Approved by the Regents
May 16, 2024

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

Alanson P. Sample, associate professor of electrical engineering and computer science, without tenure, Department of Electrical Engineering and Computer Science, College of Engineering, is recommended for the granting of tenure to be held with his title of associate professor of electrical engineering and computer science, Department of Electrical Engineering and Computer Science, College of Engineering.

Academic Degrees:

Ph.D.	2011	University of Washington, Electrical and Computer Engineering, Seattle, WA
M.S.	2008	University of Washington, Electrical and Computer Engineering, Seattle, WA
B.S.	2005	University of Washington, Electrical and Computer Engineering, Seattle, WA

Professional Record:

2018 – present	Associate Professor (without tenure), Department of Electrical Engineering and Computer Science, University of Michigan
2017 – 2018	Lab Director, Disney Research, Los Angeles, CA
2016 – 2017	Associate Lab Director and Principal Research Scientist, Disney Research, Pittsburgh, PA
2013 – 2016	Research Scientist, Disney Research, Pittsburgh, PA
2012 – 2013	Research Scientist, Intel Labs, Hillsboro, OR
2011 – 2012	Post-doctoral Research Associate, Computer Science and Engineering Department, University of Washington, Seattle, WA

Summary of Evaluation:

Teaching: Professor Sample is a dedicated and enthusiastic instructor and has taught EECS 370 *Intro to Computer Organization*, EECS 373 *Intro to Embedded Systems,* EECS 498/598 *Engineering Interactive Systems,* and EECS 601 *Introduction to Graduate Studies*. Professor Sample is known to be a caring and respectful advisor who advocates for community-building and is devoted to his students. Students also find his industry experience to be invaluable in the classroom. Professor Sample is currently advisor to seven Ph.D. students (one co-advised), and has mentored 11 masters students and nearly 40 undergraduates. His graduate students have won several awards, including a Rackham International Studies Fellowship, a Meta Ph.D. Research Fellowship, and an NSF Graduate Research Fellowship. His first Ph.D. student has passed his thesis proposal and is currently slated to graduate this year.

Research: Professor Sample's research employs novel sensing technologies for human-computer interaction (HCI), enabling a range of applications where computers detect and interpret human activities in order to serve user needs effectively and safely. In his early research as a Ph.D. student and in industry, Professor Sample focused on the development of distributed intelligent sensors and ultra-low power, programmable sensors for wireless applications, including IoT (Internet of Things). He also developed methods to harvest ambient energy in room-sized

spaces. His research in these areas was pioneering and highly influential. A few of his seminal first-authored papers have been cited over 1,000 times. Overall, Professor Sample's works have accumulated nearly 10,000 citations, yielding an h-index of 42. Upon joining Michigan, Professor Sample chose to pivot his research away from mass-consumer-motivated application domains and toward more individually focused settings such as those found in healthcare. In doing so, he continues to leverage his experience and expertise in embedded sensors and other wireless technologies, but now primarily addresses the academic research communities associated with HCI and health care. At Michigan, he has developed new research thrusts employing sensors to monitor chronic illness, establishing new collaborations and funding sources. Two examples that have been particularly successful are: (1) privacy-preserving IoT devices, which gather sufficient information for activity monitoring (e.g., of patients at home), while inhibiting collection of private and personally sensitive information; and (2) new interface modalities based on novel sensors. An example of the form is PrivacyMic, a system that collects relevant audio signals without digitizing speech. An example of the latter is SAWSense, a system that recognizes gestures that can be performed by scratching a table, using surface acoustic waves. These newer research projects have been gaining attention. The paper on SAWSense (first-authored by Professor Sample's most senior Ph.D. student) was designated a Best Paper at CHI 2023. Professor Sample has attracted nearly $5M in funding for his research as PI or co-PI. He enjoys support from industry partners, such as Meta and Proctor and Gamble, as well as funding from NSF and NIH.

Recent and Significant Publications:

Y. Su, C. Yang, E. Hwang, A. Sample, "Single Packet, Single Channel, Switched Antenna Array for RF Localization," *Proceedings of the ACM on Interactive, Mobile, and Wearable Ubiquitous Technologies*, Vol. 7, No. 2, Article 76:1-25, 2023.

Y. Su, J. Ren, Z. Qian, D. Fouhey, A. Sample, "TomoID: A Scalable Approach to Device Free Indoor Localization via RFID Tomography," *IEEE International Conference on Computer Communications*, *(INFOCOM),* 2023.

Y. Iravantchi, Y. Zhao, K. Kin, A. Sample, "SAWSense: Using Surface Acoustic Waves for Surface-bound Event Recognition," *CHI '23: Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*, 422:1-18, 2023.

T. Sasatani, A. Sample, Y. Kawahara, "Room-scale magnetoquasistatic wireless power transfer using a cavity-based multimode resonator," *Nature Electronics*, 4, 689-697, 2021.

Y. Iravantchi, K. Ahuja, M. Goel, C. Harrison, A. Sample, "PrivacyMic: Utilizing Inaudible Frequencies for Privacy Preserving Daily Activity Recognition," *CHI '21: Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, 198:1-13, 2021.

Service: Professor Sample has served in a variety of internal service roles, including several important leadership positions. He has been the director of the Human Centered Computing Lab (HCC) since 2021, and has been both a member and chair of the CSE Graduate Admissions Committee. He has served on the CSE DEI Committee, the Graduate Program Committee, the Distinguished Lecture Committee, and chaired the CSE Safety Committee. Additionally, he mentors a junior CSE faculty colleague. A particularly valuable contribution was his co-development of EECS 601 *Introduction to Graduate Studies*, which is now a required course for CSE Ph.D. students. This one-credit course, created and instituted during a time of particular crisis in the division, was designed to build a cohort-based Ph.D. community, discuss approaches

and expectations for conducting research, and give them an opportunity to discuss issues and concerns that may arise. Externally, Professor Sample served as an associate editor from 2020-2022 for the prestigious journal *Proceedings of the ACM on Interactive, Mobile, Wearable, and Ubiquitous Technologies* (IMWUT) and, in 2022, was appointed as the editor. Additionally, he has served in various leadership roles for multiple top conferences in his field, including HCFS/CHI, UIST, RFID, IJCPUC and MobiCom.

External Reviewers:
Reviewer A: "In my view, Prof. Sample's work is an excellent example of a technologically grounded human-centered researcher. Prof. Sample's track record of scholarship at the intersection of Human-Computer Interaction (HCI), wireless communications technology, and the Internet of Things (IoT) is impressive."

Reviewer B: "…his contributions to teaching, curriculum development, and mentoring, which are substantial and impressive in their own right, and when coupled with his robust internal and external service activities, make for a *clear and compelling case that Alanson Sample is extraordinarily well-qualified for the rank of Associate Professor with tenure*."

Reviewer C: "My researchers and I have often cited Dr. Sample's work over the years. His pioneering work on the reconfigurable WISP platform has spawned numerous research programs around the world and was heavily decorated by our research community. Alanson has continued to make innovative contributions to the field...I believe he is poised to continue to contribute to the emerging field of devices for the Internet of Things (IoT). His recent work on power-harvesting and low-powered radio devices, is particularly promising. Alanson has provided a great deal of leadership in this area with his publications and presentations. In this regard, he is a leader in our field (easily among the top 5) and has a long-standing reputation for high-quality work, which was established at an unusually ...age for a researcher."

Reviewer D: "…everything seems to be going in positive directions for Dr. Sample, and I would be highly supportive of his tenure case. He has a strong record in terms of developing new kinds of sensing, developing open platforms, and has had some success with industry impact. His reputation is strong in the research community, as evidenced by the number of awards his papers have won and by his service on top-tier journals and conferences."

Reviewer E: "…Prof. Sample has assembled an outstanding dossier of accomplishments in research, teaching, and service, which makes this an easy case for tenure. He has published his work in some of the best venues in his field, made significant teaching contributions, and taken on major service roles within his research community. He is seen as a leader in the field of RFID sensing and his future trajectory is bright. In terms of comparisons to other researchers, I would place him in the very top cohort of recently-tenured sensing researchers…While all have made outstanding research contributions to the field, Prof. Sample's work stands out in terms of its stronger industry impact…I recommend him for tenure in your department in the strongest possible terms."

Summary of Recommendation: Professor Sample has established a high-impact record of teaching, scholarly research, and service at the University of Michigan. It is with the support of the College of Engineering Executive Committee that I recommend Alanson P. Sample for the granting of tenure to be held with his title of associate professor of electrical engineering and computer science, Department of Electrical Engineering and Computer Science, College of Engineering.

Steven L. Ceccio, Ph.D.
Interim Dean of Engineering
Vincent T. and Gloria M. Gorguze Professor
of Engineering
College of Engineering

May 2024