

PROMOTION RECOMMENDATION

Approved by the Regents

May 17, 2007

**University of Michigan-Dearborn
College of Engineering and Computer Science
Department of Mechanical Engineering**

Taehyun Shim, assistant professor of mechanical engineering, Department of Mechanical Engineering, College of Engineering and Computer Science, is recommended for promotion to associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering and Computer Science.

Academic Degrees:

Ph.D.	2000	Mechanical Engineering, University of California, Davis, CA
M.S.	1997	Mechanical Engineering, University of California, Davis, CA
B. S.	1992	Mechanical Engineering, Hankuk Aviation University, Korea

Professional Record:

2001 to present	Assistant Professor, Department of Mechanical Engineering, University of Michigan-Dearborn, Dearborn, Michigan
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Summary of Evaluation:

Teaching: Professor Shim's teaching is rated as excellent. He has made continual improvements since he joined the department. Professor Shim is an effective teacher, as evidenced by the teaching evaluations from both his students and his peers. His average effectiveness from the student evaluations over the past three years was above 3.7 out of 4.0. This places him within the top 15% among his peers. Responses from students interviewed also support the written evaluations. Professor Shim has taught two different undergraduate courses, and three graduate courses, all of them in his area of expertise. He has also developed three new courses in the area of automotive systems and vehicle dynamics. Committee members who have talked to the students taking his classes provide positive remarks to confirm that he is a valuable teacher. Professor Shim has supervised 11 capstone design projects.

Research: Professor Shim's research is rated as significantly capable. He focuses on vehicle dynamics and vehicle systems, which are traditional disciplines in automotive engineering. He has published 16 papers in refereed journals in his area of expertise since coming to the University. In addition, he has published 15 conference papers, most of which were peer-reviewed. Both external reviewers and his colleagues are very positive about Professor Shim's scholarly contributions to the field of his interest. He has written many proposals during his time at the University and has recently obtained two external research grants from industrial companies. He has supervised five M.S. theses, with one more in progress, and has published research papers with these students in open literature.

Recent and Significant Publications:

- Kulkarni, M., Shim, T. and Zhang, Y., Dynamics and control for dual-clutch transmission shift, *Mechanism and Machine Theory*. (in press)
- Shim, T. and Velusamy, P., Suspension design and dynamic analysis of lightweight vehicle, *International Journal of Vehicle Design*. (in press)
- Shim, T. and Margolis, D., Controlled equilibrium mounts for aircraft engine isolation, *Journal of Control Engineering Practice*, Vol. 17, No. 7, pp. 721-733. (2006)
- Shim, T. and Zhang, Y., Investigation of transient powertrain shift dynamics in vehicle handling, *International Journal of Vehicle Design*, Vol. 40. Nos.1/2/3, pp. 159-174. (2006)
- Osborn, R. and Shim, T., Independent control of all-wheel-drive torque distribution, *Vehicle System Dynamics-International Journal of Vehicle Mechanics and Mobility*, Vol. 44, No. 7, pp.529-546. (2006)
- Ghike, C. and Shim, T., Distribution of wheel drive/brake torque using nonlinear predictive control to enhance vehicle handling (IMECE2006-15346), 2006 ASME International Mechanical Engineering Congress and Exposition, November 5-10, Chicago. (2006)
- Lee, S., Shim, T. and Cho, B., Development of a brake system for lightweight vehicle, (IMECE2006-15437), 2006 ASME International Mechanical Engineering Congress and Exposition, November 5-10, Chicago. (2006)
- Margolis, D. and Shim, T., Bond graph modeling for nonlinear hydro-mechanical systems, Proceedings of the Institution of Mechanical Engineers, Part K, *Journal of Multi-Body Dynamics*, Vol. 219, No. 4, pp. 371-382. (2005)

Service: Professor Shim's service is rated as excellent. He has served on a few department and college committees and as a referee for several journals and conference proceedings. He also chaired sessions in conferences. He was elected as a member of the Technical Committee on Vehicle Design of ASME. Professor Shim has been serving as a student advisor for the Mini Baja project and the University of Michigan-Dearborn Formula SAE team. He has advised students who have participated in national competitions and won top awards in several categories.

External Reviewers:

Reviewer (A)

"Professor Shim's papers demonstrate a solid understanding of the principles of vehicle dynamics. His collected papers also show that he is concentrating on important topics such as vehicle roll and rollover and integrated chassis control. I particularly like his approach of justifying a model by careful examination of its limitations and benefits, allowing the reader to gain a good understanding of the types of studies for which the model is likely to be appropriate."

Reviewer (B)

"As a researcher with similar interests to Dr. Shim's, I have found his publications to be of good value to the work that I have conducted in the past. His papers are often cited in the work that my students and I conduct at the Center for Vehicle Systems and Safety at [my institution]. Based on his intellect, diligence and ability to reorganize critical areas of research in vehicle systems, I fully expect him to build on his record of achievements and become an even stronger contributor to his field of research in future."

Reviewer (C)

“Let me first start by saying that given the fact UM-Dearborn does not have a Ph.D. program, Prof. Shim’s research productivity is quite impressive. Vehicle dynamics is not a thriving area in the last several years due to the slump of local industries. During this difficult time, however, Prof. Shim managed to secure enough internal and external funding to carry on an array of impressive research. I am quite impressed by the fact that Prof. Shim wrote a large number of proposals and had about 12 funded in the last 5 years.”

Reviewer (D)

“I am quite surprised with both the quality and quantity of Dr. Shim’s publications, considering the fact that your department does not have a Ph.D. program. Many of my colleagues across the country, including myself, manage to publish papers only with our Ph.D. candidates. I would rank his publication record on a par with similar candidates at most Ph.D.-awarding institutions.”

Reviewer (E)

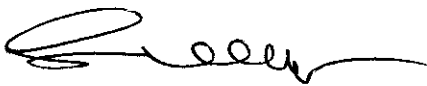
“These papers represent good quality publications of existing modeling methods technology to the vehicle dynamics problems. Given that UM-D does not have a Ph.D. program facilitating student development of original methodology development, I believe Prof. Shim is making excellent research effort and very good to excellent production relative to his faculty peer groups: Assistant Professor at non-PhD. granting institutions.”

Reviewer (F)

“Based on my limited knowledge of him and based on reviewing his promotion materials, I consider him to be a dedicated and hard working individual who is growing in our field of vehicle dynamics. He has improved his teaching skills, developed courses on vehicle dynamics and made centered efforts to promote himself and the University of Michigan-Dearborn in the vehicle dynamics community.”

Summary of Recommendation:

Professor Taehyun Shim is an excellent teacher and a significantly capable researcher as evidenced by his funding and publication records. His research work is judged to be of good quality by his peers both in his department and outside the university. He has also been active in promoting intercommunication between the University of Michigan-Dearborn and universities in Korea. We are very pleased to recommend, with the strong support of the College of Engineering and Computer Science Executive Committee, Taeyun Shim for promotion to associate professor of mechanical engineering, with tenure, Department of Mechanical 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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