Ankith Mohan | Curriculum Vitae

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EDUCATION

PhD Candidate in Computer Science *2021 - 2026* (expected)
Virginia Tech, Blacksburg, VA, USA
Advisor: Jamie Sikora

MS in Computer Science *2020*
University of Southern California, Los Angeles, CA, USA
Advisors: Aiichiro Nakano and Emilio Ferrara

RESEARCH EXPERIENCE

Virginia Tech *2021 - Present*
PhD Candidate *Blacksburg, VA*
Advisor: Jamie Sikora
Thesis topic: Optimizing large, computationally hard problems in quantum information.

Virginia Tech *Summer 2025*
Graduate Research Assistant *Blacksburg, VA*
Advisor: Sumeet Khatri
Project topic: Minimizing classical communication cost for entanglement distribution in quantum repeaters using multi-agent reinforcement learning.

Agency for Science, Technology and Research (A*STAR) *Summer 2024*
Research Intern *Singapore*
Advisor: Kishor Bharti
Project topic: Approximate floquet quantum error correcting codes.

Fujitsu Research of America *Summer 2023*
Research Intern *Sunnyvale, CA*
Advisor: Sarvagya Upadhyay
Project title: Detection and identification of multiple quantum change points.

Fujitsu Research of America *Summer 2022*
Research Intern *Sunnyvale, CA*
Advisor: Sarvagya Upadhyay
Project title: Identification of influential nodes in a social network using combinatorial optimization.

University of Southern California *2018 - 2020*
Research Assistant *Los Angeles, CA*
Advisor: Sze-Chuan Suen
Project title: Modeling the effectiveness of PrEP on HIV/AIDS outcomes in Los Angeles county.

Information Sciences Institute *Spring 2019*
Graduate Research Assistant *Marina Del Rey, CA*
Advisors: Robert F Lucas and Jeremy Liu
Project title: Modeling large-scale reactive molecular dynamics (RMD) simulations data set of MoS_2 monolayer to denoise grain boundaries and defects.

HONORS AND AWARDS

Best Research Award, Department of Computer Science, University of Southern California *2021*

PUBLICATIONS

Book

Krishnaraj P.M., **Ankith Mohan**, and Srinivasa K.G. "*Practical Social Network Analysis with Python*". Springer International Publishing, 2018.

Journals

- Caleb McIrvin, **Ankith Mohan**, and Jamie Sikora. "*Quantum state exclusion through offset measurement*". Physical Review A 110, 042211.
- **Ankith Mohan**, Aiichiro Nakano, and Emilio Ferrara. "*Graph signal recovery using restricted Boltzmann machines*". Expert Systems with Applications 185 (2021): 115635.
- Jeremy Liu, **Ankith Mohan**, Rajiv K. Kalia, Aiichiro Nakano, Ken-ichi Nomura, Priya Vashishta, and Ke-Thia Yao. "*Boltzmann machine modeling of layered MoS2 synthesis on a quantum annealer*". Computational Materials Science 173 (2020): 109429.
- Krishnaraj P. M., **Ankith Mohan**, and Srinivasa K.G. "*Performance of procedures for identifying influentials in a social network: prediction of time and memory usage as a function of network properties*". Social Network Analysis and Mining 7, no.1 (2017): 34.

Conference Proceedings

- **Ankith Mohan**, Tobias Haug, Kishor Bharti, and Jamie Sikora. "*Quantum heuristics for linear optimization over large separable operators*". To appear in *IEEE International Conference on Trust, Privacy and Security in Intelligent Systems, and Applications* (TPS 2025).
- Mohammad Beigi, Ying Shen, Runing Yang, Zihao Lin, Qifan Wang, **Ankith Mohan**, Jianfeng He, Ming Jin, Chang-Tien Lu, and Lifu Huang. "*InternalInspector I^2: Robust Confidence Estimation in LLMs through Internal States*". Findings of the Association for Computational Linguistics: The 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP 2024) (pp. 12847-12865).

Under Review

Nirupam Basak, Andrew Tanggara, **Ankith Mohan**, Goutam Paul, and Kishor Bharti. "*Approximate Dynamical Quantum Error-Correcting Codes*". Submitted to *Quantum*.

Preprints

- **Ankith Mohan**, Jamie Sikora, and Sarvagya Upadhyay. "*A generalized framework for quantum state discrimination, hybrid algorithms, and the quantum change point problem*". Available as arXiv: 2312.04023.

In Preparation

- **Ankith Mohan**, Chen Bai, Stav Halder, and Sumeet Khatri. "*Trading beliefs for classical communication in entanglement distribution with quantum repeaters: a multi-agent reinforcement learning approach*".
- Tathagata Gupta, **Ankith Mohan**, Shayeef Murshid, Vincent Russo, Jamie Sikora, and Alice Zheng. "*Learning global properties of qubit sequences, one qubit at a time*".

· Nirupam Basak, Andrew Tanggara, **Ankith Mohan**, Goutam Paul, Tobias Haug, and Kishor Bharti. "*Hierarchical quantum decoders*".

PATENTS

Ankith Mohan, and Sarvagya Upadhyay. "*Hybrid Classical-Quantum Unsupervised Multiclass Classification*". US20250094447A1, filed September 15, 2023. Patent pending.

Xiaoyuan Liu, **Ankith Mohan** and Sarvagya Upadhyay. "*Identification of Influential Nodes in Graph Datasets Using Combinatorial Optimization Formulations*". US12437003B2, filed January 18, 2023, granted 7 October 2025.

PRESENTATIONS

Talks

· *Quantum heuristics for linear optimization over large separable operators.* Presented at the Second IEEE Workshop on Quantum Intelligence, Learning and Security (QuILLS 2025).

· *Hybrid Classical-Quantum Unsupervised Multiclass Classification.* Presented at the Fujitsu Research of America Seminar Series, July 2023.

· *NISQ Algorithms for Separable Ground States.* Presented at the Virginia Tech Quantum Information Science Symposium, April 2022.

· *Approximating the Influence Maximization Problem in social networks using DA and QAOA.* Presented at the Fujitsu Research of America Seminar Series, July 2022.

Posters

· *The pretty bad measurement and optimal bounds for antidistinguishability.* Presented at the 28th Annual Conference on Quantum Information Processing, February 2025.

· *Approximate Dynamical Quantum Error-Correcting Codes.* Presented at the CCI Student Researcher Showcase, March 2024.

· *Pretty bad measurement.* Presented at the CCI Student Researcher Showcase, March 2024. **Receipient of People's Choice Best Poster Award.**

· *A generalized framework for quantum state discrimination, hybrid algorithms, and the quantum change point problem.* Presented at the Virginia Tech Quantum Information Science Symposium, November 2023.

· *Inner Approximations and a NISQ Algorithm for the Quantum Separability Problem.* Presented at the 25th Annual Conference on Quantum Information Processing, March 2022.

TEACHING EXPERIENCE

Substitute Lecturer

Introduction to Problem Solving in Computer Science — *Spring 2024*

· Taught two classes of 70 students each on the basics of networking.

Graduate Teaching Assistant

· *Ethics and Professionalism in Computer Science* — *Fall 2025*

· *Data and Algorithms Analysis* — *Spring 2025*

· *Introduction to Problem Solving in Computer Science* — *Fall 2021*

OUTREACH

C-Tech^2 summer camp at Virginia Tech 2025
Lead Instructor *Blacksburg, VA*

· Lead instructor for one camp session of 64 students about introduction to quantum.

Other summer camps at Virginia Tech 2025
Volunteer *Blacksburg, VA*

· *Explore Science (Grades 7-8)*
· *Explore Science (Grades 9-10)*
· *Explore Life Science*
· *WEE VT*
· *Virginia Tech QISE Summer School*
· *Explore Physical Sciences*

ACADEMIC SERVICE

· (Sub-)reviewer: TQC 2025.
· Reviewer: Journal of Physics A: Mathematical and Theoretical.

REFERENCES

Jamie Sikora.
Assistant Professor of Computer Science. Virginia Tech. Blacksburg, VA 24060.
sikora@vt.edu
Relationship: Doctoral Advisor.

Sumeet Khatri.
Assistant Professor of Computer Science. Virginia Tech. Blacksburg, VA 24060.
skhatri@vt.edu
Relationship: Doctoral committee member.

Sarvagya Upadhyay.
Head of Quantum Lab. Fujitsu Research of America. Sunnyvale, CA 94085.
supadhyay@fujitsu.com
Relationship: Internship Advisor.

Kishor Bharti.
Senior Scientist. Institute of High Performance Computing (IHPC), Agency for Science,Technology and Research (A*STAR). Singapore 138632.
bharti_kishor@ihpc.a-star.edu.sg
Relationship: Internship Advisor.