

# Jiho Yeo



Address: 70 Hannam-ro, Daedeok-gu, Daejeon 34141, Republic of Korea  
Phone: +82-10-3888-7320  
E-mail address: jihoyeo@hnu.kr  
Homepage: [jihoyeo.github.io/blog](http://jihoyeo.github.io/blog)

## RESEARCH INTERESTS

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- Urban Mobility Operation System
- Artificial Intelligence in Transportation & Mobility
- Human Mobility
- Mobility-on-Demand System
- Big Data in Transportation
- Traffic Safety

## ACADEMIC APPOINTMENTS

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<b>Associate Professor</b> , Department of Big Data Application, Hannam university	<i>Mar. 2021 – Present</i>
<b>Research Fellow</b> , Grab-NUS AI Laboratory, National University of Singapore	<i>Nov. 2020 – Feb. 2021</i>
<b>Postdoctoral Researcher</b> , Mechanical Engineering Research Institute, KAIST	<i>Aug. 2020 – Nov. 2020</i>
<b>Graduate Research Assistant</b> , Transportation Operation and Planning for Sustainability Laboratory, KAIST	<i>Mar. 2013 – Aug. 2020</i>

## EDUCATION

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<b>Ph.D.</b> The Cho Chun Shik Graduate School for Green Transportation, KAIST <i>Dissertation Title: Uncovering and modeling inter-city human mobility: Focusing on highway and railway travels</i>	<i>August 2020</i>
<b>M.S.</b> The Cho Chun Shik Graduate School for Green Transportation, KAIST <i>Thesis Title: Effect of smartphone dependency on use of smartphones while driving</i>	<i>March 2015</i>
<b>B.S.</b> Department of Urban Planning, Hanyang University, Seoul, Korea	<i>March 2010</i>

## PUBLICATIONS

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### REFEREED JOURNAL PUBLICATIONS (INTERNATIONAL)

(SCI: Science Citation Index; SSCI: Social Science Citation Index; SCIE: Science Citation Index Expanded)

1. Kim, S., Lee, S., Ko, E., Jang, K., **Yeo, J.** (2021). "Changes in car and bus usage amid the COVID-19 pandemic: Relationship with land use and land price" Journal of Transport Geography, 96, 103168. (**SCIE, Q1, Impact Factor 4.986**) (**Corresponding**)
2. **Yeo, J.**, Park, S. H. (2021). "Effect of Smartphone Dependency on Smartphone Use While Driving" Sustainability, 13(10), 5604. (**SCIE, Q2, Impact Factor 3.251**)
3. **Yeo, J.**, Lee, J., Jang, K. (2020) "The effects of rainfall on driving behaviors based on driving volatility." International Journal of Sustainable Transportation, 1-9. (**SSCI, Q2, Impact Factor 3.929**)
4. **Yeo, J.**, Lee, J., Cho, J., Kim, D., Jang, K. (2020) "Effects of speed humps on vehicle speed and pedestrian crashes in South Korea" Journal of Safety Research (**SSCI, Q1, Impact Factor 3.487**)

5. Lee, J., **Yeo, J.**, Yun, I., Kang, S. (2020) “Factors Affecting Crash Involvement of Commercial Vehicle Drivers: Evaluation of Commercial Vehicles Drivers’ Characteristics in South Korea.” *Journal of Advanced Transportation (SCIE, Q3, Impact Factor 2.419)*
6. Shim, J., **Yeo, J.**, Lee, S., Hamdar, S. H., Jang, K. (2019). “Empirical evaluation of influential factors on bifurcation in macroscopic fundamental diagrams.” *Transportation Research Part C: Emerging Technologies*, 102, 509-520. (**SCIE, Q1, Impact Factor 8.089**)
7. **Yeo, J.**, Park, S., Jang, K. (2015) “Effects of urban sprawl and vehicle miles traveled on traffic fatalities.” *Traffic injury prevention* 16.4: 397-403. (**SSCI**)

#### REFEREED JOURNAL PUBLICATIONS (DOMESTIC)

1. 고명진, 박민주, **여지호** (2022). Faster R-CNN 을 이용한 갓길 차로 위반 차량 검출, 한국 ITS 학회논문지 (**교신**)
2. 김수지, **여지호**, 권영민 (2020). 확률 이론을 이용한 무신호 횡단보도의 보행섬 설치기준에 관한 연구. *대한교통학회지*, 38(1), 14-25.
3. 권영민, **여지호**, 변지혜 (2019) 노선버스 운송업종별 운전자의 근로여건 및 사고 분석: DTG 데이터를 활용하여. 한국 ITS 학회논문집, 제 18 권 제 2 호
4. 이주영, **여지호**. (2018). 디지털운행기록을 활용한 우천시 주요 운전행동과사고와의 상관성 분석: 서울시 택시 운행자료를 중심으로. *대한교통학회지*, 36(6), 493. (**교신**)
5. **여지호**, 이주영, 김강화, 장기태. (2018). 기계학습을 통한 여름철 노면상태 추정 알고리즘 개발. 한국 ITS 학회논문지, 17(6), 121-132.
6. 심지섭, **여지호**, 이수진, 장기태. (2017). DSRC 기반 프로브 자료를 이용한 거시 교통류 모형 추정 방법. 한국 ITS 학회 논문지 16.6: 29-41.

#### WORKING PAPERS

1. **Yeo, J.**, Lee, S., Jang, K., Lee, J. “Real-time relocation of connected autonomous vehicles in Mobility-on-Demand system accounting for inter- and intra-zonal relocation strategies.” *Transportation Research Part E:Logistics and Transporation review (under review)*
2. **Yeo, J.**, Jang, K. “Origin-destination inter-city traffic demand prediction using Stratified Graph Convolutional Network.” *IEEE Transactions on Intelligent Transportation Systems (under review)*
3. **Yeo, J.**, Shim, J., Jang, K. “Evolution of an inter-city travel network: a weighted network analysis of highway and railway travel.” *Cities (submitted)*

#### INTERNATIONAL CONFERENCE PAPERS

1. **Yeo, J.**, Lee, J. and Jang, K. (2018) “Develop Safety Surrogate Measure for Evaluating Motor Carrier Companies and Drivers” *Proceedings of Road Safety on Five Continents, Jeju Island, South Korea*
2. Shim, G., Lee, S., **Yeo, J.**, Jang, K. (2017) “Evaluating Urban Network Performance Using Individual Vehicle Trip Data” *18th IEEE International Conference on Mobile Data Management (IEEE MDM 2017)*
3. Lee, S., **Yeo, J.**, Jang, K. (2017) “Analysis of Mobility Patterns using Trip Data from RFID-based Toll-Collection Systems”, *18th IEEE International Conference on Mobile Data Management (IEEE MDM 2017)*
4. Shim, G., Lee, S., **Yeo, J.**, Jang, K. (2017) “Effects of Trip Characteristics on Macroscopic Fundamental Diagram in Urban Network” *Conference on Traffic and Granular Flow 2017 (TGF 2017)*
5. **Yeo, J.**, Cho, J., Park, D., Lee, H., Jang, K. (2017) “Observation and experiment of driving behaviors near speed humps and speed tables “*Transportation Research Board 96th Annual Meeting, Washington D.C.*

6. **Yeo, J.**, Shim, G., Jang, K. (2016) “The evolution of inter-urban travel network: weighted network analysis of highway and railway “The 5th International Workshop on Complex Networks and their Applications, Milan, Italy
7. **Yeo, J.**, Shim, G., Jang, K. (2016) “Changing Patterns of Railway Trips: Using Time-series Passengers’ Travel Data in Korea Railway” The 1st Asian Conference on Railway Infrastructure and Transportation, Jeju, Korea

## TEACHING ACTIVITIES

Course Title	Semester
<b>Advanced Python</b> (Department of Big Data Application, Hannam University)	<i>Spring 2022</i>
<b>Data mining</b> (Department of Big Data Application, Hannam University)	<i>Spring 2022</i>
<b>Open Data Analysis</b> (Department of Big Data Application, Hannam University)	<i>Spring 2022</i>
<b>Machine Learning</b> (Department of Big Data Application, Hannam University)	<i>Fall 2021</i>
<b>Basics Mathematics</b> (Department of Big Data Application, Hannam University)	<i>Fall 2021</i>
<b>Basics Statistics</b> (Department of Big Data Application, Hannam University)	<i>Fall 2021</i>
<b>AI and Big Data Analysis for Smart City</b> (Korea Data Agency, Summer Program)	<i>Summer 2021</i>
<b>Statistical Analysis</b> (Department of Big Data Application, Hannam University)	<i>Spring 2021</i>
<b>Text mining</b> (Department of Big Data Application, Hannam University)	<i>Spring 2021</i>
<b>Explanatory Data Analysis</b> (Department of Big Data Application, Hannam University)	<i>Spring 2021</i>

## TECHNOLOGY TRANSFER

1. Jang, K.(40%), **Yeo, J.**(40%), Kim, S. (10%), Lee, J.(10%) (2020) “Travel Demand prediction Program for Mobility-on-Demand”, Nature Mobility

## AWARD

<b>Best Research Award</b> , The Cho Chunshik Graduate School for Transportation, Korea Advanced Institute of Science and Technology	<i>Feb. 2016</i>
<b>Travel Grant Award</b> , Korean Transportation Association in America, <i>Observation and experiment of driving behaviors near speed humps and speed tables</i>	<i>Nov. 2016</i>
<b>Best Poster Award</b> , 18th IEEE International Conference on Mobile Data Management, <i>Evaluating Urban Network Performance Using Individual Vehicle Trip Data</i>	<i>May 2017</i>
<b>Grand Prize</b> , The Seoul Institute’ Research Idea Contest’, <i>Development of Bus Time Forecast Model Using Weather Information and Bus Traffic Information</i>	<i>Nov. 2017</i>
<b>Excellence Prize</b> , Korea Transport Institute’ Competition for Transportation Big Data Utilization’ <i>Link Functionality Evaluation Using Weighted Network Analysis</i>	<i>July 2018</i>
<b>Excellent Paper Award</b> , The Korea Institute of ITS Spring Conference 2019, <i>Development of surrogate safety measure and safety index for managing commercial vehicle drivers</i>	<i>March 2019</i>

## PROJECT

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1. **Digital Twin Development for Road Transport Using Big Data of Driving Automation Level 4/4+**, Korea Agency for Infrastructure Technology Advancement(KAIA), 2022 – 2026 (*On-going*)
2. **2022 Data Youth Campus (AI and Big Data Analysis for Smart City)**, Korea Data Agency, 2022
3. **Operation of Autonomous Mobility-on-Demand system using deep learning and data-driven optimization**, National Foundation of Korea (NRF), 2021 – 2023 (*On-going*)
4. **Construction of Smart marine traffic safety big data platform**, Korea maritime transportation safety authority, 2021 – 2023 (*On-going*)
5. **Study for optimal location of vertiport for Urban Air Mobility (UAM)**, Incheon International Airport Corporation, 2021
6. **Development of commercial vehicle safety consulting and supporting system**, Korea Transportation Safety Authority, 2021
7. **2021 Data Youth Campus (AI and Big Data Analysis for Smart City)**, Korea Data Agency, 2021
8. **Development of Autonomous driving electric vehicle based on Infrastructuresensing**, KU-KAIST Joint Research Center, 2019 – 2020
9. **Development of Daejeon big data center optimized for A.I.**, National Information Society Agency, 2019 – 2020
10. **Development of commercial vehicle safety consulting and supporting system**, Korea Transportation Safety Authority, 2015 – 2019
11. **Development of taxi operation information management system (TIMS)**, Korea Transportation Safety Authority, 2019
12. **Development traffic information system utilizing vehicle trajectory data**, Korea Agency for Infrastructure Technology Advancement, 2017 – 2019
13. **Development of predicting road surface condition and crash risk by weather conditions**, Korea Meteorological Administration, 2017 – 2018
14. **Deep learning environment for real-time road data processing**, Korea Institute of Science and Technology Information, 2016
15. **Public transit (bus) travel time prediction system using big data**, Korea Agency for Infrastructure Technology Advancement, 2015 – 2017
16. **Optimization of urban traffic network for eco-friendly traffic flow**, Aramco Overseas Company, 2014 – 2016
17. **Analysis of large-scale travel patterns using big data analytics and complex network theory**, National Research Foundation of Korea, 2014 – 2015

## TECHNICAL SKILLS

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**Geospatial analysis:** QGIS, ArcGIS, Geopandas (python)

**Deep learning:** Tensorflow (python), Keras (python), Pytorch (python)

**Optimization:** CPLEX (Julia), GLPK (Julia), GA (R)

**Traffic simulation:** MATSim, VISSIM

**Complex network:** igraph (R), networkX (python)

**Database:** PostgreSQL, MySQL

## REFERENCES

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**Professor Kitae Jang**

The Cho Chun Shik Graduate School for Green Transportation, KAIST  
kitae.jang@kaist.ac.kr

**Professor Jinwoo Lee**

The Cho Chun Shik Graduate School for Green Transportation, KAIST  
lee.jinwoo@kaist.ac.kr

**Professor Dong-Kyu Kim**

Department of Civil and Environmental Engineering, Seoul National University  
dongkyukim@snu.ac.kr

**Professor Shin-Hyung Park**

Department of Transportation Engineering, University of Seoul  
shinhpark@uos.ac.kr