Approved by the Regents
May 16, 2024

PROMOTION RECOMMENDATION
The University of Michigan-Flint
College of Innovation and Technology

Mark Allison, associate professor of computer science, with tenure, Department of Computer Science, College of Innovation and Technology, is recommended for promotion to professor of computer science, with tenure, Department of Computer Science, College of Innovation and Technology.

Academic Degrees:

Ph.D.	2014	Florida International University, Miami, Computer Science
M.S.	1993	The City University of New York, Information Systems
B.S.	1990	City College of New York, Computer Science

Professional Record:

2021-2022	Visiting Scholar, Carnegie Mellon University
2020-Present	Associate Professor, with tenure, University of Michigan-Flint
2014-2020	Assistant Professor, University of Michigan-Flint
2006-2013	Department Chair, Keiser University, Pembroke Pines, FL

Summary of Evaluation:

Teaching: Professor Allison is a committed educator who continually strives to reflect upon his teaching and evolve his practices. He aims to place student success at the core of his teaching philosophy, and he works to implement a learner-centered approach in his courses. Professor Allison has taught courses across the computer science curriculum including both lower-level and upper-level undergraduate courses, as well as graduate courses. In addition, he is quite active in pedagogical research, and has published in many areas including, pedagogy related to problem solving skills, flipped classroom approaches, underrepresented groups and gender in STEM, and the impact of grit and fear in the learning process, to name a few. His involvement and familiarity with the pedagogical aspects of instruction provide opportunities for him to design courses in innovative and forward-thinking ways.

Research: Professor Allison's research is at the convergence of various disciplines, notably robotics, the Internet of Things (IoT), software engineering (SE), and artificial intelligence. Advances in computing hardware require software to become ever more pervasive and increasingly complex and are reaching the limit of human capability to develop. Professor Allison is attacking this challenge through an innovative and novel approach. He develops systems that self-evolve and adapt to their user's environment by learning how to improve their performance and interactions with humans. The model-driven software engineering methods he develops utilize graphical models to incorporate artificial intelligence, thereby realizing a high level of autonomy. This is critical as human collaboration with autonomy has been identified as a key concern within the community. This ambitious plan will be challenging, but Professor Allison has mapped a future that has potential for transformative, not evolutionary, changes to software development.

Recent and Significant Publications:

Allison, Mark, Gaspard, Alice, Parks, Max, Jefferson, Felicia. (December 2023). *A Layered Architecture for Adaptive Autonomy in Human-Robotic Team Interaction* [Conference presentation]. 28th International Command and Control Research and Technology Symposium, Johns Hopkins University.

Allison, Mark, Jefferson, Felicia, Allison, Dana. (July 2023). *Beyond Intelligence: A Survey of Grit and Fear of Failure as Interrelated Non-Cognitive Invariants in Academic Performance* [Conference presentation]. 2023 Hawaii International Conference on Education.

Allison, Mark, Spradling, Matthew. (April 2022). *Modeling Sub-Team Formations for Heterogeneous Multi-Robot Systems using Colored Petri-Net Semantics* [Conference presentation]. IEEE 4th International Workshop on Wireless Sensors and Drones in Internet of Things (Wi-DroIT), Marina Del Rey, CA. https://doi.org/10.1109/DCOSS54816.2022.00048.

Heather A. Dawson, Mark Allison. (2021). Requirements for Autonomous Underwater Vehicles (AUVs) for scientific data collection in the Laurentian Great Lakes: A questionnaire survey. *Journal of Great Lakes Research, 47*(1), 259-265. https://doi.org/10.1016/j.jglr.2020.11.004.

Service: Professor Allison is active in service. At the department level, he was part of a team that developed the B.S. program in Software Engineering. He also served as the faculty advisor for the UMF chapter of the Association for Computing Machinery and as the founding faculty advisor for the UMF chapter of Upsilon Pi Epsilon, the computer science honor society. He has served the Flint campus with active participation in a provost search advisory committee and through his service to the UMF Academic Assessment Committee. In terms of the University of Michigan, Professor Allison has chaired two committees that reach across all three campuses, Flint, Dearborn, and Ann Arbor: one on Diversity, Fairness, Equity, and Inclusion and another on Anti-Racism. Additionally, he has served on five review panels for the National Science Foundation.

External Reviewers:

Reviewer (A): "…Dr. Allison's publication record presents a strong upward trajectory. ... I am also impressed by Dr. Allison's funding record and industrial background."

Reviewer (B): "…I believe Dr. Mark Allison has demonstrated a strong research record with consistent conference publications in relevant venues."

Reviewer (C): "…Dr. Allison has exhibited a very good record in research."

Reviewer (D): "Dr. Allison seems to have identified a specific application area in which he can apply his model-based approaches to solve local area problems. In terms of quality, the Journal of Systems and Software is very high-quality and well-respected."

Reviewer (E): "…he has published a good number of papers, generally well written and with interesting results, with good focus, mainly on Autonomous Underwater Vehicles in Swarms but also with publication in Software Engineering Education, showing a good concern for the quality of education, which is great for a university professor."

Reviewer (F): "…there appears to be an upward trajectory in productivity over the last two years, with several articles either published, or accepted for publication. ... The articles submitted for evaluation are well written and technically sound."

Summary of Recommendation:
Professor Allison is a committed educator who continually assesses his own teaching to determine the most effective means to reach students. He is knowledgeable and active in pedagogical development within computer science. His innovative research approach has potential for transformative changes to software development and is experiencing an upward trajectory in terms of publications and funding. His service contributions reach across all campuses of the University of Michigan. In concurrence with his promotion committee, I recommend Mark Allison for promotion to professor of computer science, with tenure, Department of Computer Science, College of Innovation and Technology.

Recommended by:

Christopher Pearson, Dean
College of Innovation and Technology

Recommendation endorsed by:

Yener Kandogan, Interim Provost and
Vice Chancellor for Academic Affairs

Donna Kay Fry, Interim Chancellor
University of Michigan – Flint

May 2024