Louis Sungwoo Cho

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Education

University of Illinois at Urbana–Champaign (UIUC) Aug 2020 – May 2025
M.S. Civil Engineering (Transportation), GPA: 3.46/4.00
B.S. (Honors) in Civil Engineering (Transportation), Minor in Computer Science, GPA: 3.55/4.00

Experience

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

- Applied **traffic flow modeling** and **stability analysis** in mixed human–AV environments; showed AV presence reduces stop-and-go shockwaves.
- Deployed **ROS-based planning/control** on a physical AV at the Illinois Center for Transportation; validated trajectory tracking under real-world dynamics.
- Analyzed Phoenix Robotaxi dataset; identified differences in lane-changing and car-following between human and autonomous drivers.

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

- Developed a **trajectory re-identification pipeline** with ML methods to improve detection in complex traffic.
- Explored AI for state prediction and simulation of mixed-autonomy traffic.

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

- Co-developed **AutoVerse-AI**, a simulation platform for AV control verification and safety testing.

Projects

GRAIC Autonomous Driving Competition | *Machine Learning, Python, CARLA, ROS, Gazebo* Mar 2025 – May 2025

- Collaborated in a team of 3 to develop and refine autonomous driving algorithms on the **CARLA simulator**.
- Maximized the average velocity of a Tesla model on multiple race tracks while ensuring safe obstacle avoidance.
- Analyzed **RRT**, **Potential Field Steering**, and **End-to-End ML models** for driving performance evaluation.

Sustainable Road Network Design | *Python, Mathematical Optimization, Data Analysis* Oct 2024 – Dec 2024

- Designed an optimization-based framework for **sustainable roadway network improvements**.
- Implemented models in **Python** to optimize traffic efficiency and environmental impact reduction.

Bus Rapid Transit (BRT) Feasibility Study | *Python, Mathematical Optimization, Data Analysis* Jan 2023 – Mar 2023

- Conducted a feasibility study for a proposed **Bus Rapid Transit (BRT)** system in Champaign–Urbana.
- Applied **optimization models** and **Python programming** to determine optimal stop locations and improve accessibility.

Leadership & Service

Institute of Transportation Engineers (ITE@UIUC) Aug 2022 – May 2025
President, Graduate Student Rep, Council Representative *Urbana, IL*

- Led chapter growth, increasing event participation by 60%; organized industry panels on **ITS** and **CAVs**; directed a **transit ridership analytics project** (Top 3 Award at UIUC EOH); and volunteered for engineering council.
- Contributed to case study on **High-Speed Rail (Chicago–St. Louis)**.

Awards

Charles E. DeLeuw Scholarship – Urban Transit Systems Travel Abroad Mar 2025
UIUC Engineering Open House – Outstanding Exhibit, *3rd Place* Apr 2024
Grant W. Shaw Scholarship – Leadership in Traffic Engineering Mar 2023

Skills

Programming: Python, Java, C++, HTML/CSS/JavaScript, ReactJS
Transportation/Simulation: ROS, CARLA, Gazebo, HCS
Tools: Git, Cloud, Docker, LaTeX, Bentley Openroads, AutoCAD, Revit
Languages: English, Korean