Joonhyuk Ko

Curriculum Vitae

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Research Interests

Algorithmic Fairness, Differential Privacy, Optimization, and Uncertainty Quantification.

Education

University of Virginia — Charlottesville, VA
B.S. in Computer Science, B.A. in Mathematics — *Aug 2022 – May 2026*
GPA: 3.997/4.000; (both) *Major GPA*: 4.000/4.000

Relevant Courses:
Machine Learning†, Convex Optimization†, 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*

†Graduate-level Courses *Fall 2025 Courses

Research Experience

Carnegie Mellon University, School of Computer Science — Pittsburgh, PA
Research Intern — *May 2025 – Present*
Advisor: **Dr. Steven Wu**

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

University of Virginia, Department of Computer Science — Charlottesville, VA
Research Assistant — *Jan 2024 – Present*
Advisor: **Dr. Ferdinando Fioretto**

- 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

University of Virginia, School of Engineering and Applied Science — Charlottesville, VA
Research Assistant — *May 2024 – Aug 2024*
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 a poster at the 2024 Fall Undergraduate Research Expo at UVA.

Publications

Conference Proceedings

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%).**

Preprints

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

Awards and Honors

Louis T. Rader Undergraduate Research Award, Top Honors 2025
The highest undergraduate CS research award at the University of Virginia ($750 award). [link]

The Raven Society Member 2025
The oldest and most prestigious honorary society at the University of Virginia.

AAAI 2025 Student Travel Award 2025
Received NSF-sponsored travel funding to support conference participation ($1,800 award).

CRA Outstanding Undergraduate Researcher Award, Honorable Mention 2025
Recognizes North American undergraduates with outstanding computing research potential. [link]

Dean's Undergraduate Engineering Research Fellowship 2024
Received a stipend to pursue full-time research for summer 2024 ($4,800 award).

Invited Talks

Talk: *Fairness Issues and Mitigations in (Differentially Private) Socio-Demographic Data Processes.*
TOC4Fairness Seminar, Simons Foundation. [link] *Mar 2025*

Panelist: *Preparing for Undergraduate Research (CS 2501).*
Department of Computer Science, University of Virginia. *Feb 2025*

Academic Services

Reviewer
AAAI Conference on Artificial Intelligence (AAAI), 2026.

Teaching Experience

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

References

Dr. Ferdinando Fioretto
Assistant Professor, Department of Computer Science
University of Virginia
Email: 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