

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

Paul C. Richardson, associate professor of electrical and computer engineering, with tenure, Department of Electrical and Computer Engineering, College of Engineering and Computer Science, is recommended for promotion to professor of electrical and computer engineering, with tenure, Department of Electrical and Computer Engineering, College of Engineering and Computer Science.

Academic Degrees

Ph.D.	1998	Oakland University, Rochester Hills, MI, Systems Engineering
M.S.	1993	Oakland University, Rochester Hills, MI, Electrical and Computer Engineering
B.S.	1990	Oakland University, Rochester Hills, MI, Computer Engineering

Professional Record

2005 - present	Associate professor, Department of Electrical and Computer Engineering, University of Michigan-Dearborn
2000 - 2005	Assistant professor, Department of Electrical and Computer Engineering, University of Michigan-Dearborn
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

Teaching: Professor Richardson is rated excellent in teaching. His course evaluation by his students is always at the top rank in the ECE department. Students liked the fact that he regularly incorporates real world examples into the lectures. They rated him as an excellent teacher and a great class on their evaluations. Professor Richardson has supervised six Master's theses, and eight capstone design projects. Two of the capstone design projects supervised by him received 1st place awards.

Research: Professor Richardson is rated excellent in his research. His research interests are in the broad areas of communications and networks, control networks, UWB radio systems, radio tracking systems, and teleoperation /unmanned systems. Since joining the ECE department, he has published 21 journal articles, and 13 refereed conference papers. His research work is both theoretical and applied. Professor Richardson is extremely successful in attaining research funding from the U.S. government. He established two research centers, U.S. Army Vetronics Institute (VI) and U.S. Army Robotics Institute (RI). These two multimillion dollar centers brought researchers and faculty from other universities together to study problems that are important to our national interest. The research funding he received to support his own research is in excess of 4.8 million dollars since 2000. The fact that Professor Richardson's work has been funded extensively by the government is evidence that his research capability is highly respected by his peers.

Recent and Significant Publications:

- P. Richardson, D. Shan, "Experimental Data Collection and Performance Analysis of Outdoor UWB Positioning System Under Static and Mobile Conditions," *EURASIP Journal on Wireless Communications and Networking*, Volume 2009, Article ID 618036, 13 pages.
- C. Chen, P. Richardson, "Mobile Robot Obstacle Avoidance Using Short Memory: A Dynamic Recurrent Neuro-Fuzzy Approach," *Transactions of the Institute of Measurement and Control*, Jul 2010, doi: 10.1177/0142331210366642, pps 1-17.
- P. Richardson, D. Shan, "An Outdoor Ultra-Wide Band Tracking System to Improve Safety of Semi-Autonomous Vehicle Operations," *International Journal of Ultra Wideband Communications and Systems*, Vol. 1, No. 3, 2010 pps 209-221.
- S. Majhi, A. S. Madhukumar, A. B. Premkumar, W. Xiang, P. Richardson, "Enhancing Data Rates of TH-UWB Systems Using M-ary OPPM-BPSM Modulation Scheme: A System Perspective M-ary OPPM-BPSM," *Wireless Personal Communications Journal of Springer*, April 2010.
- S. Majhi, A. Madhukumar, P. Richardson, "Combined OOK with PSM Modulation for TH-UWB Radio Systems: A Performance Analysis," *EURASIP Journal on Wireless Communications and Networking*, Vol. 2008 (2008), Sept 2008, Article ID 735410.
- W. Xiang, P. Richardson, C. Zhao, "Automobile Brake-by-Wire Control System Design and Analysis," *IEEE Transaction on Vehicular Technology*, Volume 57, Issue 1, Jan. 2008 Page(s):138 - 145 .
- T. Jiang, W. Xiang, P. Richardson, D. Qu, G. Zhu, "On The Nonlinear Companding Transform for Reduction in PAPR of MCM Signals", *IEEE Transactions on Wireless Communications*, Vol. 6, No. 5, Jun 2007.
- T. Jiang, W. Xiang, P. Richardson, D. Qu, G. Zhu, "PAPR Reduction of OFDM Signals Using Partial Transmit Sequences with Low Computational Complexity," *IEEE Transactions of Broadcasting*, Vol. 53, no 3, pp 719-724, Sept 2007.
- P. Richardson, W. Xiang, Performance Results for Real-Time Control Networks in a Linux Based System with Sporadic Message Arrivals, *IEEE Transaction on Industrial Infomatics*, Nov 2007, Vol. 2, no. 4, pp 231-241.

Service: Professor Richardson is rated significantly capable in his service. He has served on a number of committees at the department and college levels. Currently he is a member of CECS Bylaws Committee, an alternate member of CECS Executive Committee, a member of ECE graduate program committee, secretary of ECE faculty governing body, and the IEEE Student Branch Representative. Professor Richardson provided his professional service extensively to the government and professional communities. He has been chairing quarterly workshops for Vetronics Institute and, more recently, Robotics Institute. He currently serves on three different committees/teams for the U.S. Department of Defense.

External Reviewers:

Reviewer A: "Dr. Richardson has an impressive record of applied research. The quality and quantity of his publications is excellent with 21 publications in solid journals and 30 publications in peer-reviewed conferences or workshops."

Reviewer B: "I find his modeling of ultra-wide band channels within vehicles very useful. His experimental work on ultra-wideband tracking systems also seems solid."

Reviewer C: "I find his work innovative and effective. He correctly identifies the core issues and brings the right tools to bear on the problems. Within the military research community of the RDECs where I have spent some time, he is viewed as a visionary, consistent, and reliable performer."

Reviewer D: "Dr. Richardson seems to excel in the classified work that he does for the military. I think his depth is shown by the fact that he has succeeded in having as many good quality papers that he has, in spite of how much of his time is spent on activities on which he cannot publish."

Reviewer E: "His overall funding numbers are stellar compared to the vast majority of researchers at his level of development."

Reviewer F: "He has published his works in very high quality journals, to include IEEE Transactions on Vehicular Technology, IEEE Transactions on Wireless Communications, IEEE Transactions of Broadcasting, IEEE Transactions on Industrial Informatics, and IEEE Transactions on Selected Areas of Communications. Professor Richardson stands out amongst his peers in both the quality and broad range of topics he has studied in networking and communications. His work is unquestionably significant and ranks with the best of his colleagues in his peer group."

Summary of Recommendation:

Professor Richardson is an excellent teacher, who is highly regarded by students and faculty. He is an excellent research scholar with outstanding publication and funding records. He has been providing significant service to the ECE department, CECS, and the U.S. government. We are very pleased to recommend, with strong support of the College of Engineering and Computer Science Executive Committee, Paul C. Richardson for promotion to 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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