Debasish Pattanayak

Curriculum Vitae & Achivements

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Personal

Name	Debasish Pattanayak
Citizenship	Indian
Date of Birth	1st August 1992
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Languages	Odia (Native), English (Fluent), Hindi (Fluent), Japanese (Conversational)

Education

Ph.D. in COMPUTER SCIENCE
DEPARTMENT OF MATHEMATICS, INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI — 2014-PRESENT
ADVISORS: PROF. PARTHA SARATHI MANDAL & DR. H. RAMESH — CPI: 8.81/10

- Date of Submission: 5 February 2020
- Expected Date for Degree: May 2020
- Title: Distributed Algorithms for Autonomous Mobile Robots
- Research Areas: Distributed Algorithms, Mobile Robots, Self-stabilization, Fault-tolerance, Randomized Algorithms

B.Tech. in MATHEMATICS AND COMPUTING — 2010 - 2014
DEPARTMENT OF MATHEMATICS, INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI — CPI: 7.87/10

Experience

University of Vienna | SERB OVDF FELLOW
MENTOR: PROF. STEFAN SCHMID — JULY - DECEMBER 2019
- To design distributed algorithms for robots with minimal capabilities in the context of pattern formation, evacuation and convergence.

Japan Advance Institute of Science and Technology | VISITING RESEARCHER
MENTOR: PROF. ATSUKO MIYAJI — MAY - JULY 2013
- Explored methods of fast scalar multiplication in elliptic curve with faster point addition including tripling and halving.
- Used hybrid base chain expansion of integers and joint forms.

Awards

- Best Poster Award at Doctoral Symposium, 21st International Conference on Distributed Computing and Networking, ICDCN 2020, Kolkata.
- Awarded SERB Overseas Visiting Doctoral Fellowship 2018-2019 to visit the University of Vienna for a duration of six months.
- Qualified IIT-JEE 2010 among top 0.7%.
- Received scholarship from NCERT for qualifying National Talent Search Examination (NTSE), 2008.
- Secured 8th position in High School Certificate Examination, Odisha in 2008.
- Awarded Silver Medal in Regional Mathematics Olympiad, Odisha in 2007 for securing 2nd position in the state.

Projects

BTech Project |TITLE: STUDY OF NEGATIVE CONTINUED FRACTIONS
ADVISOR: DR. VINAY WAGH — AUG 2013 - APRIL 2014
- Explored the simple continued fraction and its properties. Investigated Negative continued fraction, its properties and relation with simple continued fraction. Proposed an algorithm for factorization of integers using negative continued fraction.

Publications

Journals

- Debasish Pattanayak, Kaushik Mondal, H. Ramesh, and Partha Sarathi Mandal. **Gathering of mobile robots with weak multiplicity detection in presence of crash-faults.** *Journal of Parallel and Distributed Computing (Elsevier)*, 123:145–155, 2019.

Conferences

- Debasish Pattanayak, Kaushik Mondal, H. Ramesh, Partha Sarathi Mandal. **Fault-Tolerant Gathering of Mobile Robots with Weak Multiplicity Detection**. In *Proceedings of the 18th International Conference on Distributed Computing and Networking* (ACM), Hyderabad, India, January 5-7, 2017.
- Debasish Pattanayak, Kaushik Mondal, Partha Sarathi Mandal, and Stefan Schmid. **Convergence of even simpler robots without position information**. In *Networked Systems - 5th International Conference, NETYS 2017, Marrakech, Morocco, May 17-19, 2017, Proceedings* (Springer), pages 69–85, 2017.
- Debasish Pattanayak, H. Ramesh, Partha Sarathi Mandal, and Stefan Schmid. **Evacuating two robots from two unknown exits on the perimeter of a disk with wireless communication**. In *Proceedings of the 19th International Conference on Distributed Computing and Networking, ICDCN 2018* (ACM), Varanasi, India, January 4-7, 2018, pages 20:1–20:4, 2018.
- Debasish Pattanayak, H. Ramesh, and Partha Sarathi Mandal. **Chauffeuring a crashed robot from a disk**. In *Algorithms for Sensor Systems - 15th International Symposium on Algorithms and Experiments for Wireless Sensor Networks, ALGOSENSORS 2019, Munich, Germany, September 12-13, 2019, Revised Selected Papers* (Springer), pages 177–191, 2019.
- Dibakar Saha, Debasish Pattanayak, and Partha Sarathi Mandal. **Surveillance of uneven surface with unmanned aerial vehicles**. In *Proceedings of the 21st International Conference on Distributed Computing and Networking, ICDCN 2020, (ACM)*, Kolkata, India, January 4-7, 2020.

Abstracts/Posters

- Debasish Pattanayak, H. Ramesh, Partha Sarathi Mandal. **Collaborative Evacuation of Mobile Robots**. In Doctoral Symposium ICDCN 2020, Kolkata, India, January 4-7, 2020. (Best poster award)

Manuscripts Submitted/Under Preparation

- Debasish Pattanayak, John Augustine, Partha Sarathi Mandal. **Randomized Gathering of Asynchronous Mobile Robots**. Theoretical Computer Science (Elsevier) [Revised version submitted]
- Debasish Pattanayak, Kaushik Mondal, Partha Sarathi Mandal, and Stefan Schmid. **Convergence of Weaker Robots**. The Computer Journal (Oxford) [Submitted]
- Debasish Pattanayak, Klaus-Tycho Foerster, Partha Sarathi Mandal, Stefan Schmid. **Distributed Pattern Formation With Faulty Robots** [Under Preparation]
- Debasish Pattanayak, Ami Paz, Partha Sarathi Mandal, Stefan Schmid. **Distributed Evacuation of Mobile Robots** [Under Preparation]
- Debasish Pattanayak, Gokarna Sharma, Partha Sarathi Mandal. **Dispersion of Mobile Robots in Presence of Faults** [Under Preparation]

Teaching

IIT Guwahati | Teaching Assistant
- Data Structures Lab with OOP
- Matrix Computations Lab with MATLAB
- Computer Programming Lab with C
- Data Structures and Algorithms Lab with C++

Skills

Programming
- C • C++ • Python
- LaTeX • HTML • CSS
- MATLAB
- Mathematica

Community Services

- Reviewer for ICDCN 2017, ICDCN 2019, OPODIS 2019, CALDAM 2020.
- Part of the Organizing Committee of the 13th International Conference and Workshop on Algorithms and Computation (WALCOM), 2019.

References

Prof. Partha Sarathi Mandal
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