# VICTOR P. NELSON

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# EDUCATION

- 1978 Ph.D., Electrical Engineering, Ohio State University
- 1977 MS, Electrical Engineering, Ohio State University
- 1971 BSEE, Electrical Engineering, University of Kentucky

# EXPERIENCE

- 2022 2023, Visiting Lecturer, Computer Science, Auburn University
- 2020 present, Visiting Professor, Electrical and Computer Engineering, Auburn University
- 2019 present: Professor Emeritus, Electrical and Computer Engineering, Auburn University
- 2003 2019: Professor, Electrical and Computer Engineering, Auburn University
- 1982 2003: Associate Professor, Electrical and Computer Engineering, Auburn University
- 1978 1982: Assistant Professor, Electrical and Computer Engineering, Auburn University
- 1976 1978: Research Assistant, Communication and Control Systems Lab, Ohio State Univ.
- 1971 1975: Instructor, Physics, Electrical Engineering, U.S. Naval Nuclear Power School

# **REGISTERED PROFESSIONAL ENGINEER**

• State of Alabama (PE 13107), 1978 - present

# SCIENTIFIC AND PROFESSIONAL SOCIETIES

- 2002 present: ABET Volunteer
- IEEE Computer Society, Life Senior Member
- IEEE Education Society, Life Senior Member
- Association for Computing Machinery
- American Society for Engineering Education (ASEE)

### INSTITUTIONAL AND PROFESSIONAL SERVICES

- 2022,2023,2024: Member, IEEE ABET Board of Delegates Representative Nominating Committee
- 2022,2023,2024,2025: Co-Presenter, ABET Workshop, Electrical and Computer Engineering Department Heads Association (ECEDHA) Annual Conference
- 2002 Present: ABET Program Evaluator
- 2012 2017: Commissioner, ABET Engineering Accreditation Commission (EAC)
- 2020 Present, ABET EAC Readiness Reviewer
- 2009 2012, 2018 Present: IEEE Committee on Engineering Accreditation Activities (CEAA)
  - ABET/EAC Program Evaluator Assignment Team, 2018 present. Coordinator 2022-present.
    PEV Mentor Coordinator, 2009-2011
- 2013 2017: Member, ACM/IEEE Computer Society Task Force, *Computer Engineering Curriculum Guidelines (CE2016)*

- 2001 2005: Member, ACM/IEEE Computer Society Task Force, *Computer Engineering Curriculum Guidelines (CE2004)*
- 2001 2019: Assistant Department Chair ECE Department
- 2001 2009, 2011-2019: *Member* ECE Executive Committee (Chair 2011-2019)
- 1999 2000: Interim Associate Dean for Accreditation and Freshman Computing Initiative.
- 1998 2019: ECE Curriculum Committee (Chair, 1999-2010)
- 2011 2017: Director, Auburn Wireless Engineering Undergraduate Program
- 2002 2017: Board of Governors Member, Constitution and Bylaws Chair IEEE Education Society
- 2006 2007: Chair, ECE Division American Society for Engineering Education (ASEE)
- 2003 2010: Associate Editor for Digital Systems IEEE Transactions on Education
- 2001 2004: Member, Auburn Residency Appeals Committee (Chair 2003-2004)

### HONORS AND AWARDS

- 2024: <u>IEEE EAB Meritorious Achievement Award in Accreditation Activities</u> IEEE Educational Activities Board, For two decades of sustained leadership and contributions to Engineering Accreditation and BET with responsibilities for selecting, training and mentoring program evaluators, and developing accreditation criteria for IEEE-related programs.
- 2019: Inducted into University of Kentucky Athletics Hall of Fame.
- 2019: Electrical and Computer Engineering Outstanding Faculty Member.
- 2018: Electrical and Computer Engineering Outstanding Faculty Member.
- 2015: <u>Edwin C. Jones, Jr., Meritorious Service Award</u> IEEE Education Society, For service to the Education Society through maintenance, improvement, and implementation of the by-laws and related activities, for overall service to the society, and for service to all of IEEE, ABET, and ASEE.
- 2013: <u>Distinguished Member Award</u> IEEE Education Society. For leadership on the Board of Governors and By-Laws Committee and related professional contributions through publications, accreditation activities, and as an associate editor.
- 2010: <u>Meritorious Service Award</u> ECE Division of ASEE. In recognition of academic leadership in advancing the electrical and computer engineering profession through scholarship and national service.
- 2005: <u>Outstanding Contribution Award</u> IEEE Computer Society. For the establishment of Computing Curricula 2005 for Computer Engineering.
- 2005: <u>Wireless Educator of the Year</u> Global Wireless Education Consortium (GWAC). Coawarded with Richard Chapman. *For creation of Auburn University Wireless Engineering Program*
- 2004: <u>Graduate School Outstanding Faculty Member</u> Auburn University.
- 2002: Walker Merit Teaching Award Auburn University, College of Engineering.
- 2000: Birdsong Merit Teaching Award Auburn University, College of Engineering.
- 1995: Faculty Honoree Camp War Eagle Auburn University.
- 1984: ASPE Regional Young Engineer of the Year State of Alabama.
- 1983: <u>Honorable mention C. Holmes Macdonald Outstanding Teaching Award for Young</u> <u>Electrical Engineerin</u> - Eta Kappa Nu.
- 1971: NCAA Post Graduate Scholarship NCAA/University of Kentucky.

### PROFESSIONAL DEVELOPMENT ACTIVITIES

• 2009: ABET IDEAL Workshop

### **RESEARCH INTERESTS**

• Embedded systems design

- FPGA-based Systems on Chip (SoC)
- VLSI design and test
- Microprocessor applications
- Computer-aided design and test of digital systems

# **Research Grants:**

- B. Thurow & S. J. Reeves (PIs) "Low-Latency Embedded Vision Processor (LLEVS) Phase II STTR," Perceptive Innovations, Inc/U. S. Air Force, 27 months, AU portion: \$190,741, (V. Nelson participation (0%/5%): January-August, 2017)
- C. Stroud & **V. Nelson**, "BitStream Verification Tool Study", National Security Agency, \$361,311, 2006-10, (25%/50%). \$148,421, August 20011 December 2012 (50%/50%)
- F. Dai, C. Stroud and V. Nelson, Self-Healing Mixed-Signal SoCs, \$1,093,779, BAE Systems, subcontract under DARPA grant for \$9,382,485, 2009-12 (10%/10%)
- V. Agrawal, F. Dai, **V. Nelson**, A. Singh and C. Stroud, Collaborative Research: Electronic Testing Education, Research and Training Infrastructure, National Science Foundation, \$1,099,876, 2007-11 Auburn portion = \$599,995, plus \$43,000 REU Supplement awarded for 2009-11 (20%/20%)
- "Wafer-Oriented Trend Analysis for VLSI Test Optimization", with Adit D. Singh, National Science Foundation, NSF-CCR-9912389, \$315,117, September 1, 2000 August 31, 2003.
- "NOTES (Novel Test Strategies)", U.S. Spain Science and Technology Program Joint Research Project, with A.D. Singh (Auburn) and J. Figueras (Universitat Politecnica De Catalunya). \$25,670, June 1, 1999 May 31, 2000.
- An Integrated Model for Evaluating Test Effort, Product Quality and Cost Trade-off in Microelectronics Manufacturing", Co-principal investigator with A.D. Singh and R.W. Johnson, DARPA, \$529,764, March 1995-March 1997.
- "Fault Tolerance and Architectural Reliability of Distributed Processing Systems" by the U.S. Army Ballistic Missile Defense Advanced Technology Center. Six separate awards from July 1979 through September 1986. Total amount: \$648,000.
- "Reconfigurable, Distributed Digital Filters" by the Auburn Engineering Experiment Station" Award: \$14,020, October 1979 to September 1980.
- "Hardware Upgrade to a Fault Tolerance Distributed Computing Laboratory" by the U.S. Army Research Office, Award: \$174,085, June 1982 to May 1985.
- "Microcomputer Control of a Home Appliance Network" by Whirlpool Corporation. Four Awards from September, 1983 through December 1987. Total amount: \$321,065.
- "Parallel Logic Simulation and Fault Analysis of Digital Circuits" by Cray Research, Inc., Award: \$19,503, January 1988 to December 1988.

# Instructional Support Grants:

- "A VLSI Computer-Aided Design Laboratory Equipment Support", National Science Foundation, \$99,510, March 1990 to August 1991.
- Arranged donation of approximately \$6 million of computer-aided design software from Mentor Graphics, Xilinx, and Altera.
- Arranged donation of approximately \$1.2 million of computer-aided design software from Intergraph/Dazix.

### PRINCIPAL CONTRIBUTIONS IN AREA OF SPECIALIZATION:

### Courses Taught:

CSE220 - Fundamentals of Structured Programming \* CPSC3300 – Computer Organization and Assembly Language Programming \* EE306 - EE Lab VI (Computer-Controlled Motor) \* EE3040 – Electrical System Design Lab EE3050 – Embedded System Design Lab \*

EE330/221/2200 - Design and Analysis of Logic Circuits EE335/222/2220 - Computer Org. and Assv. Lang. Prog. EE401/402, ELEC4000 - Senior Design Projects EE4200 - Digital Systems Design \* EE430 - Introduction to Microprocessor Systems EE520 - Introduction to Computer Graphics \*\* EE521 - Artificial Intelligence and Robotics \*\* EE523 - Fault Diagnosis of Digital Systems EE523/5250/6250 - Computer-Aided Digital Circuit Design \* EE524/6210 - Personal Computer Hardware Design \* EE525 - Microcomputer Laboratory \* EE527 - Systems Programming EE528 - Compiler Design EE530 - Computer Engineering Seminar EE530/CSE530/5200/6200 - Computer Architecture and Design \* EE531/CSE531 - Bit-Slice, Microprogrammed CPU Design EE590/5260/6260 - Embedded Computing Systems \* EE590 - Introduction to Multiprocessor Systems \* EE621 - Switching Theory I EE626/CSE626 - Computer Architecture I EE633/CSE633 - Special Purpose Computer Systems EE636/CSE636 - Computer Networks \*\* EE642/CSE642 - Fault Tolerant Computing \*\* EE576/677/678/776 - VLSI Design I & II \* ELEC7970 - Standard Cell IC Design \* EE690 - 32-Bit Microprocessors \* \* - new courses developed, \*\*- old courses redesigned

### Contributions to Curriculum Development and Administration:

- Undergraduate Program Director/Curriculum Committee Chair, Wireless Engineering (2012-2017)
- Chair, ECE Curriculum Committee (1998-2010)
- Member & Chair, ECE Executive Committee
- Developed proposals for Bachelor of Computer Engineering and Bachelor of Wireless Engineering programs at Auburn
- Member, College of Engineering Curriculum Committee
- Member, College of Engineering ABET EC-2000 Committee
- ABET Program Evaluator, 2002 present
- ABET Engineering Accreditation Commission, 2012 2017
- Member, IEEE Computer Society and ACM Joint Task Forces that developed "Computing Engineering 2004" (CE2004) and "Computer Engineering 2016" (CE2016) Computer Engineering Model Curricula.
- Served as chair of the initial Computer Science and Engineering Curriculum Committee.
- Interim Associate Dean for Assessment and the Freshman Computing Initiative (1999-2000).
- Coordinator, ECE Department SACS/ABET accreditation activities
- Director, ECE Digital Stem (since 1979)
- Established VLSI Computer-Aided Design and Test Laboratory
- ECE Graduate Program Coordinator (January 1994-2008, 2012)
- Directed 32 completed Master's Theses and 6 PhD dissertations

#### MAJOR PUBLICATIONS

#### **TEXTBOOKS AND BOOK CHAPTERS:**

- <u>Digital Logic Circuit Analysis and Design, 2<sup>nd</sup> Ed</u>, (eText and Paper), V.P. Nelson, B.D. Carroll, H.T. Nagle, and J.D. Irwin. Pearson Education, Inc., Hoboken, NJ, 2021.
- <u>Digital Logic Circuit Analysis & Design</u>, V.P. Nelson, H.T. Nagle, B.D. Carroll, and J.D. Irwin. Prentice-Hall,Inc., Englewood Cliffs, NJ, 1995.
- Victor P. Nelson, "Computer Architecture" chapter 23, <u>The Industrial Electronics Handbook:</u> <u>Fundamentals of Industrial Electronics</u>, 2<sup>nd</sup> Ed., B.M. Wilamowski and J.D. Irwin, Eds., CRC Press (March 2011) (22 pages 100% participation)
- "Computer Architecture", V.P. Nelson, Chapter 3, <u>The Handbook on Industrial Electronics</u>, J. David Irwin, editor, pp. 48-72, CRC Press, 1997.
- "MCM Testing", V.P. Nelson, Chapter 15, <u>Handbook of Multichip Module Technology</u>, ISHM, P Garrou & I Turlik, eds., pp. 15.1-57, 1998.
- "Techniques in Fault-Tolerant Computing", <u>Control and Dynamic Systems</u>, Vol. 60, C.T. Leondes, Editor, Academic Press, 1994, pp. 329-365.
- Fault Tolerant Computing, V.P. Nelson & B.D. Carroll, IEEE Computer Society Press, 1987.
- <u>74AS-EVM-16 Microprogramming ASISP Processors, Laboratory Manual No. 1</u>, Texas Instruments, Inc., 1987.

#### JOURNAL PAPERS:

- Barnett, T.S., Singh, A.D., and Nelson, V.P., "Extending Integrated-Circuit Yield Models to Estimate Early-Life Reliability, <u>IEEE Transactions on Reliability</u>, Vol. 52, No. 3, Sep. 2003, pp 296-300.
- Knight, C.G., Singh, A.D., and V.P. Nelson, "An IDDQ Sensor for Concurrent Timing Error Detection", <u>IEEE Journal of Solid State Circuits</u>, Vol. 33, No. 10, October 1998, pp. 1545-1550.
- Wang, C.J., Wu, C., and V.P. Nelson, "A Study of the Generalized Multiple Bus-Connected Parallel Computer", <u>The Computer Journal</u>, Vol. 35, 1992, pp. A089-A094.
- Kutz, L.J. and V.P. Nelson, "Remote Control of a Robot in a MAP Network", <u>International Journal of</u> <u>Advanced Manufacturing Technology</u>, Vol. 6, 1991, pp.317-327, Springer-Verlag London,Ltd.
- Wang, C.J. and V.P. Nelson, "Petri Net Performance Modelling of a Modified Mesh-Connected Parallel Computer", <u>Parallel Computing</u>, Vol. 17, pp. 75-84, 1991.
- Nelson, V.P., "Fault Tolerant Computing: Fundamental Concepts", <u>IEEE Computer</u>, Vol. 23, No. 7, pp 19-25, July 1990. Also included in <u>Readings in Ultra-Dependable Distributed Systems</u>, by N. Suri, C.J. Walker, and M.M. Hugue, from IEEE Computer Society Press.
- Wang, C.J., Wu, C.H., and V.P. Nelson, "A Comparative Architectural Study of Three MIMD Computing Surfaces", <u>IEE Proceedings</u>, Vol. 137, Pt. E, No. 4, pp. 261-268, July 1990.
- Bisbee, C.R. III, and V.P. Nelson, "Failure dependent bandwidth in shuffle/exchange networks", <u>IEEE</u> <u>Transactions on Computers</u>, Vol. C-37, No. 7, July 1988, pp 853-858.
- Thanawastien, S. and V.P. Nelson "Interference analysis of shuffle/exchange networks", <u>IEEE</u> <u>Transactions on Computers</u>, Vol. C-30, No. 8, Aug. 1981, pp 545-555.
- Nelson, V.P. and Fellows, H.L.,Jr., "A microprocessor-based real-time amusement ride controller", <u>IEEE Micro</u>, Vol. 1, No. 3, August 1981, pp 13-22. Also included in <u>Microprocessors & Microcomputers</u>, J.T. Cain, Ed., IEEE Computer Society Press, 1984, pp. 327-336.
- Nagle, H.T., Jr. and V.P. Nelson "Implementing digital filters on 16-bit microcomputers", <u>IEEE MICRO</u>, Vol. 1, No. 1, Feb. 1981, pp 23-41.
- Nelson, V.P. and H.T. Nagle, Jr. "Comparison of 16-bit microcomputer performances in digital filtering applications", <u>IEEE MICRO</u>, Vol. 1, No. 1, Feb. 1981, pp 32-40.
- West, G.L., Nagle, H.T., Jr. and V.P. Nelson "A microcomputer- controlled testing system for digital integrated circuits", <u>IEEE Transactions on Industrial Electronics and Control Instrumentation</u>, Vol. IECI-27, No. 4, Nov. 1980, pp 279-283.
- Bray, J.M., Nelson. V.P., deMaine, P.A.D. and Irwin, J.D., "Data- Compression Techniques Ease

Storage Problems", <u>Computer Design</u>, Vol. 24, No. 14, Oct. 15, 1985, pp. 102-106.

#### CONFERENCE PAPERS/WORKSHOPS:

- Nelson, V. P, and Shay, Lisa A.,, "ABET Workshop", Electrical and Computer Engineering Department Heads Association (ECEDHA) Annual Conference, March 15, 2024, Tucson, AZ
- Nelson, V. P, and Shay, Lisa A.,, "ABET Workshop", Electrical and Computer Engineering Department Heads Association (ECEDHA) Annual Conference, March 17, 2023, Santa Ana Pueblo, NM
- Nelson, V. P, and Shay, Lisa A.,, "ABET Workshop", Electrical and Computer Engineering Department Heads Association (ECEDHA) Annual Conference, March 25, 2021, New Orleans, LA
- Nelson, V. P., *"Introduction to SoC Design with Arm Education Media",* Webinar sponsored by Arm Education Media and Element 14, May 14, 2019
- Nelson, V.P., "*Introduction to SoC Design*", Arm Higher Education Program on-line course. Prepared and recorded 11 lectures in Cambridge, England, Nov. 18-21, 2018.
- Nelson, V. P. and Shockley, J., *"Basic System-on-Chip (SoC) Design Education Kit from ARM University Program"*, Sponsor Tech Session for ARM Ltd, Cambridge UK and Numato Lab, Bangalore, India, ASEE Annual Conference, Salt Lake City, UT, June 26, 2018.
- Nelson, V.P. and Shockley, J., "SoC Design around ARM Cortex-M0 for Energy-efficient IoT Applications, Techniques and Demonstrations", Half-day workshop, Georgia Tech Internet-of-Things Summer School, Atlanta, GA, August 8, 2018.
- Nelson, V.P. and Shockley, J., *"Basic System-on-Chip (SoC) Design Education Kit from Arm"*, Workshop, Centro Universitario FEI (Faculdade de Engenharia Industrial), Sao Paulo, Brazil, August 13, 2018.
- Nelson, V.P. and Shockley, J., *"Basic System-on-Chip (SoC) Design Education Kit from Arm"*, Workshop, "Insper Tech Day with Arm", Insper (Institute of Education and Research), Sao Paulo, Brazil, August 13, 2018.
- Nelson, V.P. and X. Iturbe, "Building ARM Cortex-M Powered Internet of Things Applications: from design to Deployment", Tutorial M06, DATE 2018, Dresden, Germany, March 29, 2018.
- Nelson, V.P. "Basic System-On-Chip (SoC) Design Education Kit from ARM University Program", Sponsor Tech Session by ARM and Numato lab, ASEE Annual Conference, Columbus, OH, June 26, 2017.
- Nelson, V.P., "Efficient Embedded System Design Education Kit from ARM University Program", Sponsor Tech Session by ARM and ST Microelectronics, ASEE Annual Conference, Columbus, OH, June 27, 2017.
- Nelson, V.P. and X. Iturbe, "SoC Design Around ARM Cortex-M for Energy-Efficient IoT Applications", VLSI for IoT Workshop, DATE 2017, Lausanne, Switzerland, March 31, 2017.
- Nelson, V.P."Teaching Embedded Systems Design with the ARM University Program Lab-in-a-Box (LiB) Using the ST STM32F4Discovery", Sponsored Tech Session Presented by ARM and ST Microelectronics, ASEE Annual Conference, Indianapolis, IN, June 16, 2014.
- Nelson, V.P., Impagliazzo, J. Durant, E., Hughes, H., "CE2016: Updated Curricular Guidelines for Computer Engineering", Frontiers in Education Conference (FIE), Oct. 18-21, 2017, Indianapolis, IN.
- Nelson, V. P., Iturbe, X., "SoC Design around ARM Cortex-M0 for Energy-efficient IoT Applications, Techniques and Demonstrations", VLSI for IoT Workshop, Design, Automation and Test in Europe (DATE) 2017, Lausanne, Switzerland, March 31, 2017.
- Nelson, V. P., "Basic System-on-Chip (SoC) Design Education Kit from ARM University Program", Sponsor Tech Session for ARM Ltd, Cambridge UK and Numato Lab, Bangalore, India, ASEE Annual Conference, Columbus, OH, June 26, 2017.

- Nelson, V. P., "Efficient Embedded Design Education Kit from ARM University Program", Sponsor Tech Session for ARM Ltd, Cambridge UK and STMicroelectronics, Geneva, Switzerland, ASEE Annual Conference, Columbus, OH, June 27, 2017
- Victor P. Nelson, "Efficient Embedded Systems Design and Programming", ARM University Program Webinar, recorded in Cambridge, England, Nov. 21-22, 2016. (Webinar to be released by ARM in 2017.)
- E. Durant, J. Impagliazzo, S. Conry, R. Reese, H. Lam, V. Nelson, J. Hughes, W. Lieu, J. Lu, and A. McGettrick, "CE2016: Updated Computer Engineering Curriculum Guidelines" Frontiers in Education (FIE) Conference, Oct. 22-24,2015, El Paso, Texas.
- E. Durant, J. Impagliazzo, S. Conry, R. Reese, H. Lam, V. Nelson, and J. Hughes, "CE2016 Update (Panel Discussion)," American Society for Engineering Education (ASEE) Annual Conference, June 16, 2015, Seattle, WA.
- E. Durant, J. Impagliazzo, S. Conry, R. Reese, M. Thornton, H. Lam, and V. Nelson, "Setting the stage for CE2016: A revised body of knowledge," Frontiers in Education (FIE) Conference, October 22,2014, Madrid, Spain.
- E. Durant, J. Impagliazzo, S. Conry, R. Reese, H. Lam, V. Nelson, and J. Hughes, "CE2016 Update (Panel Discussion)," American Society for Engineering Education (ASEE) Annual Conference, June 16, 2015, Seattle, WA.
- V. Nelson (Speaker and workshop developer). Sponsor Technical Session, Presented by ARM University Program and STMicroelectronics. "Lab-in-a-Box (LiB) with the STM43F4-Discovery platform and Keil MDK-ARM Tools", ASEE Annual Conference, Indianapolis, IN, June 15-18, 2014.
- Victor P. Nelson and John Y. Hung, "Structuring a System Design Laboratory Course to Facilitate Outcomes Assessment", ASEE Annual Conference, San Antonio, TX, June 10-13, 2012.
- Victor P. Nelson, John Y. Hung, Alex Wong, "Instrumentation for Embedded Control Systems Design: Incorporating the Digilent Electronics Explorer Board", ASEE Annual Conference, San Antonio, TX, June 10-13, 2012.
- G.Starr, J.Qin, B.Dutton, C.Stroud, F.Dai & V.Nelson, "Automated Generation of BIST and Measurement Circuitry for Mixed-Signal Circuits and Systems", IEEE International Symp. on Defect and Fault Tolerance in VLSI Systems, October, 2009
- J. Yao, B. Dixon, C. Stroud, and V. Nelson, Built-In Self-Test of Programmable Interconnect in Virtex-4 FPGAs, IEEE Southeastern Symposium on System Theory, 2009.
- G. Starr, J. Wersinger, R. Chapman, L. Riggs, **V. Nelson** and C. Stroud, Application of Embedded Systems in Low Earth Orbit for Measurement of Ionospheric Anomalies, Proc. International Conf. on Embedded Systems and Applications, pp. 9-15, 2009 (5%)
- Nitin Yogi and Victor P. Nelson, "IEEE P1500 compliant Modified Bidirectional Boundary Scan Cell for SoC testing", IEEE 1<sup>4th</sup> North Atlantic Test Workshop, Essex Junction, VT, May 11-13, 2005.
- David L. Soldan, Victor P. Nelson, Andrew McGettrick, John Impagliazzo, Pradip Srimani, Mitchell D. Theys, Joseph L.A. Hughes, "Development of the Model Curriculum for Computer Engineering", Proc. 34th ASEE/IEEE Frontiers in Education Conference, Session F3B, Oct. 20-23, 2004, Savannah, GA.
- Victor P. Nelson, David L. Soldan, Andrew McGettrick, John Impagliazzo, Pradip Srimani, Mitchell D. Theys, Joseph L. A. Hughes, "Computing Curriculum Computer Engineering (CCCE) A Model for Computer Engineering Curricula in the Next Decade", Proc. 2004 American Society for Engineering Education Annual Conference and Exposition, Session 2532, June 20-23, 2004, Salt Lake City, Utah.
- Victor P. Nelson, Richard O. Chapman, Richard C. Jaeger, "Auburn University's Baccalaureate Program in Wireless Engineering", ASEE Southeast Section Conference, April 4-6, 2004, Auburn. AL.
- Victor P. Nelson, David L. Soldan, Andrew McGettrick, John Impagliazzo, Pradip Srimani, Mitchell D. Theys, Joseph L. A. Hughes<sup>,</sup> "Computing Curriculum - Computer Engineering (CCCE)- A Model For Computer Engineering Curricula in the NextDecade", ASEE Annual Conference and Exposition, June, 2004, Session 2532.
- Victor P. Nelson, Mitchell D. Theys, Alan Clements, "Computer Architecture and Organization in the Model Computer Engineering Curriculum", Frontiers in Education Conference, FIE-2003, Boulder, Colorado, November, 2003.

- Victor P. Nelson, Richard O. Chapman, Richard C. Jaeger, "A New Baccalaureate Program in Wireless Engineering", Proc. ASEE Annual Conference and Exposition, June 22-25, 2003, Nashville, TN, Paper 2127.
- Joseph L. Hughes, Pradip Srimani, Victor P. Nelson, "Computing Curricula 2001: Computer Engineering", 2002 ASEE Annual Conference and Exposition, Montreal, Quebec, Canada, June 16-19, 2002.
- Thomas S. Barnett, Adit D. Singh, Victor P. Nelson, "Estimating Burn-In Fall-Out for Redundant Memory", accepted for presentation at International Test Conference, Oct. 28-Nov 2, 2001, Baltimore, MD.
- Thomas S. Barnett, Adit D. Singh, Victor P. Nelson, "Yield-Reliability Modeling for Fault Tolerant Integrated Circuits", accepted for presentation at Defect and Fault Tolerance in VLSI", 2001.
- Thaddeus Roppel and Victor P. Nelson, "Web-Enhanced Instruction and Assessment for a First Course in Electrical and Computer Engineering", 2001 ASEE Annual Conf. & Exposition, June 24-27, Albuquerque, NM.
- Thomas S. Barnett, Adit D. Singh, Victor P. Nelson, "Burn-In failures and Local Region Yield; An Integrated Yield/ Reliability Model", VLSI Test Symposium, Marina del Rey, CA, May 2001.
- Knight, C.G., Singh, A.D., and V.P. Nelson, "A Concurrent Timin Error Detection Circuit for CMOS", *Proc.* 3<sup>rd</sup> *IEEE Int'l On-Line Testing Workshop*, Crete, Greece, July 1997, pp. 70-74.
- Nelson, V.P. and A.D. Singh, "Yield, Defect Level and Cost Tradeoffs in MCM Substrate and Assembly Testing", *Proc. MCM Test III Advanced Technology Workshop*, Napa Valley, CA, Sep. 15-18. 1996.
- Williamson, S.T., A.D. Singh, and V.P. Nelson, "Fault and Yield Modeling of MCMs for Automotive Applications@, *Proc. 5th International Conference on Multichip Modules*, Denver Colorado, April, 1996.
- Nelson, V.P. and A.D. Singh, "MTAP: A Test Advisor Program@, *MCM Test II Advanced Technology Workshop*, Napa Valley, CA, Sep. 10-13 1995.
- Nelson, V.P. and A. Flint, "Test Development of a Microcontroller-Based MCM for Automotive Applications", Proc. the 4th International Conference on Multichip Modules, Denver Colorado, April 19-21, 1995, pp. 114-119.
- Kutz, L.J., and V.P. Nelson, "Remote Control of a Robot in a MAP Network", <u>Proc. AUTOFACT '89</u>, Detroit, MI, Oct. 30-Nov. 2, 1989.
- C.J. Wang, V.P. Nelson, and C.H. Wu, "Performance Modelling of the Modified Mesh-Connected Parallel Computer", <u>Proc. 9th Int'l Conf. on Distributed Computing Systems</u>, Newport Beach, CA., June 1989, pp 490-497.
- C.J. Wang, C.H. Wu, and V.P. Nelson, "Stochastic and Deterministic Modeling of Message Passing Parallel Computers", <u>Proc. 1st Ann. IEEE Symposium on Parallel and Distributed Processing</u>, Dallas, TX, May 1989, pp. 98-105.
- C.J. Wang and V.P. Nelson, "An augmented torus processing surface for MIMD", <u>Proc. Phoenix Conf.</u> on <u>Computers and Communications</u>, Scottsdale, Arizona, March 1989, pp. 97-100.
- S. Qian, V.P. Nelson, and J.M. Morris, "TMS320-Based Digital Communication Network in the AC Power Line", <u>Proc. 19th Annual Pittsburgh Conf. on Modeling and Simulation</u>, May 1988, pp xxx-xxx.
- Wang, C.J., Wu, C., and V.P. Nelson, "A Study of the Generalized Multiple Bus-Connected Parallel Computer", <u>Proc. 2nd Symp. on the Frontiers of Massively Parallel Computation</u>, Fairfax, VA, October 1988, pp.541-544.
- S. Thanawastien, J. Lo, and V.P. Nelson, "A reconfigurable multiple-SIMD/MIMD system for multiplase space-based missions", <u>Proc. 7th Ann. Int'l Phoenix Conf. on Computers and Communications</u>, Scottsdale, AZ, March 1988, pp 62-68.
- C.J. Wang and V.P. Nelson, "A Reconfigurable Fault-Tolerant Parallel Computer Wafer Scale Approach", <u>Proc. IEEE Southeastcon</u>, Tampa, FL, April 1987, pp. 216-220.
- C.J. Wang and V.P. Nelson, "Dynamic Reconfiguration Algorithms for Fault-Tolerant Multiprocessor Arrays", <u>Proc. 6th Ann. International Phoenix Conf. on Computers and COmmunications</u>, Phoenix, AZ, Feb. 1987, pp. 94-98.
- Hsu, Y.J., Nelson, V.P., and R.C. Jaeger, "A random self-test structure for LSI/VLSI chips", <u>Proc. 7th</u> <u>Biennial UGIM Symposium</u>, Rochester, NY, June 9-11, 1987.
- Y.J. Hsu, V.P. Nelson, and R.C. Jaeger, "A Gate Array Design of a Shuffle/Exchange Network

Switching Element", Proc. Sixth UGIM Symp., Auburn, AL, June, 1985, pp. 158-164.

- V.P. Nelson, "Integration of Personal Computers into Electrical Engineering Curricula", <u>Proc. 17th</u> <u>Symp. on System Theory</u>, Auburn, AL, March 1985, pp. 140-144.
- S. Thanawastien and V.P. Nelson, "Diagnosis of Multiple Faults in Shuffle/Exchange Networks", <u>Proc.</u> <u>1984 Real Time Systems Symp.</u>, Austin, TX, Dec. 1984.
- S. Thanawastien and V.P. Nelson, "Task Reassignment in Shuffle/Exchange Networks", <u>Proc. 4th</u> <u>Ann. Phoenix Conf. on Computers and Communications</u>, Phoenix, AZ, March 1985.
- S. Thanawastien, V.P. Nelson, and S. Tantaratana, "Optimal Fault Detection Test Sequences for Shuffle/Exchange Networks", <u>Proc. 13th Ann. Symp. on Fault Tolerant Computing</u>, Milano, Italy, June, 1983, pp.442-445.
- Nelson, V.P. and R.L Fields, "Hardware and Software Development of the FTDCL Delta-Connected Multiprocessor", <u>Proc. Southeast Symp. on System Theory</u>, April 1982, Blacksburg, VA., pp. 273-276.
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- David L. Soldan, Victor P. Nelson, et. al., "Computer Engineering 2005 Curriculum Guidelines for Undergraduate Degree Programs in Computer Engineering", Computing Curricula for Computer Engineering Joint Task Force, submitted to IEEE Computer Society and Association for Computing Machinery, December 2004.
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- Nelson, V.P. "Applications of fuzzy automata to determining the orientation of three dimensional objects from live images", MS Thesis, Ohio State University, 1977.
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- Nelson, V.P., et.al. "Hardware Approaches to Fault-Tolerant Multiprocessor Design for Ballistic Missile Defense", Auburn Univ. Tech. Report AU-EE-86-0050-1, August 1986.

# EXTENSION AND MAJOR PROFESSIONAL ACTIVITIES

- 2009 2012, 2018 Present: IEEE Committee on Engineering Accreditation Activities (CEAA)
- ABET Program Evaluator for IEEE, 2002-present.
- IEEE Education Society Board of Governors, 2002-2008, 2009-2017. Bylaws Committee Chair, 2004-2017.
- Commissioner, ABET Engineering Accreditation Commission, 2012 2017.
- Member, ACM/IEEE Computer Society Task Force Computer Engineering Curriculum 2016 (CE2016), 2013 – present.
- Secretary/Treasurer (2004-2005), Program Chair (2005-2006), Chair (2006-2007), ASEE ECE Division.
- Associate Editor, IEEE Transactions on Education, 2003-2010.
- Member, IEEE Computer Society "Computing Curriculum: Computer Engineering (CE2004) Task Force", defining the model Computer Engineering Curriculum for Computing Curriculum 2001.
- Judge and Submission Evaluation Team leader for the IEEE Computer Society International Design Contest (CSIDC), 2002, 2003, 2010.
- Panel Member, "New Trends in EE Education", ECEDHA (ECE Department Heads) Meeting, March, 2002.
- Panel Member, "Computing Curriculum 2001 Computer Engineering", Frontiers in Education Conference, Oct. 10-13, Reno, NV.
- Program committee member, VLSI Test Symposium (1997-99)
- Program committee member, MCM Test Workshop (1996-98)
- Tutorial (with B.D. Carroll), "Introduction to Fault Tolerant Computing", 3rd Int'l Conf. on Distributed Computing, Miami, FL, Oct. 22, 1982. Repeated at AIAA Workshop on Fault Tolerant Computing for Aerospace Systems, Ft. Worth, TX, Nov. 8, 1982 and in Berlin, West Germany in May, 1984 and September 1985.
- Director of Auburn Extension Service Short Course "Introduction to Microprocessors".
- Program Chairman, First Symposium on Distributed Data Acquisition and Control, Miami, FL, December 1980.
- Member of the Editorial Board of <u>IEEE MICRO</u> Journal.
- Invited participant: Distributed Systems Workshop on Fault Tolerant/ Survivable Systems for SDI, RADC, July 1986.

### CONSULTING EXPERIENCE

- ABET accreditation consultant, several universities, (2006, 2008, 2018, 2019).
- Consultant to Arm University Program, Cambridge, England (2018, 2019).
  - Designed and presented webinar *"Introduction to SoC Design with Arm Education Media"*, Sponsored by Arm Education Media and Element 14, May 14, 2019.
  - Revised ARM<sup>®</sup>-based System-on-Chip Design Lab-in-a-Box to use the low-cost Numato Labs Mimas V2 FPGA Development board (2018).
  - Developed and updated half-day tutorial/workshop "ARM Cortex-M Powered Internet of Things: A Hands-On Experience", presented in Dresden, Germany, Salt Lake City, Georgia Tech, and Sao Paulo, Brazil (2018).
  - Developed and recorded 11 lectures for Arm Higher Education Program on-line course *"Introduction to SoC Design"* (November, 2018).
- Consultant to Motorola (Austin, Phoenix) and Chrysler (Huntsville). Modeling and simulation of automotive multichip modules. (1995-96)
- Consultant to several companies on microprocessor applications and fault tolerant system architectures for military, SDI, and aerospace applications.