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Associate Director and Research Scientist, <u>Program for Sustainable Pavement Engineering &amp; Research (PROSPER)</u> at <u>Institute for Transportation (InTrans)</u> Adjunct Assistant Professor, <u>Civil, Construction and Environmental Engineering (CCEE)</u> 24 Town Engineering Bldg. Iowa State University 813 Bissell Road Ames, IA 50011-1066	515-294-4698 <a href="mailto:sunghwan@iastate.edu">sunghwan@iastate.edu</a>  <b>IOWA STATE UNIVERSITY</b> Civil, Construction, and Environmental Engineering  <b>IOWA STATE UNIVERSITY</b> <b>Institute for Transportation</b>

## EDUCATION

- PhD, Civil Engineering, Iowa State University, 2006
- MS, Civil Engineering, Iowa State University, 2004
- BS, Civil Engineering, Korea University, Seoul, South Korea, 1998

## PROFESSIONAL EXPERIENCE

- Research Scientist, InTrans, Iowa State University. 2017– present
- Assistant Research Scientist, InTrans, Iowa State University. 2015 – 2017
- Associate Director of PROSPER, InTrans, Iowa State University, 2013–present
- Research Assistant Professor, CCEE, Iowa State University, 2013–2015
- Postdoctoral Research Associate, CCEE, Iowa State University, 2007–2012
- Civil /Civil Material Engineer, Hyundai Development Company Engineering & Construction, Seoul, South Korea, 1998–2002

## SELECTED RESEARCH PROJECTS

- Development of Approaches to Quantify Superloads and Their Impacts on the Iowa Road Infrastructure System, Iowa Highway Research Board (IHRB)
- Have Minnesota's Warmer Winters Increased the Number of Freeze Thaw Cycles? MnDOT and LRRB
- Development of a Smartphone-Based Road Performance Data Collection Tool, IHRB
- Development of Pavement Structural Analysis Tool (PSAT) for Iowa Local Roads, IHRB
- Investigation on Pavement ME Design Reflective Cracking, Faulting, IRI Prediction Models, Concrete Overlays Design Tool, and Performance Threshold Levels for Iowa Pavement Systems, Iowa DOT
- Development of Iowa Pavement Analysis Technique (IPAT), IHRB
- Self-Heating Electrically Conductive Concrete Demonstration Project, Iowa DOT/IHRB
- Concrete Grinding Residue: Its Effect on Roadside Vegetation and Soil Properties, MnDOT
- Investigation into the Feasibility of Using Electrically Conductive Asphalt Cement Concrete for Heated Airport Pavements, FAA Center of Excellence (COE)
- Evaluation of Otta Seal Surfacing for Low-volume Roads in Iowa – Phase I and Phase II, IHRB

- Impact of Curling and Warping on Concrete Pavement – Phase I and Phase II, Iowa DOT/IHRB
- Evaluating Roadway Subsurface Drainage Practices – Phase I and Phase II, IHRB

## SELECTED PUBLICATIONS

- **Authored/co-authored more than 200 peer reviewed publications and more than 100 technical presentations.**
- Kaya, O., Citir, N., Ceylan, H., **Kim, S.**, and Waid, D. (2022). "Development of Pavement Performance and Remaining Service Life Prediction Tools for Iowa Jointed Plain Concrete Pavement Systems," ASCE Journal of Transportation Engineering, Part B: Pavements, 149 (1), 04022070.
- Koh, Y., Ceylan, H., **Kim, S.**, and Cho. I. H. (2022). "Structural and Fatigue Analysis of Jointed Plain Concrete Pavement Top-Down and Bottom-Up Transverse Cracking Subjected to Superloads in Iowa," Transportation Research Record: Journal of the Transportation Research Board, <https://doi.org/10.1177/03611981221085522>
- Chen, Y., Ceylan, H., Nlenanya, I., Kaya, O., Smadi, O. G., Taylor, P. C., **Kim, S.**, Gopalakrishnan, K., and King, D. E. (2020). "Long-term Performance Evaluation of Iowa Concrete Overlays," International Journal of Pavement Engineering, DOI:10.1080/10298436.2020.1766687.
- Gopiseti, L. S. P., Ceylan, H., **Kim, S.**, Cetin, B., and Kaya, O. (2020). "Sensitivity Index Comparison of Pavement Mechanistic-Empirical Design Input Variables to Reflective Cracking Model for Different Climatic Zones," Road Materials and Pavement Design, DOI: 10.1080/14680629.2020.1747523.
- Kaya, O., Ceylan, H., **Kim, S.**, Waid, D., and Moore, B (2020). "Statistics and Artificial Intelligence Based Pavement Performance and Remaining Service Life Prediction Models for Iowa Flexible and Composite Pavement Systems," Transportation Research Record: Journal of the Transportation Research Board, No. 2674, pp. 448–460.
- Yang, S., Zhang, Y., Kaya, O., Ceylan, H., and **Kim, S.** (2020). "Investigation of Longitudinal Cracking in Widened Concrete Pavements," the Baltic Journal of Road and Bridge Engineering, Vol. 15, No. 1, pp. 211-231.
- Kaya, O., Rezaei-Tarahomi, A., Ceylan, H., Gopalakrishnan, K., **Kim, S.**, and Brill, D. R. (2018). "Neural-Network Based Multiple-slab Response Models for Top-Down Cracking Mode in Airfield Pavement Design," ASCE Journal of Transportation Engineering, Part B: Pavements, 144(2), 04018009.
- Rezaei-Tarahomi, A., Kaya, O., Ceylan, H., **Kim, S.**, Gopalakrishnan, K., and Brill, D. R. (2017). "Development of Rapid Three-dimensional Finite-Element Based Rigid Airfield Pavement Foundation Response and Moduli Prediction Models," the Transportation Geotechnics, Vol.13, pp. 81-91.
- **Kim, S.**, Ceylan, H., and Gopalakrishnan, K. (2014). "Finite Element Modelling of Environmental Effects on Rigid Pavement Deformation," Frontiers of Structural and Civil Engineering Journal, Volume 8, Issue 2, pp. 101-114.
- **Kim, S.**, Ceylan, H., Ma, D., and Gopalakrishnan, K. (2014). "Calibration of Pavement ME Design and Mechanistic-Empirical Pavement Design Guide Performance Prediction Models for Iowa Pavement Systems," ASCE Journal of Transportation Engineering, Volume 140, Issue 10, pp. 04014052-1 - 04014052-13.

## PROFESSIONAL AFFILIATIONS, HONORS, AND SERVICE

- Participated in developing new pavement structure assessment program using FWD deflection data

for Iowa DOT

#### **AWARDS, RECOGNITIONS**

- Professional and Scientific Excellence Award, Iowa State University, Ames, Iowa, 2021.
- Jimenez Faculty/Researcher Award, FAA PEGASAS, 2020