

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

Taehyung Kim, assistant professor of electrical and computer engineering, Department of Electrical and Computer Engineering, College of Engineering and Computer Science, is recommended for promotion to associate professor of electrical and computer engineering, with tenure, Department of Electrical and Computer Engineering, College of Engineering and Computer Science.

Academic Degrees

Ph.D.	2003	Texas A&M University, College Station, TX, Electrical & Computer Engineering
M.S.	1998	Korea University, Seoul, South Korea, Electrical Engineering
B.S.	1994	Korea University, Seoul, South Korea, Electrical Engineering

Professional Record

2005 - present	Assistant professor, Department of Electrical and Computer Engineering, University of Michigan-Dearborn
2003 - 2005	Post-doctoral research associate, Advanced Vehicle and Power Electronics Lab, Texas A&M University, College Station, TX
1996 - 2000	Team leader, research associate, U.S. Army TARDEC, Warren, MI
1991 - 1996	Computer engineer, U.S. Army TARDEC, Warren, MI
1990 - 1991	Network specialist, Electronics Data System, Brighton, MI

Summary of Evaluation:

Teaching: Professor Kim is rated excellent in teaching. He taught seven different classes at both the undergraduate and graduate levels in the last five years and his course evaluations by students is 3.7/4 averaged over all 17 courses he taught in the last five years. This is an outstanding record for a junior professor. In addition, Professor Kim developed one new course, ECE 436, Electric Machines and Hybrid Drives, made major improvements on a graduate course, ECE 532, Automotive Sensors and Actuators, and added a new lab component in ECE 415 Power Electronics. He has also supervised two Master's theses, four capstone design projects for graduate students and six undergraduate senior design projects.

Research: Professor Kim is rated excellent in his research. His research interest is in energy conversion systems such as power converters, electric machine drives, and electric/hybrid electric/fuel cell vehicles. Since joining the ECE department, Professor Kim has had 15 journal papers published or accepted for publication, and 18 refereed conference papers. Among the 15 journal papers, 11 were published in the top journals in his field, *IEEE Transactions and IEE Proceedings (IET)*. As for research funding, Professor Kim obtained, as PI or co-PI, a total of eight external and internal research projects (about \$580,000) during the last five years. As PI, he received three externally-sponsored research funding, which is about \$260,000 in total. One of the funding sources is the National Science Foundation (NSF), which is an extremely competitive funding agency. The committee members noticed that his scholarly work is very well respected in the scientific community as evidenced in the external reviewers' evaluations.

Recent and Significant Publications:

- W. Na, T. Kim, and S. Kwak, "Light Fuel Cell Hybrid Electric Vehicles Based on Predictive Controllers," *IEEE Transactions on Vehicular Technology*, accepted, 2010.
- O. Vodyakho, C. Edrington, M. Steurer, and T. Kim, "Synchronization and Application of Three-phase Converters Utilizing the Power-Hardware-in-the-Loop Concept," *International Journal of Power Electronics*, Vol. 2, No. 3, pp. 286-303, 2010.
- S. Kwak, T. Kim, and G. Park, "Phase-Redundant based Reliable Direct AC/AC Converter Drive for Series Hybrid Off-Highway Heavy Electric Vehicles," *IEEE Transactions on Vehicular Technology*, Vol. 59, Issue 6, pp. 2674-2688, 2010.
- W. Na, B. Gou, and T. Kim, "Analysis and Control of a Bidirectional DC/DC Converter for an Ultra-Capacitor in a Fuel Cell Generation System," *Journal of Electrical Engineering, Theory and Application*, vol. 1, issue 2, pp. 72-78, 2010.
- S. Kwak and T. Kim, "An Integrated Current Source Inverter with Reactive and Harmonic Power Compensators by Active and Passive Constituents," *IEEE Transactions on Power Electronics*, vol. 24, no. 2, Feb. 2009.
- O. Vodyakho, T. Kim, S. Kwak, and C.S. Edrington, "Comparison of Space Vector Controls for the Three-Level Inverter Based Shunt Active Power Filters," *IEE Journal (IET), Power Electronics*, vol. 2, issue 6, pp. 653~664, 2009.
- T. Kim and H. Lee, "Advanced BLDC Machine Drive with Minimum Torque Ripple and Maximum Power," *International Journal of Power Electronics*, vol. 1, no. 4, pp. 347 – 362, 2009.
- T. Kim, H. Lee, and S. Kwak, "The Internal Fault Analysis of BLDC Motors Based on the Winding Function Theory," *IEEE Transactions on Magnetics*, vol. 45, issue 5, pp. 2090-2096, 2009.
- T. Kim and O. Vodyakho, "Brushless PM Machine Drive in Electric and Hybrid Electric Vehicles Based on the Space Vector Current Control," *International Journal of Automotive Technology*, vol. 10, no. 6, pp. 711–717, 2009.

Service: Professor Kim is rated excellent in his service. He has served on the department laboratory improvement committee and chaired the committee for developing power electronics lab. His services were also extended to the Automotive Systems Engineering program. Currently he is a member of the Academic Advising Committee and the faculty search committee in the ECE department. Professor Kim is also actively involved in academic assessment processes and other department activities. In all his department services, his work is highly appreciated by his colleagues. Professor Kim's professional service is equally outstanding. He served as technical program co-chair, publication chair, and organized and chaired special sessions for various conferences. He is a member of the committee for the IEEE VPPC and the IEEE Industrial Electronics Society (Power Electronics Technical Committee). Since 2008, Professor Kim has been a member of the Editorial Board for the *International Journal of Power Electronics*.

External Reviewers:

Reviewer A: "Dr. Kim's research has great impact in the area of power electronics and has added to the body of knowledge. Dr. Kim shows technical leadership in his field by serving on the editorial board of the *International Journal of Power Electronics*."

Reviewer B: "I am impressed with both quantity and quality of his writing. Dr. Kim's achievements are much above the achievements of many others in his peer group who are working in the same field."

Reviewer C: “His recent research activities on bi-directional DC/DC converters and utilization of ultra-capacitors in hybrid electric vehicles are original and of great value.”

Reviewer D: “Taehyung published two journal articles in IEEE transactions on Power Electronics, one article in IEEE transactions on Magnetics, one article in IEEE Transactions on Vehicular Technology, and three articles in IEE journal. These journals are major international journals.”

Reviewer E: “Dr. Kim has been doing great quality research in the area of power electronics and motor drives as applied to automotive as well as other industries. The research work being done by Dr. Kim is of high quality and comparable to the work being done in par with other top ranked schools.”

Reviewer F: “Dr. Kim’s achievement as a researcher can be highly appraised when compared to others in his peer group with similar experience. His focus and acumen can be an asset to his discipline of research.”

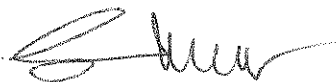
Reviewer G: “Dr. Kim has done well with publications at this stage of his career.”

Reviewer H: “Those publications have reflected Dr. Kim’s high quality research. Those articles... should have large impacts to the field of Electric Machines and Drives.”

Reviewer I: “Excellent quality and great impact in the field.”

Summary of Recommendation:

Professor Taehyung Kim is an excellent teacher, who is highly regarded by students and faculty. He is an excellent research scholar with an outstanding publication and funding records. Professor Kim has been providing excellent service to the ECE department and the research community. We are very pleased to recommend, with strong support of the College of Engineering and Computer Science Executive Committee, Taehyung Kim for promotion to associate professor of electrical and computer engineering, with tenure, Department of Electrical and Computer Engineering, College of Engineering and Computer Science.



Subrata Sengupta
Dean
College of Engineering and Computer Science



Daniel Little
Chancellor
University of Michigan-Dearborn

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