-in-Memory Architecture
- Cellular Automata with Memory
- Integration of CA and Agent-based Modeling
- Sandpile Cellular Automata

## E. Quantum-dot Cellular Automata

- Logic Gates and Circuit Design
- Quiescent Quantum Cellular Automata
- Quantum Gate Cellular Automata
- Universal Quantum Cellular Automata
- Quantum computing
- Quantum lattice gases
- Quantum Reversible Automata
- Quantum Nano-Automata

## F. Cellular Automata, Machine Learning and Artificial Intelligence

- Pattern Recognition
- Machine Learning
- Bioinformatics
- Image and Video Processing

## General co-chairs

- \* Suchismita Roy (NIT, Durgapur)
- \* Biplab K Sikdar (IEST, Shibpur, India)
- \* Kenichi Morita (Hiroshima University, Japan)

## Programme co-chairs

- \* Mamata Dalui (NIT, Durgapur)
- \* Sukanta Das (IEST, Shibpur, India)
- \* Enriko Formenti (Universite Côte d'Azur, France)

## Organizing Chair

- \* Bibhash Sen (NIT, Durgapur)
- \* Ankush Acharyya (NIT, Durgapur)
- \* Suvadip Batabyal (NIT, Durgapur)

## Program Committee (tentative)

- \* Kenichi Morita (Hiroshima University, Japan)
- \* Biplab K Sikdar (IEST, Shibpur, India)
- \* Pabitra Pal Chaudhuri (ISI, Kolkata, India)
- \* Andrew Wuensche (University of Sussex)
- \* Andrew Adamatzky (University of the West of England, UK)
- \* Enrico Formenti (University Côte d'Azur, France)
- \* Kolin Paul (IIT, Delhi, India)
- \* Huynh XuanHiep (Can Tho University, Vietnam)
- \* Anna Lawniczak (Guelph University, Canada)
- \* Stefano Nichele (Oslo Metropolitan University - OsloMet, Norway)
- \* Tejiro Isokawa (University of Hyogo, Japan)
- \* Hiroshi Umeo (University of Osaka Electro-Communication, Japan)
- \* Rezki Chamlal (University of Bejaia, Algeria)
- \* Pedro Paulo Balbi de Oliveira (Universidade Presbiteriana Mackenzie, Brazil)
- \* Sudhakar Sahoo (IMA, Bhubaneswar, India)
- \* Nazma Naskar (KIIT University, India)
- \* Jimmy Jose (NIT, Calicut, India)
- \* Raju Hazari (NIT, Calicut, India)
- \* Kamalika Bhattacharjee (NIT, Tiruchirappalli, India)
- \* Souvik Roy (Bennett University, India)
- \* Supreeti Kamilya (BIT, Mesra, India)
- \* Sukanya Mukherjee (IEM, Kolkata, India)
- \* Sumit Adak (Technical University of Denmark, Denmark)
- \* Genaro Juarez Martinez (National Polytechnic Institute, Mexico)
- \* Sukanta Das (IEST, Shibpur, India)
- \* Suchismita Roy (NIT, Durgapur, India)
- \* Bibhash Sen (NIT, Durgapur, India)
- \* Mamata Dalui (NIT, Durgapur, India)

Conference Website

<http://www.cellularautomata.in/ascat2024>

Submission Link

<https://easychair.org/conferences/?conf=ascat2024>

Submission Deadline

Monday, October 16, 2023

Notification of acceptance

Monday, December 11, 2023

Camera-ready papers

Friday, December 22, 2023

**Submission:** Authors are invited to submit original, unpublished research papers of article typewritten in English that are not more than 12 pages (single column including figures, tables and references) via the EasyChair system at <https://easychair.org/conferences/?conf=ascat2024>.

Submissions must be in L<sup>A</sup>T<sub>E</sub>X(Springer) format and submitted in Portable Document Format (PDF). For each accepted paper, at least one author has to complete full registration and present the paper.

## Contact

### Bibhash Sen

Department of Computer Science and Engineering  
National Institute of Technology, Durgapur, India.  
E-mail: [bibhash.sen@cse.nitdgp.ac.in](mailto:bibhash.sen@cse.nitdgp.ac.in)

### Mamata Dalui

Department of Computer Science and Engineering  
National Institute of Technology, Durgapur, India.  
E-mail: [mamata.dalui@cse.nitdgp.ac.in](mailto:mamata.dalui@cse.nitdgp.ac.in)