COLUMBIA | ENGINEERING
The Fu Foundation School of Engineering and Applied Science

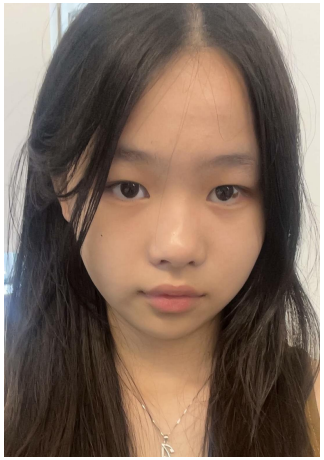
E.N.G.
Engineering the Next Generation

Virtual Reality (VR) Experiment with Elderly Pedestrians

July-August 2025

NSF | CENTER FOR SMART STREETSCAPES

Our Team

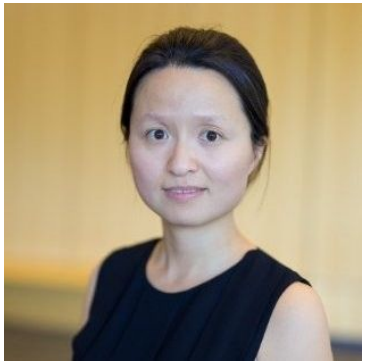


Ada Chen
The Brooklyn Latin School

Ian Nicholson
Hunter College High School

Samuel Jimenez-Lozano
Riverdale Country School

Our Mentors



Dr. Xuan (Sharon) Di
Faculty Advisor

Yongjie Fu
Engineering Mentor

Carlos Espinoza
Engineering Mentor

Seon Britton
Social Science Mentor

COLUMBIA | ENGINEERING
The Fu Foundation School of Engineering and Applied Science

E.N.G.
Engineering the Next Generation

NSF | CENTER FOR SMART STREETSCAPES

Overview

How can VR be <u>effectively implemented</u> as an <u>assistive technology</u> to facilitate safer, smarter, and more comfortable <u>active transport</u>, particularly among Harlem's <u>elderly</u> population?

Overview

- ➔ **47%** of NYC pedestrian fatalities were seniors
- ➔ The **65+** population has grown **17×** faster than the general population since 2000.
- ➔ This demographic now comprises **17.3%** of NYC's population

Overview

CREATING VR SIMULATIONS OF THE COSMOS TESTBED AT AMSTERDAM & 120TH

SOCIAL SCIENCE

- Surveys
- Interviews
- Ethnography
- Photovoice

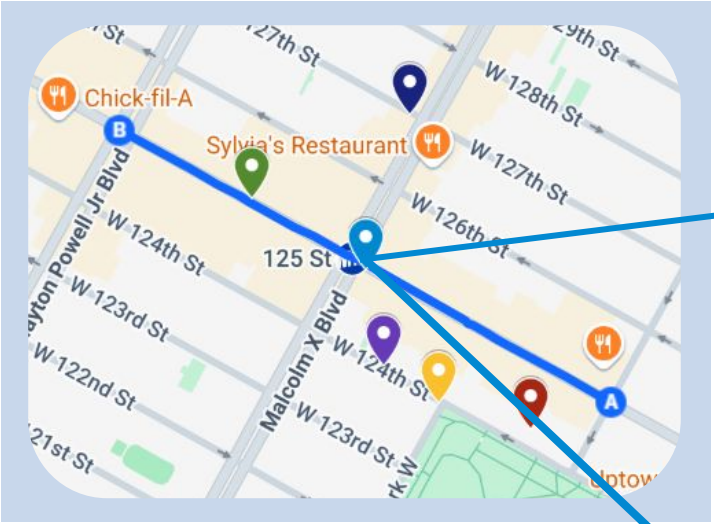
MICROMOBILITY & SPATIAL AWARENESS

- Micromobility concerns
- Spatial awareness
- Vehicles & pedestrians

ENGINEERING

- Real-world MQTT trajectory data
- C# Code
- Unity3D simulations

Social Science



“I got hit by a bike! I got hit by a bike right there.”

- Interviewee 2

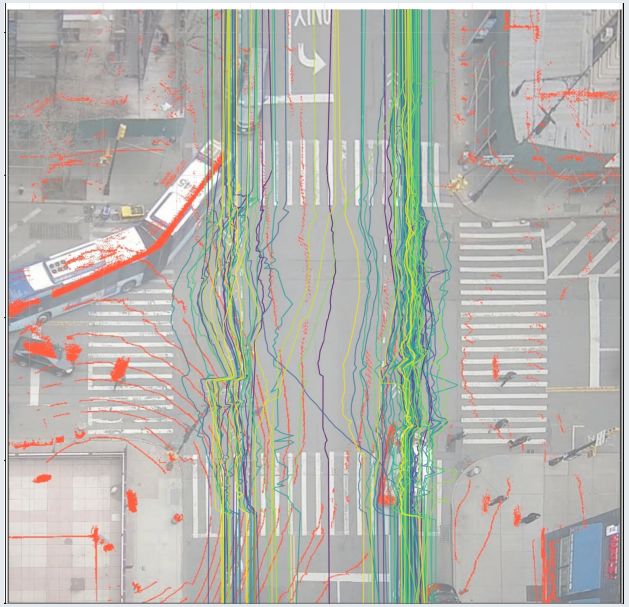
“It's too close. Too close. It'll make me jittery. I don't want to try”

- Interviewee 5

Social Science

Engineering

Engineering



Engineering

Engineering

Pedestrian Warning Bars

Acknowledgements

Thank you to our mentors Yongjie Fu, Seon Britton, and Carlos Espinoza.
Thank you to our Faculty Advisor and Principal Investigator Dr. Sharon Di.

Thank you to Ari Galper, Elizaveta Sheremet, Cristian Capotescu, and Jenny Fondren for sharing their knowledge and research expertise.

Thank you to our program organizers Trey Greene and Fernanda Martinez for bringing us to CS3 this summer.

A special thanks to Mehmet Türkcan for providing us with the micromobility data.

and....

Thank you for listening!