

**Kihyun Pyo**

Research Associate

Lead Driving Simulation Designer

Highway Systems Group

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RESEARCH AREAS & TECHNICAL SKILLS

Predictive modeling of transportation systems, HCM analysis, Intelligent Transportation Systems, data collection, and statistical analysis; Diverging Diamond Interchange (DDI) geometric design, CAD, 3D large scale simulation development for highway systems; GIS analysis including map layout and design; Analyzing and operating new signal system for pedestrian (LPI, FYA), Safety for pedestrian using high visibility marking.

EDUCATION

North Carolina State University

- Master of Science in Civil Engineering, Transportation Systems Engineering, Aug 2014 – Jul 2016
- Thesis: “Predictive Model of Breakdown for Planning Level Applications”

Kyung Hee University

- Bachelor of Engineering in Civil Engineering, Mar 2006 – Feb 2010
- Accreditation of ABEEK (Accreditation Board for Engineering Education Korea) equivalent to ABET

RESEARCH PROJECTS

- **NCDOT 2019-25:** Evaluation of the Monroe Expressway Wrong Way Vehicle Detection Program, Aug 2018 – Present
- **NCDOT 2019-18:** Yielding Compliance at High Visibility Crosswalks, Aug 2018 – Present
- **NCDOT 2018-21:** The Use of Right Turn Flashing Yellow Arrows and Leading Pedestrian Intervals, Aug 2018 – Present
- **NCDOT 2018-26:** Designing In-Vehicle Message Delivery with Manual and Fully Automated Driving, Aug 2017 – Present
- **NCDOT 2017-45:** Research and Support for Automated Traffic Signal Performance Measures (ATSPM) and Signal System Retiming Prioritization, June 2017 - Present
- **NCHRP 03-113b:** An Assessment of Safety and Geometric Design Criteria for Diverging Diamond Interchanges, Sep 2016 – Present
 - Performing geometric study by using simulation program and provide guideline for DDI design
- **NCDOT 2017-19:** NCLOS Program Update for the HCM 6th Edition, Sep 2016 – Present
 - Update the 6th HCM edition, analyze optimal level of service and recommend new default values
- **NTC2015-MU-R-06:** Guidance for Field and Sensor-Based Measurement of HCM and Simulation Performance Measures, Aug 2015 – Present
 - Provide guidance of performance measures for freeways from various field data sources with agencies

- **NCHRP 03-115:** Production of a Major Update to the 2010 Highway Capacity Manual, Jan 2015 – Mar 2017
 - Update of the 6th HCM edition, focused on new concept of capacity; “Acceptable Breakdown Rate”

CONFERENCE PROCEEDINGS AND PAPER WORK

- B. Aghdashi, N.M. Rouphail, **K. Pyo**, T. Chase and B. Schroeder, “**Stochastic Freeway Capacity: Theoretical Construct and Estimation Method**,” Presented at the Transportation Research Board Annual Meeting, Washington, D.C., January 2018.
- **K. Pyo**, T. Chase and N.M. Rouphail, “**Predictive Model of Breakdown for Planning Level Applications**”, 2016.
- B. Aghdashi, N.M. Rouphail, **K. Pyo** and B. Schroeder, “**Freeway Capacity: Theoretical Construct and Field Estimation Method**,” Presented at the Transportation Research Board Annual Meeting, Washington, D.C., January 2016.

JOURNALS & ARTICLES

- Highway policy article from KRIHS (Korea Research Institute for Human Settlements), "Geometric Design Criterion Research for Diverging Diamond Interchange", Oct 2016
- e-interview article from KRIHS (Korea Research Institute for Human Settlements), "Efficient and Safe Transportation System to Improve Quality of Our Life", Mar 2015

ACADEMIC ACTIVITIES

Memberships

- Member of American Society of Civil Engineers (ASCE), Dec 2017 – Present
- Member of Institute of Transportation Engineers (ITE) student chapter at North Carolina State University, Aug 2014 – Present
- Member of Korean Students Association (KSA) at North Carolina State University, Aug 2014 – Present
- Member of Korean Transportation Association in American (KOTAA), Jan 2015 – Present
- Member of Korean-American Scientists and Engineers Association (KSEA), Sep 2014 – Present

Conferences

- 2017 Transportation Research Board (TRB) Annual Meeting, Jan 2017
- 2016 Transportation Research Board (TRB) Annual Meeting, Jan 2016
- US-Korea Conference (UKC) 2015 in Atlanta, Aug 2015
- 2015 Transportation Research Board (TRB) Annual Meeting, Jan 2015

Awards

- KOTAA (Korean Transportation Association in American) Excellent Student Paper Award, Jan 2016
- KSEA Talent Show Award, the Best Performance (1st Place) presented at UKC 2015, Jul 2015
- National Portfolio Championship (2nd Prize) KOFST (Korean Federation of Science & Technology Societies), Oct 2009
- Civil Engineering Bridge Design Competition (3rd Prize) Korea Expressway Corporation, Mar 2008

COMPUTER SKILLS

- **ArcGIS**: spatial analysis of accidents
- **VISSIM** and **VISTRO**: calibration and validation of freeway networks
- **AutoCAD**: drawings for geometric design (Diverging Diamond Interchange)
- **FORUM 8**: 3D virtual reality simulation program for highway design and operation
- **SAS** and **R**: descriptive statistics, regression, ANOVA, random-effect regression modeling
- **TransCAD** and **TransModeler**: traffic assignment, sub-urban analysis
- **Synchro** and **SimTraffic**: traffic analysis, operation for intersection design
- **MATLAB**: estimation of route travel time

CERTIFICATIONS

- Performing Spatial Interpolation Using ArcGIS, Nov 2015
- Introduction to Surface Modeling Using ArcGIS, Nov 2015
- Deriving Rasters for Terrain Analysis Using ArcGIS, Nov 2015
- Learning ArcGIS Desktop - 24 hours of training, Sep 2015
- Basics of Raster Data, Oct 2015
- Certification of Dedicated and Outstanding Service and Contribution to the 2015 US-Korea Conference on Science, Technology, and Entrepreneurship (UKC 2015) as 44th President, Aug 2015
- Certificate of Qualification for Demolition and Blasting in Army Engineer School, Jun 2010
- Certificate of Qualification for Mine Employment and Removal in Army Engineer School, Jun 2010

EXPERIENCE

Military Service: Republic of Korea Army

- First Lieutenant Army discharged (Intelligence Officer), Mar 2008 – Jun 2012
- ROTC (Reserve Official Training Corps) of Kyung Hee University

Volunteer Activities

- 2016 North Carolina K-Pop Contest, Head judge and Instructor, Aug 2016
 - Global Korean Wave Federation in Carolina
 - Korean-American Association of Greater Greensboro
- Luke Charity Clinic (North Carolina, Raleigh), Aug 2014 – Present
 - Non Profit Local Community Medical Service, Interpreter
- Red Cross Youth Activities
 - The Honorary Ambassador, The president of student, Local Community Service, Mar 2000 – Jul 2014 (A man of merit blood donation, Gold medal, 60 times)