Jiho Yeo, Ph.D. Candidate

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RESEARCH INTERESTS

• Transportation network	• Mobility on Demand
• Human mobility	• Deep learning
• Transportation data analysis	• Traffic Safety

TECHNICAL SKILLS

Geospatial analysis: QGIS, ArcGIS, Geopandas (python)
Deep learning: Tensorflow (python), Keras (python), Pytorch (python)
Complex network: igraph (R), networkX (python)
Optimization: CPLEX (Julia), GLPK (Julia), GA (R)
Database: PostgreSQL, MySQL

RESEARCH EXPERIENCE

Graduate Research Assistant, Transportation Operation and Planning for Sustainability Laboratory**,** KAIST (*March. 2013 – Present*)

- Development of autonomous and electric vehicle system
  - Develop an integrated ride-sharing system that considers technologies of the autonomous and electric vehicle simultaneously
- Interpret human mobility via complex network theory
  - The evolution of inter-urban travel network using weighted network analysis
  - Analysis of mobility patterns using individual trip data
- Develop prediction model of travel demand and travel time
  - Taxi demand prediction using an inverted channel-intensive convolutional network
  - Bus travel time prediction using bus information system
- Data-driven approach for improving the level of service of taxis
  - Develop and improve taxi operation information management system
  - Develop real-time relocation algorithm of vacant taxis for heterogeneous passenger demand types
- Analyze large-scale transportation data
  - Effects of rainfall on driving behaviors using large-scale taxi driving records
  - Develop estimation algorithm of road surface condition using machine learning techniques

EDUCATION

Ph.D. Candidate. The Cho Chun Shik Graduate School for Green Transportation, KAIST — *To be completed, Aug. 2020*
Advisor: Kitae Jang

M.S. The Cho Chun Shik Graduate School for Green Transportation, KAIST — *March 2015*
Advisor: Kitae Jang

B.S. Department of Urban Planning, Hanyang University, Seoul, Korea — *March 2010*

PROJECT

1. **Development of Autonomous driving electric vehicle based on Infrastructuresensing,** KU-KAIST Joint Research Center, 2019 – Present

2. **Development of Daejeon big data center optimized for A.I**., National Information Society Agency, 2019 – Present
3. **Development of commercial vehicle safety consulting and supporting system**, Korea Transportation Safety Authority, 2015 – 2019
4. **Development of taxi operation information management system (TIMS),** Korea Transportation Safety Authority, 2019
5. **Development traffic information system utilizing vehicle trajectory data**, Korea Agency for Infrastructure Technology Advancement, 2017 – 2019
6. Development of predicting road surface condition and crash risk by weather conditions, Korea Meteorological Administration, 2017 – 2018
7. **Deep learning environment for real-time road data processing,** Korea Institute of Science and Technology Information, 2016
8. **Public transit (bus) travel time prediction system using big data,** Korea Agency for Infrastructure Technology Advancement, 2015 – 2017
9. **Optimization of urban traffic network for eco-friendly traffic flow**, Aramco Overseas Company, 2014 - 2016
10. **Analysis of large-scale travel patterns using big data analytics and complex network theory**, National Research Foundation of Korea, 2014 –2015

AWARD

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*

INTERNATIONAL JOURNALS

1. **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.
2. 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.
3. 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
4. **Yeo, J.**, Lee, J., Jang, K., "The effects of rainfall on driving behaviors based on driving volatility" International Journal of Sustainable Transportation (2nd revision)
5. **Yeo, J.**, Lee, J., Cho, J., Kim, D., Jang, K., "Effects of speed humps on vehicle speed and pedestrian crashes in South Korea" Journal of Safety Research (2nd revision)

INTERNATIONAL CONFERENCE PAPERS

1. **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

2. **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
3. **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.
4. **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
5. 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)
6. 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)
7. 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)

WORKING PAPERS

1. **Yeo, J.**, Yi, J., Yoo, H. " Traffic demand prediction with Inverted Channel-IntensiveNetworks for Spatio-Temporally heterogeneous demand."
2. **Yeo, J.**, Lee, J., Lee, S., Jang, K. "Real-time vacant taxi relocation accounting for heterogenous passenger demand types."

REFERENCES

Professor Kitae Jang
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