Sayantan Chakraborty

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Research Interests

Classical and Quantum Information Theory, Sampling and Randomized Algorithms
One shot information transmission protocols, quantum network information theory, quantum coding theory, markov chain monte carlo, perfect sampling algorithms

Education

Tata Institute of Fundamental Research	Registered (post qualifiers) : Jan, 2018
PhD Candidate in Computer Science	Ongoing, Expected in 2022
Advisor : Prof. Pranab Sen	Registration valid till : Aug, 2023

Indian Institute of Technology Kanpur	2014-2016
MTech in Electrical Engineering	CGPA : 8.25
Advisor : Prof. Pradip Sircar	

Institute of Engineering and Management, Kolkata	2010-2014
BTech in Electronics and Communication Engineering	CGPA : 8.47

Awards and Honours

1. Danny Lewin Best Student Paper Award at the 52nd Annual ACM Symposium on Theory of Computing (STOC 2020) jointly with Siddharth Bhandari

Publications

All authors are listed in alphabetical order, following convention in theoretical computer science.

1. Novel one-shot inner bounds for unassisted fully quantum channels via rate splitting
   with Aditya Nema and Pranab Sen
   Submitted to ISIT 2021
   Arxiv link : https://arxiv.org/abs/2102.01766

2. One-shot multi-sender decoupling and simultaneous decoding for the quantum MAC
   with Aditya Nema and Pranab Sen
   Submitted to ISIT 2021
   Arxiv link: https://arxiv.org/abs/2102.02187v2

3. Improved bounds for perfect sampling of k-colorings in graphs with Siddharth Bhandari
   In Proceedings of STOC 2020, Pages 631-642
   https://doi.org/10.1145/3357713.3384244
   Invited to to the Special Issue of the SIAM Journal of Computing (Currently under revision)

4. A novel approach for signal decomposition along a wide class of orthogonal polynomial bases
   with Prof. Pradip Sircar, IIT Kanpur
   Computational and Mathematical Methods, Vol.2 Issue 4, 2020
   https://doi.org/10.1002/cmm4.1105

Conference and Workshop Talks

1. Contributed talk at Beyond IID 8 :
   One-shot inner bounds for the unassisted quantum multiple access
   channel via simultaneous decoding and rate splitting.
   Video

2. Talk at STOC 2020 :
   Improved bounds for perfect sampling of k-colorings in graphs
   Short version, Long version

Unpublished Notes

1. Remote State Preparation   Master's Report submitted to STCS,TIFR
   with Pranab Sen

Miscellaneous Achievements

1. Secured All India Rank (AIR) 171 in GATE (ECE) 2014

2. Secured AIR 24 in Indian Statistical Institute Ph.D Computer Science written test, 2016

Key Courses taken at TIFR

1. Quantum Computation and Information   Spring 2017
   by Pranab Sen

2. Classical Information Theory   Spring 2017
   by Pranab Sen

3. Computational Complexity   Spring 2019
   by Pranab Seb

4. Markov Chains   Autumn 2017
   by Piyush Srivastava

5. Toolkit for CS   Autumn 2018
   by Piyush Srivastava and Prahladh Harsha

6. Pseudorandomness   Audit, Autumn 2018
   by Ramprasad Saptharishi

Personal Details

- DOB : 7th Oct, 1991

- Place of Birth : Kolkata, India

References

1. Prof. Pranab Sen
   School of Technology and Computer Science
   TIFR,Mumbai
   psen@tifr.res.in / pranab.sen.73@gmail.com

2. Prof. Piyush Srivastava
   School of Technology and Computer Science
   TIFR,Mumbai
   piyush.srivastava@tifr.res.in / piyushsriva@gmail.com

3. Prof. Jaikumar Radhakrishnan
   School of Technology and Computer Science
   TIFR,Mumbai
   jaikumar@tifr.res.in

4. Prof. Pradip Sircar
   Department of Electrical Engineering,
   Indian Institute of Technology, Kanpur
   UP, India-208016
   sircar@iitk.ac.in / pradipsircar@gmail.com