Lukshya Ganjoo

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Github Linkedin

Education

2021–2025 : **B.S/M.S: Computer Science, B.S: Mathematics**, *University of Washington, Seattle*, Relevant Coursework: .

- **Math:** Quantum Probability Theory, Combinatorial Optimization, Modern Algebra, Accelerated Advanced Honors Calculus, Advanced Linear Algebra
- **Computer Science:** Markov Chains, Graduate Algorithms, Graduate Natural Language Processing, Quantum Computing, Toolkit for Modern Algorithms, Introduction to Algorithms, Complexity Theory, Machine Learning, Data Structures.

GPA : 3.93/4.0

Research experience

Publications and Pre-prints

July 2024 **Alex Albors, Hisham Bhatti, Lukshya Ganjoo, Raymond Guo, Dimitry Kunisky, Rohan Mukherjee, Alicia Stepin and Tony Zeng**, On the Structure of Bad Science Matrices, In: *arXiv preprint arXiv 2408.00933*.
In review at Involve

Ongoing research

Jun 2024 – Aug 2024 ***Approximation algorithms for solving quantum max cut***, *(Pending arXiv submission)*.
I am presently working with Professor Andrea Coladangelo, where we're focused on developing approximation algorithms to find a high energy state of the QMC Hamiltonian. This Hamiltonian while serving as a generalization to the computational problem of finding a maximum cut, is also physically motivated since it models anti-ferromagnetic Hamiltonians.

Advisor : **Dr. Andrea Coladangelo**, *Assistant Professor, Department of Computer Science & Engineering*(*Personal Web-page*)

Talks/Reading

December 2023 ***Matrix Completion via Randomized Basis Pursuit***, *CSE 521: Advanced Algorithms*, University of Washington: slides.

March 2024 ***Commutative Algebra and Algebraic Geometry***, *Washington Directed Reading Program 2024*, University of Washington: slides.

May 2024 ***Error estimates and asymptotic analysis for exact qudit universality***, *Undergraduate Research Symposium 2024*, University of Washington: slides.

Teaching

Winter 2025 **TA - CSE 422: Advanced Toolkit for Modern Algorithms**, UW CSE.

- Taught an advanced undergraduate class on the principles of modern algorithms with a particular focus on machine learning algorithms.
- Initiated weekly sections for 30+ students, grading 40+ assignments weekly and conducting office hours

Fall 2023, 2024: **TA - CSE 534: Graduate Quantum Computing**, UW CSE.
- Taught a special topics graduate class on quantum computing and algorithms.
- Initiated weekly sections for 20+ students, grading 100+ assignments weekly and conducting office hours

Spring, 2024: **TA - CSE 434: Introduction to Quantum Computation**, UW CSE.
- Taught a special topics undergraduate class on quantum computing and algorithms.
- Initiated weekly sections for 30+ students, grading 100+ assignments weekly and conducting office hours

Winter, 2024: **TA - CSE 417: Algorithms and Computational Complexity**, UW CSE.
- Taught a class on designing and analyzing algorithms and data structures, along with efficient models of computation intended for a general undergraduate audience.
- Initiated weekly sections for 20+ students, grading 100+ assignments weekly and conducting office hours

Spring, 2023: **TA - CSE 311: Foundations of Computing I**, UW CSE.
- Taught a class focusing on the fundamentals of logic and computation intended for a general undergraduate CS audience.
- Initiated weekly sections for 25+ students, grading 200+ assignments weekly and conducting office hours.

Winter, 2023: **TA - CSE 446: Introduction to Machine Learning**, UW CSE.
- Taught an introductory class on machine learning intended for an advanced undergraduate CS audience.
- Initiated weekly sections for 15+ students, grading 100+ assignments weekly and conducting office hours.

Fall, Summer 2022: **TA - CSE 312: Foundations of Computing II**, UW CSE.
- Taught an introductory class on probability and statistics intended for a general undergraduate CS audience.
- Initiated weekly sections for 25+ students, grading 200+ assignments weekly and conducting office hours.

Languages and Skills

Languages: Java, Python, Lean, OCaml, C++, C, Racket, Javascript, SQL, MySQL

Technologies: LaTeX, Mathematica, Git, Jupyter Notebooks, AWS, PyTorch, TensorFlow