

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

Aug 2022 – May 2026

GPA: 3.996/4.000

Relevant Courses:

Machine Learning^{*†}, Convex Optimization[†], Algorithms, Real Analysis, Abstract Algebra^{*}, Probability, Mathematical Statistics^{*}, Partial Differential Equations, Linear Algebra, Theory of Computation, Software Engineering, Computer Systems and Organization

^{*} Spring 2025 Courses [†] Graduate-Level Courses

RESEARCH EXPERIENCE

Research Assistant

University of Virginia, Department of Computer Science

Advisor: **Dr. Ferdinando Fioretto**

Jan 2024 – Present

Charlottesville, VA

- Undergraduate Research Assistant at [RAISE](#) (Responsible AI for Science and Engineering) group
- Research topics: Algorithmic Fairness and Differential Privacy

Research Fellow

University of Virginia, Department of Computer 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 at 2024 Fall Undergraduate Research Expo at UVA.

PUBLICATIONS

Conference Papers

1. **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

University of Virginia, Department of Applied Mathematics

- Graded assignments and quizzes, and provided feedback to students for the following courses:

Jan 2023 – Dec 2023

Charlottesville, VA

- APMA 6410 (Graduate-level): Engineering Mathematics I (Fall 2023)
- APMA 2130: Ordinary Differential Equations (Spring 2023)

Private Tutor

Jun 2023 – Aug 2023

Self-employed

Fairfax, VA

- Provided personalized instruction and guidance to rising high school students in AP Computer Science A curriculum.
- Emphasized best programming practices and problem-solving strategies to deepen students' understanding.

INVITED TALKS

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

Department of Computer Science, University of Virginia.

Feb 2025

SKILLS

Programming Languages

Python, C, x86-64, Java, JavaScript, TypeScript, MATLAB, SQL, L^AT_EX

Programming Tools/Libraries

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

Languages

English, Korean

HONORS

CRA Outstanding Undergraduate Researcher Award, Honorable Mention, 2025

Dean's Undergraduate Engineering Research Fellowship, 2024

Dean's List, 2022-2024

REFERENCES

Professor Ferdinando Fioretto

Assistant Professor, Department of Computer Science

University of Virginia

Email: fioretto@virginia.edu

Professor Juba Ziani

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

Georgia Institute of Technology

Email: jziani3@gatech.edu