Joonhyuk Ko

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

Contact Information
(703) 401-5605
tah3af@virginia.edu
www.joonhyukko.com

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 *Aug 2022 – May 2026*
B.S. in Computer Science, B.A. in Mathematics 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 *Jan 2024 – Present*
University of Virginia, Department of Computer Science Charlottesville, VA
Advisor: **Dr. Ferdinando Fioretto**

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

Research Fellow *May 2024 – Aug 2024*
University of Virginia, Department of Computer Science Charlottesville, VA
Advisor: **Dr. Ferdinando Fioretto**

- 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 *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)

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, LaTeX

Programming Tools/Libraries
SLURM, Git, NumPy, Pandas, Matplotlib, Seaborn, Scikit-learn, Gurobi, CVXPY, SciPy

Languages
English, Korean

HONORS

AAAI 2025 Student Travel Award, 2025
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