

Korea-EU Horizon Europe Researchers Networking Forum on Energy & Advanced Mobility

Dr. Seunghyeon Lee

Associate Professor

University of Seoul

Transportation Engineering



1. Short Introduction of your Organization

University of Seoul, Seoul, South Korea

For more than 100 years since its establishment in 1918, the University of Seoul has faithfully performed its mission to explore truth and to serve society through creative research.

- **Founded:** May 1, 1918
- **Location:** Dongdaemun-gu, Seoul 02504, Republic of Korea
- **Students (2024):** 11,746 (8,796 undergraduate, 2,950 graduate)
- **Faculty (2024):** 448



서울시립대학교
UNIVERSITY OF SEOUL



2. Expertise

Dr. Seunghyeon Lee (www.seunghyeonlee.com)

2023 – present **Associate Professor**, Transportation Engineering, University of Seoul, South Korea
2022 – 2023 **Assistant Professor**, Transportation Engineering, University of Seoul, South Korea
2019 – 2022 **Assistant Professor**, Computer Science, University of Technology Sydney, Australia
2017 – 2019 **Postdoctoral Fellow**, Civil and Environmental Engineering, University of Canterbury, New Zealand
2016 – 2017 **Research Assistant**, Civil Engineering, The University of Hong Kong, Hong Kong

#Traffic Signal Control

#Traffic Flow Dynamics

#AI in Transportation

#Cooperative-Intelligent Transportation Systems

#Connected and Autonomous Vehicles



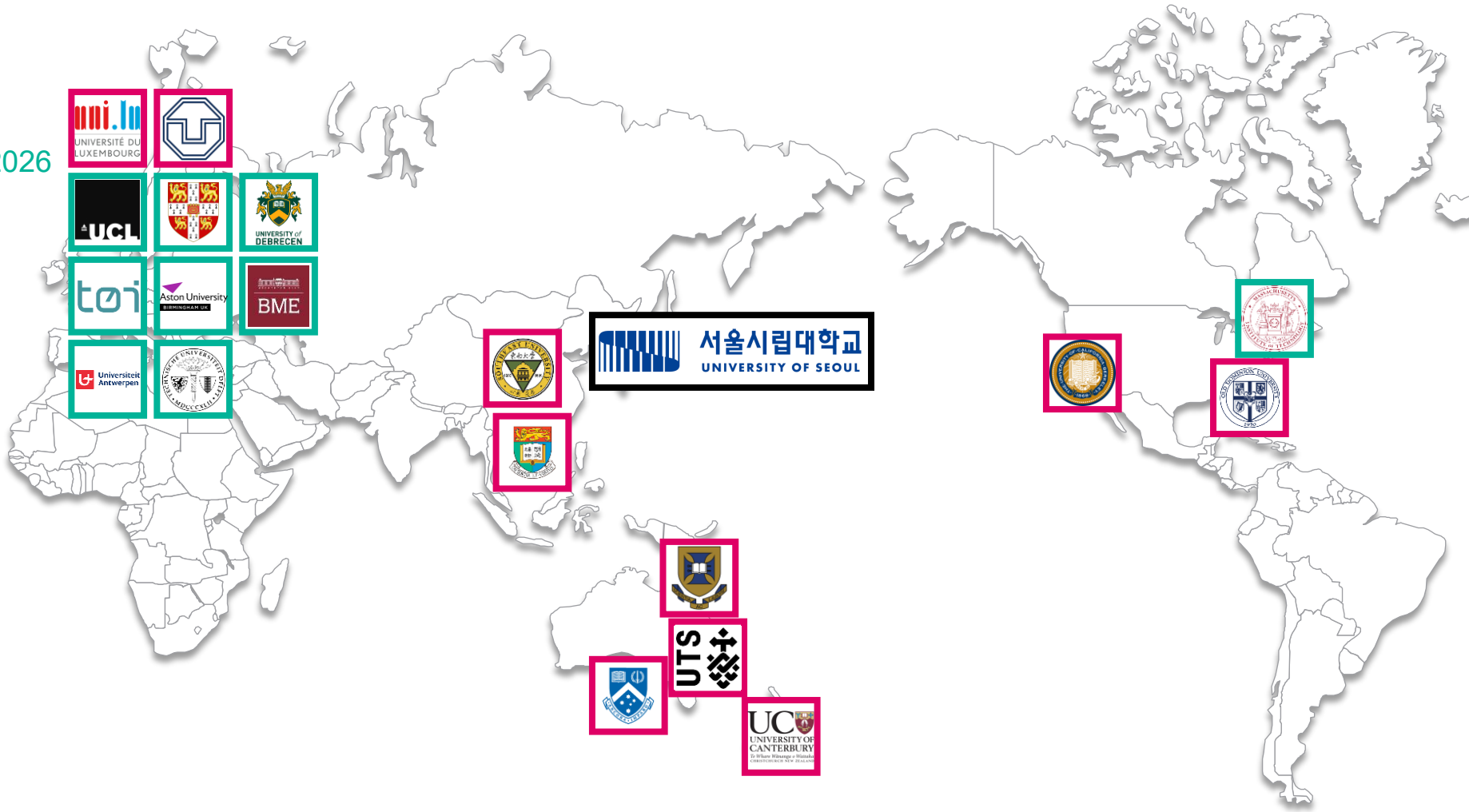
The screenshot shows the homepage of Dr. Seunghyeon Lee's website. The header includes the URL <http://seunghyeonlee.com> and a navigation menu with links: Home, Supervisor, Team members, Publications, Projects, Lectures, News, and Contact. The main content area features a group photo of the lab members and the title "Transportation Systems Lab". Below the photo, it states: "We are looking for under- and post-graduate students for the following research topics:" followed by a list of research topics: Connected and autonomous vehicular systems, Personal mobility, Adaptive traffic control systems, Cooperative adaptive cruise control, Physics-guided artificial intelligence, Digital Twin in Transportation Engineering, Traffic data science, and Transit system optimization. A red text box below the list says: "If you are interested in these topics, please do not hesitate to contact Dr. Seunghyeon Lee (seunghyeon.lee@uos.ac.kr)". Below this is a large image of a city skyline with a blue overlay containing the text "교통시스템 연구실" (Transportation Systems Lab) and "이승현 교수, 법학관 524-2호" (Professor Lee Seunghyeon, Law Building 524-2). At the bottom, there is a "목차" (Table of contents) section. A footer note mentions that Dr. Seunghyeon Lee, an Associate Professor in the Department of Transportation Engineering, founded the Transportation Systems Lab in 2023 to advance research in data-oriented multimodal transportation systems.



3. International collaborations

Projects

- EIPP 2023 - 2025
- DUT 2025 - 2027
- Hu-rizont 2025 - 2026
- KAIA 2024 - 2026



Articles

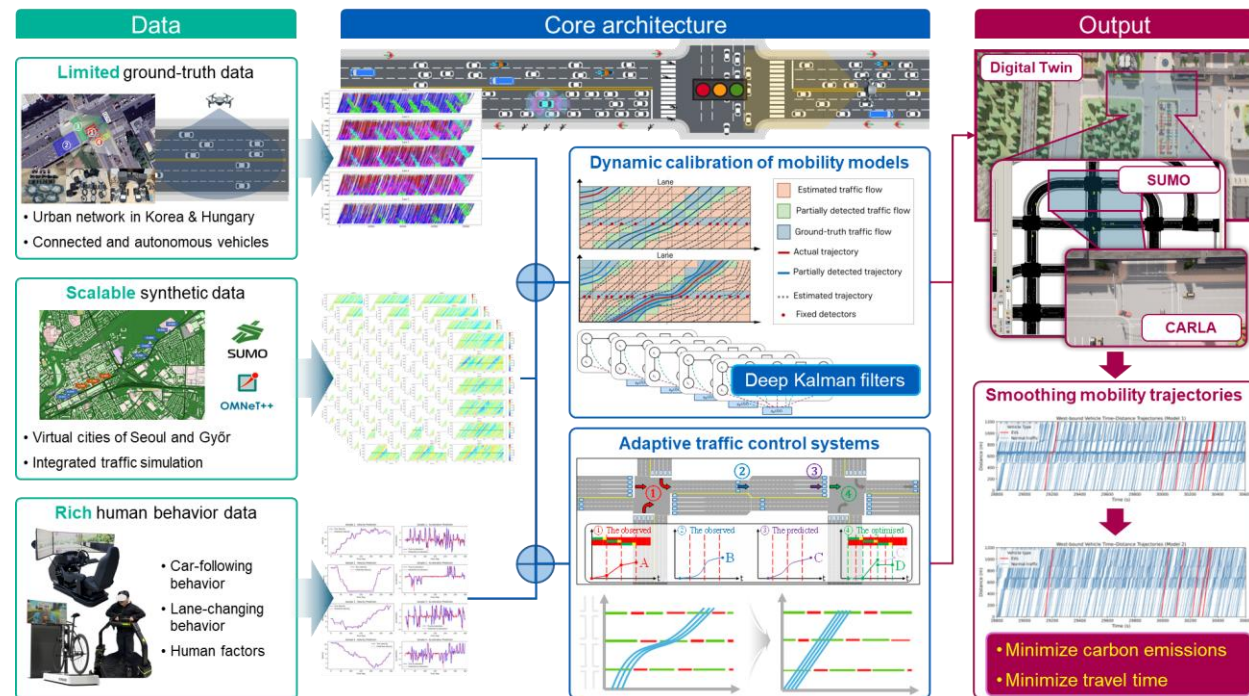
- 1 TR part A
- 3 TR part B
- 8 TR part C
- 1 TR part E
- 2 IEEE on ITS

4. Your Project Idea

HORIZON-CL5-2026-10-D6-03: Generative AI for smarter **CCAM** (**C**ooperative, **C**onected and **A**utomated **M**obility): enhancing perception, decision-making, and validation

We propose an integrated framework that combines Deep Kalman Filters (DKF) with Generative AI-driven dynamic scenario generation **to estimate and reconstruct the behavior of unobserved HVs and VRUs beyond the current sensing range of CCAM systems**. The framework fuses fragmented real-time observations from CAVs, detected surrounding vehicles (SVs), and infrastructure sensors with synthetic data generated in real time by GenAI.

1. Bidirectional Micro-behavior Estimation and Reconstruction
2. Confidence-based Weighted Data Fusion
3. Hierarchical Context-aware Driver Modeling
4. Generative AI-driven Scenario Enrichment





5. Profile You are Seeking and Why

1) C-ITS / Sensor Infrastructure Leads

- **Role:** Manage RSUs (V2X), LiDAR/Radar/Camera corridors; coordinate on-road pilots & safety procedures
- **Deliverables:** Multi-modal datasets, pilot design & permits, incident logs for EU-CEM validation

2) Edge & Distributed Computing Experts

- **Role:** Deploy low-latency (<50 ms) edge/on-board runtimes; optimize compute/energy; DT integration
- **Deliverables:** Edge deployment toolchain, runtime KPIs (latency/energy), scalability reports

3) GenAI & Simulation Modeling Labs

- **Role:** Scenario generation (LLM/VLM/VLA + RL), micro-behavior prediction, data augmentation
- **Deliverables:** Synthetic scenario packs, model cards, benchmarking & robustness studies

4) Policy / Ethics / Standardization Orgs

- **Role:** Data governance, safety cases, conformity assessment; CCAM/SDV/UNECE/ECAVA liaison
- **Deliverables:** Governance framework, standardization inputs, exploitation & uptake guidelines

5) Cities & Living Labs (Urban Demonstrators)

- **Role:** Host urban pilots; grant permits; coordinate ops & citizen engagement; impact evaluation
- **Deliverables:** Pilot KPIs (safety/equity/ops), before–after studies, replication playbook

6) Industry (OEM / Tier-1 / Telco) — SDV Alignment

- **Role:** Interface adoption (SDV), in-vehicle integration, V2X connectivity, HW-SW co-design
- **Deliverables:** SDV-compatible interfaces, in-vehicle demos, industrial exploitation path

Also welcoming individual researchers:

- VRU behavior & human factors · Multimodal sensor fusion
- CAV safety case engineering · Evaluation/metrics design · Secure data pipelines (GDPR)



6. Contact Details

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