

PROMOTION RECOMMENDATION
The University of Michigan-Flint
College of Arts and Sciences
Department of Computer Science, Engineering, and Physics

Approved by the
Regents
May 21, 2015

Michael E. Farmer, associate professor of computer science, with tenure, Department of Computer Science, Engineering, and Physics, College of Arts and Sciences, is recommended for promotion to professor of computer science, with tenure, Department of Computer Science, Engineering, and Physics, College of Arts and Sciences.

Academic Degrees:

Ph.D.	2004	Michigan State University
M.S.	1994	University of Minnesota, Minneapolis
M.S.	1984	University of Michigan-Ann Arbor
B.S.	1982	Columbia University, New York

Professional Record:

2009 - Present	Associate Professor of Computer Science, with tenure, University of Michigan-Flint
2004 - 2009	Assistant Professor of Computer Science, University of Michigan-Flint

Summary of Evaluation:

Teaching – The computer science classes for which Professor Farmer is responsible range from low level introductory type classes to highly specialized graduate classes. Since his promotion to associate professor, he has developed courses at the graduate and undergraduate levels as follows: Advanced Software Engineering (CSC 580); Computer Systems Architecture (CSC 565); Artificial Intelligence (CSC 546); the Software Engineering and Systems and Networking Capstones (CSC 483 and CSC 436); Software Engineering I and II (CSC 382 and CSC 383); and Computer Architecture (CSC 365). In all of the settings in which he teaches, his efforts are uniformly viewed very positively by students and peer evaluators. Professor Farmer's course evaluations are consistently among the highest in the department. Numerical student evaluations at the undergraduate level are typically above 4.0 and at the graduate level are above 4.5. In addition to his teaching, Professor Farmer advises approximately 100 computer students in any given semester. Because of the range of his teaching duties as well as program development activities, it is necessary for Professor Farmer to be constantly updating his substantive knowledge of the discipline. This is a highly important aspect of teaching in a fast moving academic discipline such as computer science.

Research – Professor Farmer is an exceptional scholar who spans the gap between academic disciplines and practical implementation in applied settings. His most recent book, Applications of Chaos and Fractals to Computer Vision, is likely the first comprehensive study published within the community on this topic. This topic is important because it combines the understanding of cutting edge principles of computer science with well-established principles of physics. In

addition, Professor Farmer has successfully obtained several patents for his inventive approach to organizing information. Several external reviewers commented on how rare this is in a small liberal arts based college such as the College of Arts and Sciences at the University of Michigan-Flint. The book should be of interest to researchers not only in computer vision, but also to the broader audience of robotics, mechatronics, and other applied computing subspecialties. Professor Farmer has excelled at scholarship and his innovative approaches are outstanding.

Recent and Significant Scholarly Activity:

Book:

M. Farmer (2014). Application of Chaos and Fractals to Computer Vision, Bentham Scientific Press.

Book Chapter:

M. Farmer (2009). "Application of the Wrapper Framework for Robust Image Segmentation for Object Detection and Recognition." In Pattern Recognition, InTech Press (*invited*).

Journals Articles:

M. Farmer (2013). "Pre-Attentive Processing for Video Surveillance Using Chaos Theory." *Journal of Applied Mathematics*.

Wehbe-Alamah, H., McFarland, M., Farmer, M., Call, C. and Jones, M. (2012). "CultureCopia©: Developing a Computer-Based Electronic Transcultural Simulation Game Based on Leininger's Culture Care Theory." *Online Journal of Cultural Competence in Nursing and Healthcare*, 2(1), 29.

Conferences

E. G. Freedman, M. Farmer, S. Yeary, M. Molleseau and T. Hilgendorf (2013). "Distinctiveness, Emotion, and Display Size in Change Detection in Faces." Proceedings of the 54nd Annual Meeting of the Psychonomic Society.

M. Farmer (2013). "Illumination Invariant Intensity-Based Image Registration Using Chaos Theory." Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing.

M. Farmer (2011). "A Comparison of a Chaos-Theoretic Method for Pre-Attentive Vision With Traditional Grayscale-Based Methods." Proceedings of the IEEE International Conference on Advanced Video and Signal Based Surveillance.

M. Farmer (2011). "Accumulating Evidence Based on Estimation Theory and Human Psychology." Proceedings of the International Conference on Informatics and Control.

M. Farmer (2011). "Application of Evidence Accumulation Based on Estimation Theory and Human Psychology for Automotive Airbag Suppression." Proceedings of the Special Session on Artificial Neural Networks and Intelligent Information Processing at the International Conference on Informatics and Control.

M. Farmer and W. Arthur (2011). "Study of the Phenomenology of DDOS Network Attacks in Phase Space." Proceedings of the International Conference on Security and Cryptography.

R. Fox and M. Farmer (2011). "The Effect of Computer Programming Education on the Reasoning Skills of High School Students." Proceedings of the International Conference on Frontiers in Education: Computer Science and Computer Engineering.

M. Farmer (2009). "Quantization Effects in Applying Chaos Theory to the Detection of Motion in Image Sequences." Proceedings of the IEEE International Conference on Digital Signal Processing.

Service – Professor Farmer has been heavily involved in the process of shared governance at the University of Michigan-Flint. Most recently he has served a full three-year term on the College of Arts and Sciences Executive Committee. In addition, he has been elected to several of the influential faculty governance committees across the university. He has spearheaded the drive to require an accurate understanding of departmental budget processes. In a recent collection of information about resources, Professor Farmer was the primary author of an analysis that will have an important influence on the development of funding for several units on campus. Similarly, Professor Farmer has been instrumental in the growth in enrollment in the MS in computer science at the University of Michigan-Flint. These achievements represent the best of collegial shared governance.

External Reviewers:

Reviewer (A): "As someone who is situated on the interface of Physics, Engineering and Computer Science Farmer is ideally placed to further develop the field of image processing, integrating ideas from these diverse fields and encouraging cross-fertilization between these fields... This is an important area of research and Farmer is proposing a rather novel approach that is definitely important to explore."

Reviewer (B): "Dr. Farmer's book is an impressive scholarly achievement. He has taken a number of ideas and concepts from a field that is totally unrelated to computer vision and has shown how these ideas can be used to solve difficult computer vision problems... Dr. Farmer's CV is a bit unusual for computer science. He has a considerable number of patents. Most computer scientists do not have any patents in their entire career."

Reviewer (C): "I think Dr. Farmer's work has been outstanding and certainly above average in terms of productivity and quality of work... The major contribution Dr. Farmer has brought into the community is to introduce physics into the computer vision applications and demonstrated that physics models can be utilized and applied to real world problems."

Reviewer (D): "In terms of Dr. Farmer's standing in the field, I would rate it excellent. His editorial board membership on two journals, and his reviewing service for many journals, including some highly regarded journals such as IEEE Transactions on Pattern Analysis and Machine Intelligence, and IEEE Transactions on Image Processing, clearly establish him as a well-known researcher whose judgment is valued by his peers."

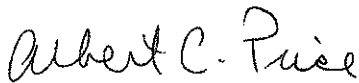
Reviewer (E): "He authored a book 'Application of Chaos and Fractals to Computer Vision' in 2014, which belongs to a narrow specific topic in Computer Vision... He published two journal papers in medium quality journals... ...he had 7 conference papers, some of them in good conferences."

Reviewer (F): "In summary, Dr. Farmer's research is very impressive. His contributions are independent, original and groundbreaking. I am quite sure that he will continue to contribute significantly to the growth of your college. Dr. Farmer has more than 30 years working experience and over ten years of postdoctoral experience in research and teaching."

Summary of Recommendation:

Professor Farmer is an exceptional teacher, innovative scholar and outstanding colleague across departmental, college and university venues. I fully concur with the Executive Committee of the College of Arts and Sciences and enthusiastically recommend that Michael E. Farmer be promoted to professor of computer science, with tenure, Department of Computer Science, Engineering, and Physics, College of Arts and Sciences.

Recommended by:

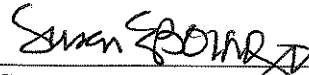


Albert C. Price, Interim Dean
College of Arts and Sciences

Recommendation endorsed by:



Barbara B. Dixon, Interim Provost and
Vice Chancellor for Academic Affairs



Susan E. Borrego, Chancellor
University of Michigan-Flint

May 2015