Sagnik Chatterjee

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Research Areas and Interests

🔖 Quantum algorithms and statistical learning theory; with an emphasis on learning w.r.t. various noise models, and proving theoretical bounds for convergence, generalization error, and speedups.

Education

2019 – 2025	🔖	**Ph.D.** in Computer Science and Engineering. Indraprastha Institute of Information Technology, Delhi (IIIT-Delhi). **Advisor:** Prof. Debajyoti Bera. **Thesis title:** Designing Quantum Learning Algorithms for Classical Objects. (**Defended:** May 2025.)
2013 – 2017	🔖	**B.Tech.** in Computer Science and Engineering. Maulana Abul Kalam Azad University of Technology, West Bengal (MAKAUT). **GPA:** *8.10/10*.

Research

Conference Proceedings

1. **S. Chatterjee**, M. Mukherjee, and A. Sethi, "Generalization bounds for dependent data using online-to-batch conversion," in *Proceedings of the 28th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2025. 🔗 URL: https://proceedings.mlr.press/v258/chatterjee25b.html.

2. **S. Chatterjee**, T. SAPV, and D. Bera, "Efficient quantum agnostic improper learning of decision trees," in *Proceedings of the 27th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2024. 🔗 URL: https://proceedings.mlr.press/v238/chatterjee24a.html.

Journal Articles

1. **S. Chatterjee**, R. Bhatia, P. S. Chani, and D. Bera, "Quantum boosting using domain-partitioning hypotheses," *Quantum Machine Intelligence*, vol. 5, no. 2, pp. 1–20, 2023. 🔗 DOI: 10.1007/S42484-023-00122-3.

Manuscripts, Short Papers, and Posters

1. Y. Saxena, **S. Chatterjee**, and T. Sapv, *Realization of maximally-entangling two-qutrit gates using the cross-resonance scheme*, Presented at the 2025 APS March Meeting., 2025. arXiv: 2504.15265.

2. **S. Chatterjee** and V. Kungurtsev, *Quantum solutions to the privacy vs. utility tradeoff*, 2023. arXiv: 2307.03118.

3. **S. Chatterjee**, R. Bhatia, P. S. Chani, and D. Bera, *Quantum boosting using domain-partitioning hypotheses*, Short Talk at the 6th Quantum Techniques in Machine Learning (QTML 2023). Poster presented at the 25th International conference on Quantum Information Processing (QIP 2022)., 2022. arXiv: 2110.12793.

4. **S. Chatterjee** and D. Bera, *Applying the quantum alternating operator ansatz to the graph matching problem*, Extended Abstract at the The 20th Asian Quantum Information Science (AQIS) Conference, 2020. arXiv: 2011.11918.

Research Visits

Aug 24– Oct 24	🔖	**ACMU, Indian Statistical Institute**, Kolkata. **Host:** Prof. Sourav Chakraborty.
Jul 23– Sep 23	🔖	**Czech Technical University**, Prague. **Host:** Prof. Jakub Marecek, Prof. Vyacheslav Kungurtsev.

Invited and Contributed Talks

Mar 2025	🔖	Quantum Computing Workshop by Edunautic, IIT Delhi. *Full day workshop from fundamentals to hands-on instruction.*
Jan 2025	🔖	QAC 2025 symposium, C-DAC and DIAT Pune. *Modern Algorithmic Primitives in Quantum Computing.*
Oct 2024	🔖	ACMU seminar, ISI Kolkata. *Generalization bounds for dependent data using online-to-batch conversion.*
July 2024	🔖	Recent Trends in Algorithms Workshop 2024. *Efficient quantum agnostic improper learning of decision trees.*
June 2024	🔖	ACMU seminar, ISI Kolkata. *Efficient quantum agnostic improper learning of decision trees.*
Februrary 2024	🔖	Quantum Computing Semester, Chennai Mathematical Institute. *Quantum Algorithms for Linear Algebra.* *Block Encodings and Linear Combination of Unitaries.*
September 2023	🔖	University of Latvia. *Efficient quantum agnostic improper learning of decision trees.*
	🔖	IDA Seminar, Czech Technical University. *Efficient quantum agnostic improper learning of decision trees.*
November 2022	🔖	The 6th Quantum Techniques in Machine Learning (QTML 2023) conference. *Quantum boosting using domain-partitioning hypotheses.*
March 2022	🔖	Theory Seminar, Indian Institute of Information Technology Delhi. *Quantum boosting using domain-partitioning hypotheses.*
December 2020	🔖	Faculty Development Programme, JNTU Anantapur. *Quantum Machine Learning.*

Teaching

Instructor (Short Courses)

February 2024	🔖	Designed and taught 3 lectures at the Quantum Computing Semester, **CMI**. **Topic:** Quantum algorithms for linear algebra.
August 2022	🔖	Designed and taught 3 lectures at IIIT-Delhi. **Topics:** C programming for Operating Systems.

Teaching Assistantship

Theory of Computation	🔖	Winter 2020, Winter 2021, Winter 2024.
Modern Algorithm Design	🔖	Monsoon 2020, Monsoon 2021.
Intro to Quantum Computing	🔖	Winter 2023.
Data Structures and Algorithms	🔖	Summer 2022.

Miscellaneous

Awards and Achievements

Aug 24	🔖	**IIITD Dean's List** for Best Teaching Assistant (Theory of Computation).
Apr 24	🔖	AISTATS 2024 Registration Grant.
Jan 22	🔖	QIP 2022 Student Travel Award (Not availed due to COVID restrictions).
Feb 20	🔖	**Runners Up, IBMQ Awards** - Teach Me Quantum 2019.
Oct 19	🔖	Accepted to the 4th Winter School in CSE organized by the IIAS, HUJI, Jerusalem. https://iias.huji.ac.il/SchoolCSE4.

Miscellaneous (continued)

Reviewing

Conference	NeurIPS'24, ICLR'25, AISTATS'25, ICML'25.
Journal	Scientific Reports (2024), Quantum (2024, 2025).

Mentoring

Jan 24 – present	Alhad Sethi. BTech student at IIIT- Delhi.
Jan 24 – Jan 25	Neeshu Rathi. Ph.D. student at IIT- Roorkee.
Jan 21 – Jul 23	Parmeet Singh Chani. Btech student at DTU, Delhi.
	Rohan Bhatia. Btech student at DTU, Delhi.

Organisation

Workshops	Co-organised (only student organiser) and Webadmin for the QISE workshop at FSTTCS 2021.
Seminars organized	Talks on Quantum Computing at IIIT-D.
	Ketchup talks at IIIT-D.
	Theory Reading Group talks at IIIT-D.

Industry Experience

Sep 17 – Mar 19	**Staff Consultant,** Oracle Financial Services Software Limited.
Feb 17 – Apr 17	**Systems Engineering Intern**, Infosys Limited.
Jun 16– Jul 16	**Data-Science Intern**, AlCircle Pte Ltd.

References

Available on Request