Approved by the Regents May 15, 2014

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

Valeria M. Bertacco, associate professor of electrical engineering and computer science, with tenure, Department of Electrical Engineering and Computer Science, College of Engineering, is recommended for promotion to professor of electrical engineering and computer science, with tenure, Department of Electrical Engineering and Computer Science, College of Engineering.

Academic Degrees:

Ph.D.	2003	Stanford University, Electrical Engineering, Stanford, CA
M.S.	1998	Stanford University, Electrical Engineering, Stanford, CA
Laurea with Honors	1995	Universita' di Padova, Computer Engineering, Padova, Italy

Professional Record:

2009 – present	Associate Professor (with tenure), Department of Electrical Engineering and Computer Science, University of Michigan
2003 – 2009	Assistant Professor, Department of Electrical Engineering and Computer Science, University of Michigan
2001 – 2003	Research Assistant, Stanford University, Stanford, CA
1999 – 2001	Research Staff, Research and Development, Synopsys, Advanced Technology Group, Mountain View, CA

Summary of Evaluation:
Teaching: Professor Bertacco has taught core undergraduate courses with over one hundred students enrolled per semester (EECS 270 and 370), a specialized upper-division undergraduate course (EECS 478), a graduate course (EECS 578), and a special-topics graduate course (EECS 598). Her evaluations have been consistently high with Q1/Q2 scores averaging 4.39/4.65, respectively. Students appreciate her unique efforts to personally interact with everyone enrolled in her courses. Students also praise her as effective, enthusiastic, and motivating. Professor Bertacco has chaired or co-chaired thesis committees of more than ten doctoral students, six of whom have completed their degrees. She also has advised several M.S. students and undergraduate major projects. Her contributions as a faculty advisor to the girls in Electrical Engineering and Computer Science (gEECS) student organization are viewed as particularly significant, inspirational and impactful.

Research: Professor Bertacco's research concerns the design of complex digital circuits and systems where correctness and reliable operation are primary objectives. Her research spans a broad range of established fields, including design verification, electronic design automation (EDA), fault-tolerant computing, and computer architecture. Her research productivity at the University of Michigan has been impressive. Professor Bertacco has received substantial funding for her research from several funding agencies including the National Science Foundation, the Microelectronics Advanced Research Corporation (MARCO)/Defense Advanced Research Projects Agency (DARPA), the Air Force Office of Scientific Research, and the Semiconductor Research Corporation. In addition, she has actively collaborated with numerous academic and industrial partners. She has co-authored, with her students and colleagues, some fifteen journal articles and 84 refereed conference papers. Professor Bertacco is the author or co-author of three research monographs and is listed as a co-inventor on twelve issued or pending patents.

Recent and Significant Publications:

Debapriya Chatterjee, Biruk Mammo, Doowon Lee, Raviv Gal, Ronny Morad, Amir Nahir, Avi Ziv and Valeria Bertacco, "Hybrid Checking for Microarchitectural Validation of Processor Designs on Acceleration Platforms," *IEEE International Conference on Computer-Aided Design*, San Jose, CA, November 2013.

Andrea Pellegrini, Joseph Greathouse and Valeria Bertacco, "Viper: Virtual Pipelines for Enhanced Reliability," *ACM/IEEE International Symposium on Computer Architecture*, Portland, OR, June 2012.

Ritesh Parikh and Valeria Bertacco, "Formally Enhanced Runtime Verification to Ensure NoC Functional Correctness," *IEEE/ACM International Symposium on Microarchitecture*, Porto Alegre, Brazil, December 2011.

Andrew DeOrio, Daya Shanker Khudia and Valeria Bertacco, "Post-Silicon Bug Diagnosis with Inconsistent Executions," *IEEE International Conference on Computer-Aided Design*, San Jose, CA, November 2011.

Andrea Pellegrini and Valeria Bertacco, "Application-Aware Diagnosis of Runtime Hardware Faults," *IEEE International Conference on Computer-Aided Design*, San Jose, CA, November 2010.

Debapriya Chatterjee, Andrew DeOrio and Valeria Bertacco, "Event-Driven Gate-Level Simulation with GP-GPUs," *IEEE/ACM Design Automation Conference*, July 2009.

Service: Professor Bertacco has a broad and extensive track record of service. Professor Bertacco's outreach to less developed countries is impressive, as evidenced by her semester spent in Addis Ababa, where she taught a graduate class and interacted extensively with students and faculty. She also has been associate editor of *IEEE Transactions on CAD* and currently serves on the editorial board of the *Elsevier Microelectronics Journal*. Her professional service activities also include several conference and workshop assignments. Professor Bertacco has also served in several important roles in the college, including serving on the graduate admissions committee and on the Dean's Advisory Committee on Female Faculty. In addition to her role as gEECS advisor as noted above, Professor Bertacco is a current member of the Computer Engineering Program Committee and a past undergraduate advisor for the Computer Engineering Degree Program. Professor Bertacco's service to the national and international research community in computer science and engineering is a great credit to the department, the college, and the university.

External Reviewers:

Reviewer A: "...she develops novel solutions to important problems, and she approaches them in a manner that is at the same time practical and effective...She is regarded as a leader in the field."

Reviewer B: "Over the past few years, she has become a leader in the areas of chip reliability, diagnosis and repair. She has also made strong contributions to on-chip network design...She more than merits this promotion."

Reviewer C: "I have followed Prof. Bertacco's work through multiple stages of her career and have watched her bloom into a leader in the areas of verification and validation of complex computing systems."

Reviewer D: "...I would rank Prof. Bertacco as probably number one in the subfield of simulation-based and semi-formal verification techniques, and among a handful of the best in the world in the post-silicon debug subfield...I am very supportive of her promotion."

Reviewer E: "Prof. Bertacco has built a very impressive research record and taken on strong leadership roles at this point in her career…She is more than ready to be a full professor in any leading EE/CS department and has my strongest recommendation for the same. If [my institution] had a search in this area, we would have worked very hard to recruit her!"

Reviewer F: "…Prof. Bertacco has built a very impressive research record and taken on strong leadership roles at this point in her career."

Summary of Recommendation: Professor Bertacco has established an exemplary record of teaching, research and service at the University of Michigan. It is with the support of the College of Engineering Executive Committee that I recommend Valeria M. Bertacco for promotion to professor of electrical engineering and computer science, with tenure, Department of Electrical Engineering and Computer Science, College of Engineering.

David C. Munson, Jr.
Robert J. Vlasic Dean of Engineering
College of Engineering

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