

# LOUIS SUNGWOO CHO

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## RESEARCH INTERESTS

Autonomous Mobility	Digital Twin Modeling	Traffic Flow Control
Intelligent Transportation Systems	Reinforcement Learning	Transit Systems Optimization

## EDUCATION

**University of Illinois at Urbana–Champaign** Aug 2020 – May 2025

M.S. in Civil Engineering (Transportation), GPA: 3.46/4.00

Labs: Smart City Laboratory

Thesis: *Evaluating Longitudinal Control Strategies for Autonomous Vehicles*

Advisor: Prof. Alireza Talebpour

B.S. (Honors) in Civil Engineering (Transportation), GPA: 3.55/4.00

Minor in Computer Science

Labs: Smart City Laboratory; Reliable Autonomy Group

## EXPERIENCE

**Graduate Research Assistant**, Smart City Laboratory, UIUC Jul 2024 – May 2025

- Calibrated *control spacing models* for autonomous vehicles using a **genetic algorithm** to optimize performance across varied traffic scenarios; demonstrated that parameters must **adapt dynamically** to ensure stability.
- Deployed planning & control algorithms on a **physical autonomous vehicle** using **ROS**; analyzed real-time vehicle dynamics at the *Illinois Center for Transportation* to validate trajectory-tracking responsiveness.
- Performed **comparative behavioral analysis** using the *Phoenix Robotaxi Open Dataset* to identify discrepancies in lane-changing and car-following between human and autonomous drivers.

**Undergraduate Research Assistant**, Smart City Laboratory, UIUC May 2023 – May 2024

- Developed a **trajectory re-identification** pipeline incorporating *convolutional social pooling*, improving vehicle detection accuracy in low-visibility scenarios.
- Explored integration of **GPT-based sequence modeling** with **deep reinforcement learning** for vehicle state prediction, evaluating feasibility for mixed autonomy traffic simulations.

**Undergraduate Research Assistant**, Reliable Autonomy Group, UIUC May 2022 – Aug 2022

- Co-developed **AutoVerse-AI**, a simulation platform for **control verification** of autonomous vehicles, stress-testing controller safety and performance under *edge-case* scenarios ([github.com/AutoVerse-ai/Verse-library](https://github.com/AutoVerse-ai/Verse-library)).

## LEADERSHIP & SERVICE

### Institute of Transportation Engineers (ITE), UIUC Chapter

#### President

Aug 2022 – May 2024

- Led professional development by organizing seminars and panels with industry leaders in **CAVs** and **ITS**; increased student participation by **60%** and built partnerships with national ITE chapters, and volunteered at major transportation conferences.
- Directed a **transit analytics** project (ML-based bus ridership trends), identified capacity gaps, and presented at the *UIUC Engineering Open House*; earned **Top 3 Award** out of 200+ projects.
- Coordinated K–12 robotics outreach and networking events with UIUC engineering leadership.

#### Graduate Student Representative

May 2024 – May 2025

- Organized graduate-level panels on transportation research and career development.
- Facilitated collaboration between undergraduate and graduate members, strengthening mentorship and project integration.
- Contributed to a chapter-wide case study and feasibility analysis on **High-Speed Rail (HSR)** development from Chicago to St. Louis.

#### Representative to the Engineering Council

Sept 2023 – Apr 2024

- Advocated for the importance of **diversity in transportation** in the school community by building cross-disciplinary connections with representatives from other student organizations.
- Participated in **university community volunteering activities**.

## AWARDS & RECOGNITIONS

#### Charles E. DeLeuw Scholarship

Mar 2025

Awarded to outstanding civil engineering students to study urban transit systems abroad. Conducted a field study in South Korea, analyzing the public transit network and producing a report on lessons applicable to U.S. transit planning.

#### UIUC Engineering Open House Outstanding Exhibit Award, 3rd Place

Apr 2024

Recognition for a mobility exhibit covering **high-speed rail**, **Maglev**, **eVTOL**, **BRT**, and **AI-driven** time-series forecasting for transit planning.

#### Grant W. Shaw Memorial Scholarship

Mar 2023

Faculty-selected award recognizing **leadership in Traffic Engineering** (UIUC Transportation area; Schaumburg Chapter, Illinois Association of Highway Engineers).

## SKILLS

**Programming:** Python, Java, C++, HTML/CSS/JavaScript, ReactJS

**Transportation/Simulation:** ROS, CARLA, HCS

**Design/Tools:** Git, Cloud, Docker, LaTeX, Bentley Openroads, AutoCAD, Revit

**Languages:** English, Korean