Approved by the Regents
May 20, 2021

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

Ronald G. Dreslinski, Jr., assistant professor of electrical engineering and computer science, Department of Electrical Engineering and Computer Science, College of Engineering, is recommended for promotion to associate professor of electrical engineering and computer science, with tenure, Department of Electrical Engineering and Computer Science, College of Engineering.

Academic Degrees:

Ph.D.	2011	University of Michigan, Computer Science and Engineering, Ann Arbor, MI
M.S.	2004	University of Michigan, Computer Science and Engineering, Ann Arbor, MI
B.S.E.	2002	University of Michigan, Computer Engineering, Ann Arbor, MI
B.S.E.	2002	University of Michigan, Electrical Engineering, Ann Arbor, MI

Professional Record:

2019 – present	Morris Wellman Faculty Development Assistant Professor, Department of Electrical Engineering and Computer Science, University of Michigan
2015 – present	Assistant Professor, Department of Electrical Engineering and Computer Science, University of Michigan
2012 – 2015	Assistant Research Scientist, Department of Electrical Engineering and Computer Science, University of Michigan
2011 – 2012	Research Fellow, Department of Electrical Engineering and Computer Science, University of Michigan

Summary of Evaluation:
Teaching: Professor Dreslinski is a highly successful teacher. While at Michigan, he has taught four different courses: EECS 370 (Introduction to Computer Organization), three times; EECS 373 (Introduction to Embedded System Design), three times; EECS 470 (Computer Architecture), six times; and EECS 598 (Integrating Technology with Computer Architecture), once. His teaching evaluations are outstanding with instructor quality scores all 4.8 and higher. Professor Dreslinski has worked to modernize several of his courses. For example, he completely revamped EECS 470, updating all course materials, and switching to a modern instruction set. From an inclusion standpoint, Professor Dreslinski worked to make both EECS 373 and EECS 470 more accessible for students with different learning styles by adding an additional animated presentation so visual learners could more easily follow the lectures.

Professor Dreslinski manages a large research group of 22 students, nine of whom are female. He is currently sole advisor to 12 Ph.D. students and co-advisor to another three. He has graduated four students as co-chair, and two of his sole-chaired Ph.D. students defended in December 2020. He has served on committees for an additional seventeen students. Professor Dreslinski's students universally report that he is exceptionally friendly, knowledgeable, effective, approachable, and inclusive. A Ph.D. student letter notes that Professor Dreslinski takes special steps to acknowledge the cultures of the eight different countries from which his

research students originate; at weekly staff meetings, the group spends the first part of their lab meeting discussing and exploring aspects of world culture, as brought to the group by whichever student represents that culture.

Research: Professor Dreslinski's research lies at the intersection of computer architecture and VLSI circuit design. He is considered an exceptionally talented contributor and emerging leader in both areas. His record of accomplishment is a series of successful demonstrations of novel architectural ideas realized in physical implementations, overcoming what were considered daunting engineering challenges. These works enable new level of performance on cutting-edge applications (e.g., neural networks) and for deployment on new platforms (e.g., Internet of Things). His publications appear regularly in top forums and have accumulated over 6000 citations to date, for a remarkable h-index of 36. Professor Dreslinski is exceptionally well-funded, having received more than $9M in funding, primarily from DARPA and NASA, and often in collaboration with industry partners including ARM, Boeing, and General Dynamics. These partnerships have led to an extensive portfolio of technology transfer, reflected in chip designs as well as numerous patents and regular releases of open-source software.

Recent and Significant Publications:

A. Amarnath, J. Bagherzadeh, J. Tan, R. Dreslinski, "3DTUBE: A Design Framework for High-Variation Carbon Nanotube-based Transistor Technology," *IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED)*, 6, 2019.

T. Ajayi, K. Al-Hawaj, A. Amarnath, S. Dai, S. Davidson, P. Gao, G. Liu, A. Lotfi, J. Puscar, A. Rao, A. Rovinski, L. Salem, N. Sun, C. Torng, L. Vega, B. Veluri, X. Wang, S. Xie, C. Zhao, R. Zhao, C. Batten, R. Dreslinski, I. Galton, R. Gupta, P. Mercier, M. Srivastava, M. Taylor, Z. Zhang, "Celerity: An Open Source RISC-V Tiered Accelerator Fabric," *Hot Chips*, 30-41, 2017.

R. Dreslinski, D. Fick, B. Giridhar, G. Kim, S. Seo, M. Fojtik, S. Satpathy, Y. Lee, D. Kim, N. Liu, M. Wieckowski, G. Chen, D. Sylvester, D. Blaauw, T. Mudge, "Centip3De: A Many-Core Prototype Exploring 3D Integration and Near-Threshold Computing," *Communications of the ACM*, 97-104, 2013.

R. Dreslinski, M. Wieckowski, D. Blaauw, D. Sylvester, T. Mudge, "Near-Threshold Computing: Reclaiming Moore's Law Through Energy Efficient Integrated Circuits," *Proceedings of the IEEE,* 253-266, 2010.

S. Pal, J. Beaumont, D. Park, A. Amarnath, S. Feng, C. Chakrabarti, H. Kim, D. Blaauw, T. Mudge, R. Dreslinski, "OuterSPACE: An Outer Product Based Sparse Matrix Multiplication Accelerator," *IEEE International Symposium on High Performance Computer Architecture (HPCA)*, 13, 2018.

Service: Professor Dreslinski is an exceptionally good citizen of the department. He is a reliable and popular undergraduate advisor in computer engineering and serves on the Graduate Admissions Committee, where he regularly advocates on behalf of diverse and non-traditional applicants. He has served as a faculty advisor to the IEEE and the HKN student groups. At the college level, Professor Dreslinski represents CSE on the Safety Committee. This highly valued service took on special significance in 2020, as the coronavirus pandemic necessitated research ramp-downs and then, months later, corresponding ramp-ups. Professor Dreslinski's external service likewise demonstrates excellent citizenship in the professional community. He has

served on numerous technical program committees and also reviewed papers for multiple prestigious venues in his field, including ISCA and MICRO.

External Reviewers:
Reviewer A: "Dr. Dreslinski has worked at the intersection of computer architecture and VLSI circuit design for most of his career... From my view, Dr. Dreslinski is one of the top faculty in the world in this inter-disciplinary research area, at the junior or senior level, and he clearly meets the bar for tenure at any top computer science and engineering department."

Reviewer B: "Dr. Dreslinski is a slam dunk for promotion. His research is top notch and his professional service on program committees for leading conferences is commensurate with someone of his research standing (and appropriate for a candidate for tenure). He is a visible leader on multiple high-profile DARPA-funded programs, and I always look forward to the briefings he provides on the work at Michigan."

Reviewer C: "Ronald Dreslinski Jr is nothing short of amazing... No packet has ever come across my desk that exceeds Ron's in breadth, depth, and impact. I cannot even make comparisons to other Associate Professors."

Reviewer D: "Prof. Dreslinski has a research expertise that is both unusual among computer architects and very valuable. Specifically, he is able to prototype and build chips, which is something that few researchers in computer architecture can do."

Reviewer E: "Ron has made huge impact [sic] on the field of computer architecture and he should receive tenure. I have no hesitation in enthusiastically recommending Ron for tenure and feel his strong, published, research results, his ability to build large teams that can build hugely impactful prototypes, his demonstrated ability to raise huge amounts of funding, and his service to the larger community make him an extremely deserving candidate for tenure..."

Summary of Recommendation: Professor Dreslinski is an established leader in computer architecture with demonstrated leadership in teaching, research, and service. It is with the support of the College of Engineering Executive Committee that I recommend Ronald G. Dreslinski, Jr. for promotion to associate professor of electrical engineering and computer science, with tenure, Department of Electrical Engineering and Computer Science, College of Engineering.

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

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