

# Jiho Yeo



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## RESEARCH INTERESTS

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

## ACADEMIC APPOINTMENTS

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

## EDUCATION

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

## PUBLICATIONS

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### REFEREED JOURNAL PUBLICATIONS (INTERNATIONAL)

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

1. Shim, J., & Yeo, J. (2022). An Evaluation Method of Road Link Functionality Using Individual Trajectory Data and Weighted Network Analysis., Journal of Advanced Transportation (**SCIE, Q3, Impact Factor 2.249**)
2. 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 5.899**) (**Corresponding**)
3. Yeo, J., Park, S. H. (2021). "Effect of Smartphone Dependency on Smartphone Use While Driving" Sustainability, 13(10), 5604. (**SCIE, Q2, Impact Factor 3.889**)

4. **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 3.963)**
5. **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)**
6. 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 2.249)**
7. 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 9.022)**
8. **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, Q3, Impact Factor 2.183)**

#### REFEREED JOURNAL PUBLICATIONS (DOMESTIC)

9. 고명진, 박민주, **여지호** (2022). Faster R-CNN 을 이용한 갓길 차로 위반 차량 검출, 한국 ITS 학회논문지 **(Corresponding)**
10. 김수지, **여지호**, 권영민 (2020). 확률 이론을 이용한 무신호 횡단보도의 보행섬 설치기준에 관한 연구. 대한교통학회지, 38(1), 14-25.
11. 권영민, **여지호**, 변지혜 (2019) 노선버스 운송업종별 운전자의 근로여건 및 사고 분석: DTG 데이터를 활용하여. 한국 ITS 학회논문집, 제 18 권 제 2 호
12. 이주영, **여지호**. (2018). 디지털운행기록을 활용한 우천시 주요 운전행동과사고와의 상관성 분석: 서울시 택시 운행자료를 중심으로. 대한교통학회지, 36(6), 493. **(Corresponding)**
13. **여지호**, 이주영, 김강화, 장기태. (2018). 기계학습을 통한 여름철 노면상태 추정 알고리즘 개발. 한국 ITS 학회논문지, 17(6), 121-132.
14. 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

15. **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.” IEEE Transactions on Intelligent Transportation Systems (under review)
16. **Yeo, J.**, Kim, S., Jang, K. “Scalable Origin-Destination Travel Demand Prediction using Stratified Graph Convolutional Network” Journal of Intelligent Transportation Systems (under review)

17. Yeon, H., Eom, T., Jang, K., & **Yeo, J.** "DTUMOS, Digital Twin for Large-scale Urban Mobility Operating System" scientific reports (**Corresponding**) (under review)
18. **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

19. **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
20. 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)
21. 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)
22. 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)
23. **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.
24. **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
25. **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>Deep Learning</b> (Department of Big Data Application, Hannam University)	<i>Fall 2022</i>
<b>Basics Mathematics</b> (Department of Big Data Application, Hannam University)	<i>Fall 2022</i>
<b>Machine Learning</b> (Department of Big Data Application, Hannam University)	<i>Fall 2022</i>
<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

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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

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

## 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  
**Database:** PostgreSQL, MySQL

## REFERENCES

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### **Professor Kitae Jang**

The Cho Chun Shik Graduate School for Green Transportation, KAIST  
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### **Professor Jinwoo Lee**

The Cho Chun Shik Graduate School for Green Transportation, KAIST  
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### **Professor Dong-Kyu Kim**

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### **Professor Shin-Hyung Park**

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