

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering.

Approved by the Regents

May 17, 2007

David Blaauw, 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. 1991 University of Illinois, Computer Science, Urbana-Champaign
M.S. 1988 University of Illinois, Computer Science, Urbana-Champaign
B.S. 1986 Duke University, Physics and Computer Science, Durham, NC

Professional Record:

2001 – present Associate Professor (with tenure), Department of Electrical Engineering and Computer Science, University of Michigan
1994 – 2001 Engineering Manager, Advanced Design Technology, Motorola, Inc., Austin, TX
1993 – 1994 Staff Engineer, Semiconductor Systems Design Technology Group, Motorola, Inc., Austin, TX
1992 – 1993 Development Staff Member, IBM Corporation, Endicott, NY

Summary of Evaluation:

Teaching: Professor Blaauw is an excellent educator, both inside and outside of the classroom. He has taught a range of courses, from a large lower-level course on logic design that is required for all undergraduates in computer engineering, to an upper-level undergraduate course on VLSI (very large scale integrated) circuit design, and an advanced graduate course on VLSI that involves a very sizeable design project, to which he brings his considerable industrial experience. He has also introduced and taught special topics courses on two occasions. His performance in the classroom has yielded very high student evaluations, with Q1 scores ranging from 4.22 to 4.79, and Q2 scores between 4.30 and 4.77. He puts significant effort into class preparation and into helping his students learn, and this is highly respected and appreciated by those students.

Professor Blaauw is also an outstanding mentor. Since joining the University in 2001, he has graduated three Ph.D. students, with three more expected to graduate before the end of 2007. In addition, he has advised several Master's Degree students, many of whom have contributed directly to his research projects and publications. He currently has a research group comprised of approximately ten students.

Professor Blaauw's skill and enthusiasm were recognized with the 2005 University of Michigan Henry Russel Award for "Exceptional Scholarship and Conspicuous Ability as a Teacher."

Research: Professor Blaauw is a nationally and internationally renowned leader in the field of low-power robust VLSI circuit design. When he came to Michigan in 2001, he had already established himself as one of the leading researchers in VLSI. At Michigan, he continued the work he had begun at Motorola on timing analysis of digital circuits, signal integrity, and power distribution within integrated circuits. He has also initiated research projects on several new topics, including low power and robust systems. His work on producing robust digital systems that can tolerate the non-determinism that creeps into highly miniaturized logic devices has been particularly influential in the field. He has also recently begun a

cross-disciplinary collaboration with the Kellogg Eye Center to place a very low power processor and pressure sensor in the human eye.

Professor Blaauw is an extraordinarily prolific researcher: in the five years since coming to Michigan, he has published approximately 150 papers in journals and strongly refereed conferences. Moreover, the quality of these papers is very high, with four winning best paper prizes and several more being nominated for them. He has also obtained eight patents and has four more pending. He has raised over \$4,000,000 in research support, counting only his share of collaborative projects. Further evidence of the impact of his work is provided by the large number of industrial seminars that he has been invited to present at corporations including Intel, Philips, ARM, Toyota, Nvidia, and Synopsys, amongst others.

Recent and Significant Publications:

Kanak Agarwal, Mridul Agarwal, Dennis Sylvester, David Blaauw, "Statistical Interconnect Metrics for Physical-Design Optimization," *Transactions on Computer-Aided Design of Integrated Circuits and Systems (T-CAD)*, Vol. 25, No. 7, July 2006 pg. 1273 - 1288.

Rajeev Rao, Harmander Deogun, David Blaauw, Dennis Sylvester, "Bus Encoding for Total Power Reduction using a Leakage-Aware Buffer Configuration," *IEEE Transactions on Very Large Scale Integration Systems (T-VLSI)*, December 2005, pg. 1376-1383.

Bo Zhai, David Blaauw, Dennis Sylvester, Krisztián Flautner, "The Limit of Dynamic Voltage Scaling and Insomniac Dynamic Voltage Scaling," *IEEE Transactions on Very Large Scale Integration Systems (T-VLSI)*, November 2005, pg. 1239-1252.

Dongwoo Lee, David Blaauw, Dennis Sylvester, "Static Leakage Reduction through Simultaneous V_T and State Assignment," *Transactions on Computer-Aided Design of Integrated Circuits and Systems (T-CAD)*, Vol. 24, No. 7, July 2005 Pg. 1014-1029.

Rajeev Rao, Anirudh Devgan, David Blaauw, Dennis Sylvester, "Parametric Yield Estimation Considering Leakage Variability," ACM/IEEE Design Automation Conference (DAC), June 2004, pg. 442-447, Best Paper Nomination.

Dan Ernst, Nam Sung Kim, Shidhartha Das, Sanjay Pant, Toan Pham, Rajeev Rao, Conrad Ziesler, David Blaauw, Todd Austin, Trevor Mudge, "Razor: A Low-Power Pipeline Based on Circuit-Level Timing Speculation," ACM/IEEE International Symposium on Microarchitecture (MICRO), December 2003, pg. 7-18, Best Paper Award.

Service: Professor Blaauw performs extensive professional service, as befits a professor. He is an associate editor for a major IEEE publication; has served multiple times as co-chair of the technical program for one of the leading computer hardware conferences; and, has served as a member of the technical program committee and/or executive committee for dozens of major conferences over the past few years. Internally he has been a chair and member of the EECS Undergraduate Committee, as well as the Graduate Admissions Committee, and he served as an undergraduate advisor.

External Reviewers:

Reviewer A: "He is highly sought after and I am certain that he would have no difficulty in obtaining a faculty position at the rank of full professor at the top 5 Universities in the country."

Reviewer B: "David is an outstanding researcher and has been recognized for his contributions to the fields of high-performance and low-power integrated circuit design methodology and computer-aided design tools."

Reviewer C: "Overall, Prof Blaauw has addressed relevant problems and achieved significant scientific accomplishments."

Reviewer D: "When serving as an external evaluator of a case for promotion to Professor, I look for three things: significant contributions in more than one research area, successful PhD students graduated, and leadership service to one's profession. David clearly gets an A in research contributions. David also gets an A in leadership service to his profession. He has graduated three PhD students to date with a whole slew in the pipeline...they are well prepared and have worked on challenging and forward looking project [sic] for their dissertation research."

Reviewer E: "He is exceptionally creative, with both an uncanny feel for what should work, as well as the drive to make it work."

Reviewer F: "He has become one of the global leaders in the field of advanced integrated circuits and the associated design methodologies, and is bound to do his department pride [sic]."

Reviewer G: "...he is a world-class researcher and is a real asset to any top class University."

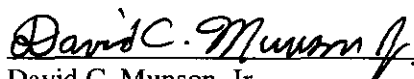
Reviewer H: "He has a broad portfolio of first-rate research publications in this general area [chip-level large-scale analysis and optimization], including some very prominent Best Paper Awards and nominations..."

Reviewer I: "It is particularly notable that his work has been widely cited by other researchers, and much of it has been put into practice in industry..."

Reviewer J: "David's research in low-power design is of exceptional quality. I have seen his work cited extensively in journals and conference papers everywhere."

Reviewer K: "...one of the most outstanding researchers and recognized names in the VLSI CAD and design automation community worldwide."

Summary of Recommendation: Professor Blaauw is a very prominent and very productive computer engineer who has made significant contributions to the field of VLSI CAD. He is an excellent teacher and mentor; and he is a leader who contributes both in external and internal service. It is with the support of the College of Engineering Executive Committee that I recommend David Blaauw 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

May 2007