

# Joonhyuk Ko

## School Address

School of Engineering and Applied Science  
University of Virginia  
Charlottesville, VA 22903

## Contact Information

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## RESEARCH INTERESTS

My research interests are in differential privacy and algorithmic fairness. I use constrained optimization to address problems in high-stakes decision-making tasks (e.g., how privacy noise affects data quality for fund allocation). More broadly, I am interested in applying mathematical modeling to study practical societal problems (e.g., strategic classification in hiring and admissions).

## EDUCATION

### University of Virginia

B.S. in Computer Science, B.A. in Mathematics  
GPA: 3.997/4.000; (both) *Major GPA*: 4.000/4.000

*Aug 2022 – May 2026*  
Charlottesville, VA

### Relevant Courses:

Machine Learning<sup>†</sup>, Convex Optimization<sup>†</sup>, Algorithms, Real Analysis, Abstract Algebra, Linear Algebra, Probability, Mathematical Statistics, Partial Differential Equations, Theory of Computation, Software Engineering, Computer Systems and Organization, Reinforcement Learning\*, Natural Language Processing\*, Intermediate Microeconomics\*

<sup>†</sup>Graduate-level Courses   \* Fall 2025 Courses

## RESEARCH EXPERIENCE

### Research Intern

**Carnegie Mellon University**, School of Computer Science  
Advisor: **Dr. Steven Wu**

*May 2025 – Present*  
Pittsburgh, PA

- Research topics: Uncertainty Quantification, Learning Theory
- Summer visiting student researcher with [Prof. Steven Wu](#)'s group.

### Research Assistant

**University of Virginia**, Department of Computer Science  
Advisor: **Dr. Ferdinando Fioretto**

*Jan 2024 – Present*  
Charlottesville, VA

- Research topics: Differential Privacy, Algorithmic Fairness
- Undergraduate Research Assistant at [RAISE](#) (Responsible AI for Science and Engineering) group
- Led to the following publication(s): [C1](#), [P1](#)

### Research Fellow

**University of Virginia**, School of Engineering and Applied Science  
Advisor: **Dr. Ferdinando Fioretto**

*May 2024 – Aug 2024*  
Charlottesville, VA

- Selected as a Dean's Undergraduate Engineering Research Fellow.
- Awarded \$4,800 from the engineering department to pursue full-time research for summer 2024.
- Attended weekly professional development workshops.
- Presented a poster at the 2024 Fall Undergraduate Research Expo at UVA.

## PUBLICATIONS

### Preprints

- P1. **Joonhyuk Ko**, Juba Ziani, Ferdinando Fioretto. *“Optimal Allocation of Privacy Budget on Hierarchical Data Release.”*  
ArXiv Preprint, 2025.

### Conference Papers

- C1. **Joonhyuk Ko**, Juba Ziani, Saswat Das, Matt Williams, Ferdinando Fioretto. *“Fairness Issues and Mitigations in (Differentially Private) Socio-Demographic Data Processes.”*  
AAAI Conference on Artificial Intelligence (AAAI), 2025. **Oral Presentation (< 5%)**.

## TEACHING EXPERIENCE

Teaching Assistant

Jan 2023 – Dec 2023

University of Virginia, Department of Applied Mathematics

Charlottesville, VA

- Graded assignments and quizzes, and provided feedback to students for the following courses:
  - APMA 6410 (Graduate-level): Engineering Mathematics I (Fall 2023)
  - APMA 2130: Ordinary Differential Equations (Spring 2023)

## INVITED TALKS

**Panelist:** *Preparing for Undergraduate Research (CS 2501).*

Department of Computer Science, University of Virginia.

Feb 2025

**Talk:** *Fairness Issues and Mitigations in (Differentially Private) Socio-Demographic Data Processes.*

TOC4Fairness Seminar, Simons Foundation. [\[link\]](#)

Mar 2025

## SKILLS

### Programming Languages

Python, C, x86-64, Java, JavaScript, TypeScript, MATLAB, SQL, L<sup>A</sup>T<sub>E</sub>X

### Programming Tools/Libraries

SLURM, Git, NumPy, Pandas, Matplotlib, Seaborn, Scikit-learn, Gurobi, CVXPY, SciPy

### Languages

English, Korean

## HONORS

Louis T. Rader Undergraduate Research Award<sup>‡</sup>, Top Honors [\[link\]](#), 2025

The Raven Society<sup>¶</sup> Member, 2025

AAAI 2025 Student Travel Award, 2025

CRA Outstanding Undergraduate Researcher Award, Honorable Mention [\[link\]](#), 2025

Dean's Undergraduate Engineering Research Fellowship, 2024

Dean's List, 2022-2025

<sup>‡</sup>The highest undergraduate CS research award at the University of Virginia (\$750 award)

<sup>¶</sup>The oldest and most prestigious honorary society at the University of Virginia

## REFERENCES

**Dr. Ferdinando Fioretto**

Assistant Professor, Department of Computer Science

University of Virginia

Email: [fioretto@virginia.edu](mailto:fioretto@virginia.edu)

**Dr. Juba Ziani**

Assistant Professor, H. Milton Stewart School of Industrial and Systems Engineering

Georgia Institute of Technology

Email: [jziani3@gatech.edu](mailto:jziani3@gatech.edu)