

PROMOTION RECOMMENDATION  
The University of Michigan-Dearborn  
College of Engineering and Computer Science

Sang-Hwan Kim, assistant professor of industrial and manufacturing systems, Department of Industrial and Manufacturing Systems Engineering, College of Engineering and Computer Science, is recommended for promotion to associate professor of industrial and manufacturing systems, with tenure, Department of Industrial and Manufacturing Systems Engineering, College of Engineering and Computer Science.

Academic Degrees:

Ph.D. 2009 Industrial Engineering, North Carolina State University, Raleigh, North Carolina  
M.S. 2002 Industrial Engineering, Korea University, Seoul, South Korea  
B.S. 2000 Industrial Engineering, Soongsil University, Seoul, South Korea

Professional Record:

2009 – present Assistant Professor of Industrial and Manufacturing Systems Engineering,  
Department of Industrial and Manufacturing Systems Engineering University of  
Michigan-Dearborn, Dearborn, MI  
2002 – 2005 Research Engineer, Interaction Group, Software Center, Samsung Electronics,  
Seoul, South Korea

Teaching: Professor Kim is rated excellent in teaching. Professor Kim is the recipient of the UM-Dearborn 2014 Distinguished Teaching Award in the non-tenured category. Since joining the department in September 2009, he has established an outstanding record in several aspects of teaching including classroom instruction, course development, and student mentorship. He has taught undergraduate and graduate courses in Industrial and Systems Engineering and Automotive Systems Engineering programs, one of which (IMSE 577 User Interface Design and Analysis) he updated significantly. Students consider Professor Kim to be an effective and knowledgeable instructor who is always prepared for the class. Students had many positive comments about his concern on student learning and willingness to help. His Q1 and Q2 scores are consistently among the top few in the department. Since joining the department, his Q1/Q2 scores have been excellent, averaging 4.37 and 4.74, respectively. Beyond his excellent contributions in the classroom, Professor Kim is a highly sought after graduate thesis and capstone project advisor. He advised three student theses in the Masters of Science in Engineering (Industrial and Systems Engineering) and has been a faculty advisor to nine graduate students in six Automotive Systems Engineering capstone projects.

Research: Professor Kim is rated significantly capable in his research. Professor Kim's research focuses on design and evaluation of human-computer interface using cognitive engineering and human-factors engineering. Many of Professor Kim's approaches collect and analyze multidimensional data from human subjects and utilize cognitive modeling techniques to develop recommendations for improved design of a user interface. Professor Kim's contributions are not only empirical but also include theoretical approaches to fundamental problems such as novel cognitive modeling of human-computer-interface. Professor Kim also proposed systematic methods for linking mechanical properties to multi-dimensional measures of human perceptions.

Professor Kim has been prolific in publications with fifteen journal papers among which, nine were based on his work since his arrival at UM-Dearborn. Some of his publications are through top-tier journals in his field such as *International Journal of Industrial Ergonomics* and *International Journal of Human-Computer Interaction*, which demonstrates the high quality of his research. Professor Kim developed a partnership with automotive companies and secured significant external funds to support his research in human-vehicle interactions. He has been an active collaborator in research. In addition to interdepartmental collaborations within the college through two internal seed funding programs, he successfully collaborated with a faculty member in the College of Arts, Sciences, and Letters to secure funding from Ford Motor Company to conduct research into cognitive aspects of navigation systems.

Recent and Significant Publications:

- Kim, S-H. and Kaber, D.B., "Examining the Effects of Conformal Terrain Features in Advanced Head-Up Displays on Flight Performance and Pilot Situation Awareness," *Human Factors and Ergonomics in Manufacturing & Service Industries*, 24 (4), pp. 386-402, 2014.
- Jeon, B.W. and Kim, S-H., "Measurement and Modeling of Perceived Gear Shift Quality for Automatic Transmission Vehicles," *SAE International Journal of Passenger Cars – Mechanical Systems*, 7 (1), pp. 423-433, 2014.
- Kaber, D.B., Naylor, J.T., Gil, G-H., Pankok, C., and Kim, S-H., "The Influence of Dynamics and Flight Domain on Pilot Perception of Clutter in Aviation Display," *Journal of Aerospace Information Systems*, 10 (12), pp. 550-559, 2013.
- Kaber, D., Kaufmann, K., Alexander, A., Kim, S-H., Naylor, J.T., Prinzel, L.J., Pankok, C., and Gil, G-H., "Testing and Validation of a Psychophysically Defined Metric of Display Clutter," *Journal of Aerospace Information Systems*. 10 (8), pp. 359-368, 2013.
- Alexander, A.L., Kaber, D.B., Kim, S-H., Stelzer, E.M., Kaufman, K., and Prinzel, L.J., "Measurement and Modeling of Display Clutter in Advanced Flight Deck Technologies," *International Journal of Aviation Psychology*, 22 (4), pp. 299-318, 2012.
- Gill, G-H., Kaufmann, K., Kim, S-H., and Kaber, D.B., "Effects of Modes of Cockpit Automation on Pilot Performance and Workload in a Next Generation Flight Concept of Operation," *Human Factors and Ergonomics in Manufacturing & Service Industries*, 22 (5), pp. 395-406, 2012.
- Kim, S-H., Prinzel, L.J., Kaber, D.B., Alexander, A.L., Stelzer, E.M., Kaufmann, K., and Veil, T., "Multidimensional Measure of Display Clutter and Pilot Performance for Advanced Head-up Display," *Aviation, Space, and Environmental Medicine*, 82 (11), pp. 1013-1022, 2011.

Service: Professor Kim is rated excellent in his service. Within the department, he served as the faculty secretary for two years. He is a member of the program committee for MS in Information Systems and Technology and he is a member of the review committee for MSE in Industrial and Systems Engineering program. He also served on a faculty search committee which was successful in hiring two new IMSE faculty members. Within the college, he is serving as the faculty lead on the Human Factors and Ergonomics thrust area organized by the Institute of Advanced Vehicle Systems. He regularly hosts high school students in his lab for tours and demonstrations of his distracted driving simulator. Professor Kim has also made good contributions to the professional community.

External Reviewers:

Reviewer A: "... he has made good quality contributions to the literature in his chosen area of research. ... Of particular note to this topic is the 2013 article in the *Journal of Aerospace Systems* wherein Dr. Kim and his co-authors developed a psychologically driven model of display clutter - a more theoretical model that other researchers can employ in their own work. It would be my expectation that, given time, this will be an article that will receive significant citations from researchers in this domain."

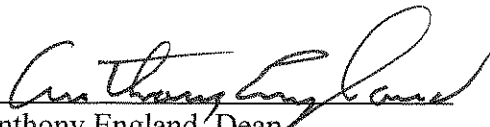
Reviewer B: "Dr. Kim has been most productive with his work in the areas of cognitive engineering and aviation psychology, because he has published 14 peer-reviewed journal articles out of 15 publications in these areas."


Reviewer C: "The paper on Multidimensional Measure of Display Clutter is based on a high quality apparatus (NASA IFD) and a good experimental procedure. The list of his co-authors shows a strong team of excellent researchers. ... I was impressed with his involvement in technical review in journals."

Reviewer D: "Over the past 3-4 years, Dr. Kim has been actively engaged in building a research program in human-vehicle interaction. This research has been direct result of strong partnership he has built and nurtured with automotive companies and has led to significant funding. ... this research has developed novel methods in human-vehicles interactions in automobiles. The work includes both information presentation and user-based system control and contributes to the understanding of user experience and attitude while providing specific recommendations for design of vehicle interfaces. While this work is substantially applied, Dr. Kim has been able to use the research to also address fundamental questions about HVI. It is this program of research that distinguishes Dr. Kim's scholarship."

Reviewer E: "... he has focused on an interesting problem (i.e., HCI issues in automobile) with proper research methodologies. In addition, he demonstrated that his research can attract healthy funding as well as productive research collaboration with the automobile industry, which makes his future very bright."

Summary of Recommendation: Professor Kim has established an excellent record of teaching, scholarly research and service at the University of Michigan-Dearborn. We are very pleased to recommend, with strong support of the College of Engineering and Computer Science Executive Committee, Sang-Hwan Kim for promotion to associate professor of industrial and manufacturing systems, with tenure, Department of Industrial and Manufacturing Systems Engineering, College of Engineering and Computer Science.

  
Anthony England, Dean  
College of Engineering and Computer Science

  
Daniel Little, Chancellor  
University of Michigan-Dearborn

May 2015