Approved by the Regents
May 16, 2024

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

Nikola Banovic, 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.	2018	Carnegie Mellon University, Human-Computer Interaction, Pittsburgh, PA
M.S.	2012	University of Toronto, Computer Science, Toronto, Ontario, Canada
B.S.	2010	University of Toronto, Computer Science, Toronto, Ontario, Canada

Professional Record:

2018 – present	Assistant Professor, Department of Electrical Engineering and Computer Science, University of Michigan

Summary of Evaluation:

Teaching: Professor Banovic has taught a few different courses. (1) EECS 493: User Interface Development. This is a large, popular class, and CSE's core upper-level elective in HCI, which Professor Banovic has improved primarily through deliberate adoption of inclusive teaching practices, including accommodation of hybrid participation modes. (2) In his first few terms here, he taught special topics courses on computational modeling for interaction—his research specialty. (3) Perhaps his most valuable contribution is the development of EECS 593: Human-Computer Interaction, a new core graduate course in HCI. This was originally offered by Professor Banovic under the 598 number in Winter 2020, and was recently approved by the department to meet our Ph.D. depth requirement. Professor Banovic has also demonstrated that he is an excellent instructor. Course evaluations are very good to excellent, with no course or instructor quality score (Q1/Q2 or new averages) below 4.0, even in EECS 493 (150-250 students). Since joining Michigan, Professor Banovic has advised and mentored dozens of undergraduate students, six masters students, a post-doctoral scholar and, currently, eight Ph.D. students (three co-advised). Although Professor Banovic has not yet graduated a Ph.D. student, three (one as co-chair) are expected to graduate this year. Based on publications and awards, many of his students are achieving success and all are progressing. He has shown himself to be an outstanding mentor and advisor.

Research: The core of Professor Banovic's research is computational modeling of human behavior. The models are developed with machine learning (ML) techniques, and inform the human-centered (one might say "people-first") design of systems that interact with human users. Increasingly, these systems themselves employ AI methods, thus much of his research concerns human-AI interaction. One thrust of this work addresses the problem of helping humans understand AI decisions, that is, developing *explainable AI* (XAI). XAI research aims to create systems that are transparent and justifiable to end-users—especially non-technical end users—without sacrificing performance. Another (related) thread of Professor Banovic's research agenda is assurance of responsible and trustworthy AI. He has contributed to this goal by developing techniques to help detect and counter situations where AI is untrustworthy, either by willful design or through design failure. Professor Banovic publishes in top venues in the field of human-computer interaction, is well-placed to become

a leader in the area of trustworthy AI, and has obtained an appropriate level of funding to support his research. Funding sources include the WM Keck Foundation, Toyota Research Institute, NSF, NIH, DOE, among others.

Recent and Significant Publications:

A. Antar, A. Kratz, N. Banovic, "Behavior Modeling Approach for Forecasting Physical Functioning of People with Multiple Sclerosis," *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol*ogy, 7(1): 1-29, 2023.

N. Banovic, Z. Yang, A. Ramesh, A. Liu, "Being Trustworthy is Not Enough: How Untrustworthy Artificial Intelligence (AI) Can Deceive the End-Users and Gain Their Trust," *Proceedings of the ACM on Human-Computer Interaction*, 7 (CSCW1): pp 1-17, 2023.

S. Prabhudesai, L. Yang, S. Asthana, X. Huan, Q. Liao, N. Banovic, "Understanding Uncertainty: How Lay Decision-makers Perceive and Interpret Uncertainty in Human-AI Decision Making," *Proceedings of the 28th International Conference on Intelligent User Interfaces (IUI '23)*, 18 pages, 2023.

E. Zhang, N. Banovic, "Method for Exploring Generative Adversarial Networks (GANs) via Automatically Generated Image Galleries," *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21)*, 15 pages, 2021.

N. Escher, N. Banovic, "Exposing Error in Poverty Management Technology: A Method for Auditing Government Benefits Screening Tools," *Proceedings of the ACM on Human-Computer Interaction*, 4 (CSCW1): pp 1-20, 2020.

Service: Professor Banovic has excelled in internal service. Most of his activities have been DEI-focused, including the External Recruiting Committee, faculty advisor to Tech4SocialGood, and organizer of a program to coach students applying for fellowships. He has participated actively in diversity-focused mentoring programs, such as the African Undergraduate Research Adventure (AURA), CoE's Summer Undergraduate Research in Engineering (SURE) program, and MIDAS's Big Data Summer Institute. Professor Banovic is currently serving as the DEI Committee chair. Among fellow faculty, staff, and students, Professor Banovic enjoys the reputation as a particularly DEI-focused faculty member, and a strong student advocate. When the position of DEI Committee chair became available, Professor Banovic immediately came to mind as someone who could command confidence across the division for good judgment and continued energy in this pivotal leadership role for CSE.

Externally, Professor Banovic has served as an associate editor for PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (2019-2023), and as an associate chair or program committee member for multiple conferences, including CHI and UIST. He has organized workshops and summer schools, serves as a reviewer for numerous venues in his field, and co-edited a book.

External Reviewers:

Reviewer A: "…I am happy to support Nikola's application for tenure and promotion at the University of Michigan. He's met the criteria I'd expect of someone in his position to advance. And he's working in an area that has high potential impact. So he's doing everything right..."

Reviewer B: "Dr. Banovic is an active collaborator with other well-respected researchers that I know in this area. He has been serving as an associate chair in the corresponding subcommittee in top HCI conferences (e.g., CHI and UIST) since 2018 and was an instructor in the ACM SIGCHI Summer School on Computational Interaction in 2019 and 2023. He also reviewed for and organized events in many HCI venues. These evidences show that he has gained recognition as a rising scholar and a

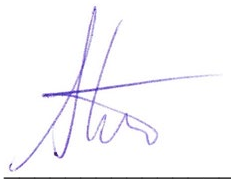
responsible contributor in this research community and he stands out in his peer group in the area of computational interaction and human modeling.

Reviewer C: "Dr. Banovic has developed an exciting research program making contributions to multiple, related areas and supported his graduate students in developing their own scholarship, raising the resources necessary to do the work and communicating the results in ways that are advancing his fields and having immediate real-world impact...and externally he has contributed to his research community as a reviewer and associate chair / editor at a time when such roles have been tremendously hard to fill."

Reviewer D: "…I strongly support Nikola's promotion. Already as an assistant professor, Dr. Banovic's research compares in quality favorably to those of associate professors in this area. He has a strong record of publications in top HCI forums, including CHI and UIST. In most universities, including mine, he would be a strong candidate to be promoted to the level of an associate professor."

Reviewer E: "Dr. Banovic has an excellent publication track record, publishing regularly at high-profile journals and major international conferences in the field. ... I am very impressed by Dr. Banovic's leadership in the international research community... I believe that Dr. Banovic is an outstanding academic who fully merits being awarded promotion."

Summary of Recommendation: Professor Banovic 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 Nikola Banovic for promotion to associate professor of electrical engineering and computer science, with tenure, Department of Electrical Engineering and Computer Science, College of Engineering.



Steven L. Ceccio, Ph.D.
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May 2024