

# Jasdeep Singh

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## EDUCATION:

**University of Colorado at Boulder**, College of Engineering and Applied Sciences

Expected Graduation May 2026

**B.S. in Computer Science, B.S. in Applied Mathematics**

Boulder, CO

*Statistics Minor and Quantitative Finance Certificate*

- **GPA 3.72** | Deans list 2021-present
- CU Esteemed Scholars-Sewall Scholarship
- Sikh Student Association, South Asian Student Association, Bole Boulder Bhangra, CU Quants, CU Traders

*Engineering Honors Program*

- Rigorous academic experience for the highest achieving incoming engineering students
- Program requires participation in related activities, Honors Senior Thesis/Portfolio.

## WORK EXPERIENCE:

**Jain Research Lab, Purdue University**

2024 to Aug 2024

*Undergraduate Researcher Intern*

Lafayette, IN

- Modified an online drone simulation where participants provided self-confidence assessments after each trial and received feedback from a large language model.
- Conducted an open-loop experiment to collect data for training a Markov Decision Process (MDP) model, with random automation assistance and chatbot feedback.
- Closed the loop by training the MDP model to determine an optimal policy for providing feedback and automation assistance based on participant performance and confidence.

**Programming Languages and Verification Laboratory, University of Colorado Boulder**

May 2023 to Present

*Undergraduate Researcher*

Boulder, CO

- Developed a robustness evaluator in Scala to assess drone flight skills using signal temporal logic and dynamic programming for trajectory segmentation.
- Analyzed flight path data with Python and MATLAB, enabling trend identification and specialized feedback using machine learning techniques.
- Co-authored and presented a paper at Hybrid Systems Control and Computation 2024, showcasing the segmentation method and its impact on user feedback.

## PROJECTS:

**Chladni Plates**

October 2022 to December 2022

- Conducted research on advanced differential equations, including the Double Laplacian & Bessel's equations
- Analyzed partial differential equations (PDEs) both analytically & numerically using Mathematica
- Co-authored academic report on modeling sand patterns on vibrating metal plate with PDEs

**MiniGit**

Jun 2022 to Aug 2022

- Developed version control system that tracks and manages file changes
- Allows users to add/remove files, search, commit, and checkout within repository
- Implemented data structures (e.g. linked-lists, hash tables) in C++ for project management

**Image Compression**

Mar 2022 to Jun 2022

- Researched and applied advanced linear algebra and analysis concepts (e.g. SVD, Fourier Transform)
- Analyzed image compression techniques using SVD and Fourier Transform in MATLAB
- Co-authored academic report on results of different image compression techniques

**Infectious Disease Model on Network**

Oct 2021 to Jan 2022

- Conducted extensive research on advanced graph theory concepts, including density, degree, and distribution
- Analyzed the spread of an epidemic using an SIR model and statistical analysis in MATLAB
- Co-Authored an academic report about the spread of infectious diseases with varying parameters

## SKILLS AND INTERESTS:

**Programming Languages:** Python, C++, Java, R, Node.JS, SQL, MATLAB, Scala, Mathematica, HTML, CSS, PHP

**Technical:** Git, Docker, REST API's, Bootstrap, OOP, Scrum, Agile, Microsoft Office (Word, PowerPoint, Excel)

**Interests:** Autonomous Systems, Hybrid Systems, Machine Learning, Deep Learning, Data Science, Optimization, Cyber Physical Systems, Formal Methods and Verification, Statistical Analysis, Numerical Computation, Software Engineering