

## RESEARCH INTERESTS

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

## EDUCATION

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### University of Virginia

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

Charlottesville, VA  
Aug 2022 – May 2026

### 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, Computer Systems and Organization, Reinforcement Learning, Natural Language Processing, Intermediate Microeconomics

<sup>†</sup>Graduate-level Courses

## RESEARCH EXPERIENCE

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### University of Virginia, Department of Computer Science

*Research Assistant*

Charlottesville, VA  
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](#)

### Carnegie Mellon University, School of Computer Science

*Research Intern*

Pittsburgh, PA  
May 2025 – Aug 2025

Advisor: **Dr. Steven Wu**

- Research topics: Uncertainty Quantification, Learning Theory
- Summer visiting researcher in [Prof. Steven Wu](#)'s group on a joint project with [Prof. Andrew Ilyas](#).

### University of Virginia, School of Engineering and Applied Science

*Research Fellow*

Charlottesville, VA  
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

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### 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

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- CRA Outstanding Undergraduate Researcher Award** [\[link\]](#) 2025, 2026  
Finalist (2026), Honorable Mention (2025).  
Recognizes North American undergraduates with outstanding computing research potential.
- Louis T. Rader Undergraduate Research Award** [\[link\]](#) 2025  
Top Honors. The highest undergraduate CS research award at the University of Virginia (\$750 award).
- 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).
- Dean's Undergraduate Engineering Research Fellowship** 2024  
Received a stipend to pursue full-time research for summer 2024 (\$4,800 award).

## INVITED TALKS

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- 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

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- Program Committee**  
AAAI Conference on Artificial Intelligence (AAAI), 2026.

## TEACHING EXPERIENCE

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

## ADDITIONAL INFORMATION

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- Technical Skills:** Python, C, MATLAB,  $\text{\LaTeX}$ , SLURM, Gurobi, CVXPY, SciPy, TypeScript  
**Languages:** English, Korean  
**Nationality:** U.S. Citizen

## REFERENCES

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- 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)
- Dr. Steven Wu**  
Associate Professor, School of Computer Science  
Carnegie Mellon University  
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