

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Mechanical Engineering

C. David Remy, assistant professor of mechanical engineering, Department of Mechanical Engineering, College of Engineering, is recommended for promotion to associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering.

Academic Degrees:

D.Sc.	2011	Swiss Federal Institute of Technology, Zurich, Switzerland
Diploma	2007	Universität Stuttgart, Stuttgart, Germany
M.S.	2006	University of Wisconsin, Madison, Mechanical Engineering, Madison, WI

Professional Record:

2012 – present	Assistant Professor, Department of Mechanical Engineering, University of Michigan
2011 – 2012	Post-doctoral Associate, Autonomous Systems Lab, Zurich, Switzerland

Summary of Evaluation:

Teaching: Professor Remy has demonstrated that he is an excellent teacher and advisor. Since joining the UM, he has taught a required undergraduate course (ME350 six times) and resurrected and taught a now large graduate course (ME543 five times). His overall average teaching evaluations are outstanding, as compared to those of his faculty peers. The students' comments show Professor Remy is an effective, caring and helpful teacher. He has graduated two Ph.D. students (one solely supervised, one co-supervised) and has five more doctoral students in the pipeline. Additionally, he has advised or co-advised 30 M.S. students on their theses or projects. He has also supervised more than 30 undergraduate research and development projects. Letters from his students show he is an excellent mentor and an inspiration to his students. His mentorship is also demonstrated through the publications with his graduate students in high quality journals.

Research: Professor Remy is building an excellent reputation in the technical field of robotics. His research vision is driven by the desire to build robotic systems that can step away from the assembly line and help us on a day-to-day basis. Towards this goal, he has researched systems with compliant structures and elastic actuation that facilitate passive adaptation to non-deterministic environments and enable physical interaction with humans. The resulting systems might be under-actuated or even partly passive, and have to cope with demanding constraints on actuator power, torque, and bandwidth. Professor Remy has made significant research contributions in the design of legged robotic systems; the creation, optimization, and control of different gaits; the design of wearable and rehabilitation robots; and the control and optimization of assistive robotic devices. He has developed a strong research program with a mix of funding sponsored by NSF, NIH, and Toyota, including the NSF CAREER award. Professor Remy has published research findings in top refereed journals in his field, with 10 journal papers published since arriving at UM (mostly with his UM students) and 18 in total, with eight more submitted and under review. In addition, Professor Remy has published 39 conference papers (19 since joining UM). Many of his conference papers based on UM work are considered equivalent to archival journal articles due to the highly competitive acceptance rates of

the associated conferences. Professor Remy has also been active in presenting at important conferences in his field and has been invited to give talks at institutions in the U.S. and in Europe. External reviewers are positive, praising his research quality and scholarship.

Recent and Significant Publications:

- Smit-Anseeuw, N., Gleason, R., Vasudevan, R., Remy, C.D., “The Significance of Robotic Gait Selection - A Case Study on the Robot RAMone,” *IEEE Robotics and Automation Letters*, 2017.
- Xi, W., Yesilevskiy, Y., Remy, C.D., “Selecting Gaits for Economical Legged Robots,” *The International Journal of Robotics Research*, 2016.
- Koller, J.R., Gates, D.H., Ferris, D.P., Remy, C.D., “‘Body-in-the-Loop’ Optimization of Assistive Robotic Devices: A Validation Study,” *Robotics Science and Systems XII*, RSS, Ann Arbor, MI, 2016.
- Felt, W., Chin, K.Y., Remy, C.D., “Contraction Sensing with Smart Braid McKibben Muscles,” *IEEE/ASME Transactions on Mechatronics*, 2015.
- Gan, Z., Waldern, N., Wiestner, T., Weishaupt, M., Remy, C.D., “Passive Dynamics Explain Quadrupedal Walking, Trotting, and Tölting,” *ASME Journal of Computational and Nonlinear Dynamics*, 2015.

Service: Professor Remy has been a good citizen serving on the department seminar committee, the ME faculty search committee, and graduate admission committee. At the college level, he has also been strongly involved in the newly established Robotics Institute. He has contributed to the planning for the institute and the associated building, serving on the organizational committee for Robotics Day, and served as faculty liaison for our exoskeleton student team. He has recently joined the Executive Committee of this new institute. Professor Remy has also contributed to diversity, climate, and outreach through his active involvements in various undergraduate research opportunity programs (Marian Sarah Parker, UROP and SROP) attracting underrepresented students to engineering research, giving a Sunday Morning talk to the general public, and organizing a workshop at the Ann Arbor Hands-on Museum, a Robot Camp at Middle Schools, and a tutorial at STEM Outreach Expo. Externally, Professor Remy has been very active in serving the technical community. He is a member of the scientific committee for the Dynamic Walking conference, an annual meeting that brings together researchers from robotics, rehabilitation, biomechanics, and biology, to discuss the principles of legged locomotion. He co-organized the meeting in 2014, and helped with the organization in 2016. He serves as an associate editor for the top conference in robotics theory: the IEEE International Conference on Robotics and Automation. He recently became an associate editor for a key conference in the area of wearable robots, the International Conference on Rehabilitation Robotics, and he has been a member of various panels and review boards.

External Reviewers:

Reviewer A: “I think the outstanding quality, productivity and scientific rigor of Dr. Remy’s work largely speaks for itself ... widely recognized as a leader in the Dynamic Walking community, and is currently leading a dynamic research team with exciting, cutting-edge research that will advance the fields of legged robotics and human rehabilitation.”

Reviewer B: “Prof. Remy’s work on the Smart Braid...may be a major breakthrough for researchers and designers...”

Reviewer C: “Prof Remy is really among the top people in legged locomotion (clearly top 10%). His work is highly visible. He is well known, liked, and respected in the dynamic walking community.”

Reviewer D: “He is publishing steadily in the top venues in robotics..., and he has an interesting set of collaborations in related fields, leading to publications in top journals ... I believe he is considered to be an emerging leader in the field of walking/running robots.”

Reviewer E: “His 2015 NSF CAREER Award is a strong endorsement that his work is widely respected and appreciated in the broader robotics community.”

Reviewer F: “Professor Remy is a highly talented, creative and prolific scientist and engineer ... Dr. Remy is among the top 10 scientists studying terrestrial locomotion ... in the world and is within the top 5 when considering only those at similar career stage.”

Reviewer G: “Dr. Remy is a rising star and is quickly becoming a leading scientist in the field of robotics.”

Reviewer H: “David has established himself as one of the top scholars in the areas of optimization for dynamic legged locomotion...”

Summary of Recommendation: Professor Remy is an outstanding faculty member in all aspects of teaching, research and service. He has demonstrated excellent performance and potential, and is a valuable asset to the University of Michigan. It is with the support of the College of Engineering Executive Committee that I recommend C. David Remy for promotion to associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering.



Alec D. Gallimore, Ph.D.
Robert J. Vlasic Dean of Engineering
College of Engineering

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