

## Curriculum Vitae

### Ronald J. Hayne, Ph.D.

Colonel, U.S. Army (Retired)  
Professor of Electrical and Computer Engineering  
The Citadel  
171 Moultrie Street  
Charleston, SC 29409  
(843) 953-2281  
ron.hayne@citadel.edu

### Education:

Ph.D. Electrical Engineering, University of Virginia	1999
M.S. Electrical Engineering, University of Arizona	1987
B.S. Computer Science, United States Military Academy	1980

### Military Education:

Interservice Space Intelligence Operations Senior Course Command and General Staff College	2000 1994
Materiel Acquisition Management Course	1993

### Academic Appointments:

Professor Department of Electrical and Computer Engineering The Citadel, Charleston, SC Responsible for development, preparation, and presentation of electrical engineering instruction. Coordinates computer engineering curriculum.	2006 - present
Adjunct Professor Department of Electrical and Computer Engineering George Mason University, Fairfax, VA Responsible for development, preparation, and presentation of computer engineering instruction, including laboratory program.	2001 - 2006
Associate Professor / Director, Computer Engineering Group Department of Electrical Engineering and Computer Science United States Military Academy, West Point, NY Responsible for development, preparation, and presentation of electrical engineering instruction in upper-division courses. Coordinated computer engineering curriculum.	1987 - 1991

### Professional Experience:

Director, Operations Support Group Defense Acquisition University, Ft. Belvoir, VA Responsible for information technology, audio-visual, human resources, student services, publishing, facilities, contracting, logistics, and library support for students, staff, and faculty at regional campuses in VA, MD, OH, AL, and CA.	2002 - 2006
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Chief, Information Technology and Analysis Division 1999 - 2002  
National Security Space Architect, Fairfax, VA  
Responsible for information technology and analysis support for the organization across the Department of Defense and the Intelligence Community.

Air Defense Artillery Technology Manager 1994 - 1996  
Weapons Technology, Army Research Laboratory, Aberdeen Proving Ground, MD  
Responsible for matching operational requirements with technology development, serving as a two-way link between the user and developmental communities.

Executive Officer / Research and Development Staff Officer 1991 - 1993  
U.S. Army Space and Strategic Defense Command, Arlington, VA  
Executive assistant to 3-star Commanding General. Coordinated the Command's Science and Technology Master Plan.

### **Honors and Awards:**

C.A. Medbery Award for Dedication to Teaching	2019
Lawton Ellis Electrical and Computer Engineering Teaching Award	2018
IEEE Senior Member	2012
Lawton Ellis Electrical and Computer Engineering Teaching Award	2011
Defense Superior Service Medal	2006
Defense Meritorious Service Medal	2002
Joint Service Commendation Medal	2001
National Reconnaissance Office Director's Team Award	2001
Meritorious Service Medal	1996
Army Research Laboratory Enhancement Award	1996
Meritorious Service Medal	1993
Honor Graduate, Materiel Acquisition Management Course	1993
Meritorious Service Medal	1991
Meritorious Service Medal	1985
Distinguished Cadet (Top 5% of class), USMA	1980

### **Professional and Honor Societies:**

Institute of Electrical and Electronics Engineers (IEEE), Senior Member  
American Society for Engineering Education (ASEE)  
Military Officers Association of America  
Tau Beta Pi Engineering Honor Society  
Eta Kappa Nu Electrical Engineering Honor Society  
Phi Kappa Phi Honor Society

### **Courses Taught at The Citadel:**

ELEC 105 Engineering Fundamentals II (course director)  
Spring 2009 - 2010  
ELEC 106 Fundamentals of Electrical Engineering (course developer)  
Fall 2012, 2014, 2015, 2017  
ELEC 206 Computer Applications for Electrical Engineers (course director)  
Spring 2007

ELEC 302 Electrical Machinery Laboratory  
Spring 2007, 2010, 2018  
ELEC 308 Elements of Electrical Engineering (course director)  
Summer 2009, 2013  
ELEC 311 Digital Logic and Circuits (course developer)  
Fall 2006 - 2015, 2017 - 2018  
ELEC 313 Electronics Laboratory (course director)  
Fall 2007, 2009 - 2013, 2018  
ELEC 330 Digital Systems Engineering (course developer)  
Spring 2007 - 2019  
ELEC 413 Advanced Topics in Electrical Engineering (course developer)  
Summer 2011  
ELEC 418 Advanced Digital Systems (course developer)  
Spring 2008 - 2019  
ELEC 428 (413) Computer Architecture (course developer)  
Summer 2012, 2014 - 2019  
ELEC 675 Computer Architecture (course developer)  
Summer 2016 - 2019  
HONR 400 Honors Directed Research Project  
Fall 2007, Spring 2010

**Courses Taught at George Mason University:**

ECE 331 Digital Systems Design (course developer)  
Fall 2001 - 2004, Spring 2002 - 2006  
ECE 332 Digital Electronics and Logic Design Lab (course director)  
Fall 2001 - 2004, Spring 2002 - 2006  
ECE 445 Computer Organization (course developer)  
Fall 2005

**Courses Taught at the United States Military Academy:**

EE 302 Introduction to Electrical Engineering I  
Fall 1987  
EE 362 Introduction to Electrical Engineering II  
Spring 1988  
EE 365 Digital Computer Logic (course developer)  
Fall 1988 - 1991, Spring 1989 - 1991  
EE 475 Computer Architecture (course developer)  
Spring 1990 - 1991

**Publications:**

Book Chapters:

Hayne, R.J., "Design of an Instructional Processor," in Roth, C.H. and John, L.K., *Digital Systems Design Using VHDL*, Third Edition, Cengage Learning, Boston, MA, 2018. [Online]. Available:  
[http://academic.cengage.com/resource\\_uploads/downloads/1305635140\\_559956.pdf](http://academic.cengage.com/resource_uploads/downloads/1305635140_559956.pdf).

Hayne, R.J., "Design of an Instructional Processor," in Roth, C.H., John, L.K., and Lee, B.K., *Digital Systems Design Using Verilog*, First Edition, Cengage Learning, Boston, MA, 2016. [Online]. Available: [http://academic.cengage.com/resource/uploads/downloads/1285051076\\_581158.pdf](http://academic.cengage.com/resource/uploads/downloads/1285051076_581158.pdf).

Peer-Reviewed Journals:

- Hayne, R.J., "Translating the Instructional Processor from VHDL to Verilog," *Computers in Education Journal, ASEE*, Vol. 9, No. 4, December 2018.
- Hayne, R.J. and Moore, J.I., Jr., "Evolution of the Instructional Processor," *Computers in Education Journal, ASEE*, Vol. 6 No. 4, October - December 2015.
- Hayne, R.J., "An Instructional Processor Design using VHDL and an FPGA," *Computers in Education Journal, ASEE*, Vol. 3 No. 2, April - June 2012.
- Hayne, R.J., "Beyond VHDL Simulation to On-Chip Testing," *Computers in Education Journal, ASEE*, Vol. XVIII No. 4, October - December 2008.
- Hayne, R.J., "VHDL Projects to Reinforce Computer Architecture Classroom Instruction," *Computers in Education Journal, ASEE*, Vol. XVIII No. 2, April - June 2008.

Peer-Reviewed Conference Proceedings:

- Hayne, R.J., "Translating the Instructional Processor from VHDL to Verilog," *Proceedings ASEE Annual Conference and Exposition*, Salt Lake City, UT, June 2018.
- Barsanti, R.J., Hayne, R.J., Bower, K.C., and Peeples, J.W., "An Undergraduate Engineering Ethics and Leadership Education Program," *Proceedings ASEE Annual Conference and Exposition*, Columbus, OH, June 2017.
- Mazzaro, G.J. and Hayne, R.J., "Instructional Demos, In-Class Projects, and Hands-On Homework: Active Learning for Electrical Engineering using the Analog Discovery," *Proceedings ASEE Annual Conference and Exposition*, New Orleans, LA, June 2016.
- Hayne, R.J. and Moore, J.I., Jr., "Evolution of the Instructional Processor," *Proceedings ASEE Annual Conference and Exposition*, Seattle, WA, June 2015.
- Hayne, R.J., "An Instructional Processor Design using VHDL and an FPGA," *Proceedings ASEE Annual Conference and Exposition*, Vancouver, B.C., Canada, June 2011.
- Hayne, R.J., "Presynthesis Test Generation using VHDL Behavioral Fault Models," *Proceedings IEEE SoutheastCon*, Nashville, TN, March 2011.
- Hayne, R.J. and McKinney, M.H., "Interdisciplinary Laboratory Projects Integrating LabVIEW with VHDL Models Implemented in FPGA Hardware," *Proceedings ASEE Annual Conference and Exposition*, Louisville, KY, June 2010.
- Hayne, R.J., "Beyond VHDL Simulation to On-Chip Testing," *Proceedings ASEE Annual Conference and Exposition*, Pittsburgh, PA, June 2008.
- Hayne, R.J., "VHDL Projects to Reinforce Computer Architecture Classroom Instruction," *Proceedings ASEE Annual Conference and Exposition*, Honolulu, HI, June 2007.
- Hayne, R.J. and Johnson, B.W., "Behavioral Fault Modeling in a VHDL Synthesis Environment," *Proceedings VLSI Test Symposium*, Dana Point, CA, April 1999.

Kaufman, L.M., Gretlein, R., and Hayne, R.J., "A Quantitative Assessment of the Application of Software Reliability to Reusable Code," *Proceedings Reliability and Maintainability Symposium*, Washington, D.C., January 1999.

Hayne, R.J., Brown, P.A., Hair, S.G., and Oristian, J.E., "An Innovative Educational Application of the VHSIC Hardware Description Language," *Proceedings Frontiers in Education Conference*, Vienna, Austria, 1990.

**Other Publications:**

Hayne, R.J., "Behavioral Fault Modeling in a VHDL Synthesis Environment," doctoral dissertation, University of Virginia, School of Engineering and Applied Science, Charlottesville, VA, May 1999.

**Presentations at Conferences and Professional Meetings:**

**Peer-Reviewed National/International Organizations:**

Hayne, R.J., "Translating the Instructional Processor from VHDL to Verilog," ASEE Annual Conference and Exposition, Salt Lake City, UT, June 2018.

Hayne, R.J. and Moore, J.I., Jr., "Evolution of the Instructional Processor," ASEE Annual Conference and Exposition, Seattle, WA, June 2015.

Hayne, R.J., "An Instructional Processor Design using VHDL and an FPGA," ASEE Annual Conference and Exposition, Vancouver, B.C., Canada, June 2011.

Hayne, R.J. and McKinney, M.H., "Interdisciplinary Laboratory Projects Integrating LabVIEW with VHDL Models Implemented in FPGA Hardware," ASEE Annual Conference and Exposition, Louisville, KY, June 2010.

Hayne, R.J., "Beyond VHDL Simulation to On-Chip Testing," ASEE Annual Conference and Exposition, Pittsburgh, PA, June 2008.

Hayne, R.J., "VHDL Projects to Reinforce Computer Architecture Classroom Instruction," ASEE Annual Conference and Exposition, Honolulu, HI, June 2007.

Hayne, R.J. and Johnson, B.W., "Behavioral Fault Modeling in a VHDL Synthesis Environment," VLSI Test Symposium, Dana Point, CA, April 1999.

Hayne, R.J., Brown, P.A., Hair, S.G., and Oristian, J.E., "An Innovative Educational Application of the VHSIC Hardware Description Language," *Frontiers in Education Conference*, Vienna, Austria, 1990.

**Peer-Reviewed Regional Organizations:**

Hayne, R.J., "Presynthesis Test Generation using VHDL Behavioral Fault Models," IEEE SoutheastCon, Nashville, TN, March 2011.

**By Invitation Local Organizations:**

Hayne, R.J., "Design of an Instructional Processor," Sigma Xi Brown Bag Lunch, The Citadel, February 2018.

Hayne, R.J., "Programmable Logic Devices," IEEE Coastal SC Section Meeting, Charleston, SC, October 2010.

**Grants:**

**Citadel Foundation New Faculty Research Grant:**

"Testbed for Advanced Digital Systems Development Using Hardware Description Languages and Programmable Logic Devices," November 2006, \$2,720.

**Citadel Foundation Presentation of Research Grant:**

IEEE SoutheastCon, March 2011, \$1470.

#### Citadel Foundation Faculty Development Grants:

- ASEE Annual Conference and Exposition, March 2018, \$2413.
- ASEE Annual Conference and Exposition, March 2015, \$2522.
- ASEE Annual Conference and Exposition, April 2013, \$2209.
- ASEE Annual Conference and Exposition, March 2011, \$2500.
- ASEE Annual Conference and Exposition, April 2010, \$1861.
- ASEE Annual Conference and Exposition, March 2008, \$1893.
- ASEE Annual Conference and Exposition, April 2007, \$2000.

#### Senior Design Projects (Student Research):

- Murray, L., Spohnholz, S., Stanton, M., and Wentley, M., "Smart Door Home Automation," *Proceedings 2019 Citadel Electrical Engineering Design Symposium.*
- Terwilliger, A., Washington, Q., Foor, A., and Anderson, C., "Complete Pet Care System," *Proceedings 2019 Citadel Electrical Engineering Design Symposium.*
- Dale, J., Tye, K., Ledford, N., and Matthew, R., "C.A.R.T.S: Crash Avoidance Railway Tracking System," *Proceedings 2018 Citadel Electrical Engineering Design Symposium.*
- Alexander, A., Kisabeth, M., Middleton, S., and Ramos, G., "Remote Access Door System," *Proceedings 2018 Citadel Electrical Engineering Design Symposium.*
- Nichols, W., Browne, D., Edwards, N., and Bryant, P., "TruBru Automated Brewing System," *Proceedings 2016 Citadel Electrical Engineering Design Symposium.*
- Dedding, O., Miller, C., Snipes, W., and Chen, Y., "PanaCea: Medication Organization and Healthcare Integration," *Proceedings 2016 Citadel Electrical Engineering Design Symposium.*
- Creed, W., Decker, J., Kerr, J., and Vandermolen, D., "The Smart Pour System," *Proceedings 2015 Citadel Electrical Engineering Design Symposium.*
- Becherer, N., Eastwood, C., Shelton, S., Smith, C., and Smith, J., "RFI-Key," *Proceedings 2015 Citadel Electrical Engineering Design Symposium.*
- Davis, D., Gause, A., Cardin, C., and Shannon, J., "The All-In-One," *Proceedings 2014 Citadel Electrical Engineering Design Symposium.*
- Harrison, D., Hubbs, D., Gulipardo-Thompson, I., and Faucher, R., "Vehicle Parking Notification System," *Proceedings 2014 Citadel Electrical Engineering Design Symposium.*
- Cummings, T., Feagin, J., Jenkins, B., Langan, J., and Stevick, B., "2013 IEEE Southeast Conference Hardware Competition: Autonomous Shipping-Container Sorting Robot," *Proceedings 2013 Citadel Electrical Engineering Design Symposium.*
- Amalla, S., Isham, J., Lowe, S., and Sturgis Jr., D., "Pill Bottle Platform," *Proceedings 2013 Citadel Electrical Engineering Design Symposium.*
- Finn, M., Ivashchenko, D., Rogers, D., and Barnhill, M., "Automated Saltwater Aquarium," *Proceedings 2012 Citadel Electrical Engineering Design Symposium.*
- Diemer, D., Hargadine, C., Helfer, R., Mutters, J., and Valerio, V., "Automated Railway Control System," *Proceedings 2011 Citadel Electrical Engineering Design Symposium.*

- Crenshaw, J., Kubik, J., Fernandez, W., and Malone, J., "The Advent of Comfort through a Brilliant Idea," *Proceedings 2010 Citadel Electrical Engineering Design Symposium*.
- Kottraba, R., Jackson, R., Seabolt, T., and Huckaby, D., "IEEE Southeast Conference 2009 Hardware Competition - Team: EBOT," *Proceedings 2009 Citadel Electrical Engineering Design Symposium*.
- Spell, B., Morgan, H., Riddick, L., and Throckmorton, J., "Online Reprogrammable LED Sign," *Proceedings 2008 Citadel Electrical Engineering Design Symposium*.

### **Student Research Projects:**

- Finlay, G., "Assembler for an Instructional Processor," Student Paper Competition, IEEE SoutheastCon, Orlando, FL, March 2012.
- Smoak, E., "A Sustainable Future through Engineering," Honors Directed Research Project, April 2010.
- Cobb, T., "Our Solar Solution," Honors Directed Research Project, April 2010.
- Kelley, J., "Examine-a-Bit Program," Honors Directed Research Project, March 2008.

### **Professional Development Activities:**

#### Conferences and Workshops:

- American Society for Engineering Education Annual Conference, June 2018
- Getting Started with IoT for Research and Teaching Workshop, June 2018
- Online Teaching Faculty Academy, Spring 2016
- American Society for Engineering Education Annual Conference, June 2015
- American Society for Engineering Education Annual Conference, June 2013
- Machine Science, Bringing a First-year Programming Course to Life Using Programmable Microcontrollers Workshop, June 2013
- IEEE SoutheastCon, March 2013
- Excellence in Engineering Education (ExcEEd) Teaching Workshop, Spring 2012
- IEEE SoutheastCon, March 2012
- American Society for Engineering Education Annual Conference, June 2011
- Texas Instruments MSP430 Microcontroller Workshop, June 2011
- IEEE SoutheastCon, March 2011
- American Society for Engineering Education Annual Conference, June 2010
- IEEE SoutheastCon, March 2010
- IEEE SoutheastCon, March 2009
- American Society for Engineering Education Annual Conference, June 2008
- Embedded System Design using the FPGA Workshop, June 2008
- IEEE SoutheastCon, April 2008
- American Society for Engineering Education Annual Conference, June 2007
- ABET Faculty Workshop on Assessing Program Outcomes, June 2007

#### Advanced Courses:

- The Connected Microcontroller Lab, Imagination University Program, January 2017
- MIPSfpga Fundamentals, Imagination University Program, November 2016
- Xilinx Vivado Design Suite Tutorial, June 2016
- Analog Discovery Portable Analog Circuit Design Kit Tutorial, May 2014
- Xilinx Integrated Synthesis Environment VHDL Simulator Tutorial, June 2013

Microchip MPLAB X Integrated Development Environment Tutorial, February 2013  
Microchip MPLAB Integrated Development Environment Tutorial, June 2009  
Xilinx ChipScope Pro Tutorial, May 2007  
Xilinx Integrated Synthesis Environment Tutorial, July 2006

**Institutional Service:**

Service to College:

Sabbaticals Committee (2018 - present)  
Faculty Senate (2017 - 2018)  
High Impact Practices Faculty Reading Group (2017)  
Fellow, Center for Cyber, Intelligence, and Security Studies (2016 - present)  
Interdisciplinary Study Committee (2017 - 2018)  
Graduate Curriculum Committee (2016 - 2017)  
Scholarship Committee (2014 - 2016)  
Core Curriculum Oversight Committee (2013 - 2016)  
    Chair (2015 - 2016)  
Evaluation of Instruction Committee (2010 - 2014)  
Computer Services Committee (2007 - 2013)  
    Chair (2009 - 2011)  
Pre-Knob Visits (2006 - present)

Service to Department of Electrical and Computer Engineering:

Freshman Math Review (2015)  
Senior Design Microcontroller Applications Primer (2014 - present)  
Fundamentals of Engineering (FE) Exam Review (2013, 2016, 2018)  
Engineers Week Robotics Competition (2009 - present)  
Electrical and Computer Engineering Curriculum Committee (2007 - present)  
ABET Self-Study Committee (2007 - 2008, 2013 - 2014)

Service to Students:

Academic Advisor, Electrical Engineering Majors (2007 - present)  
Academic Advisor, Charlie Company, SCCC (2007 - 2012)  
Faculty Advisor, IEEE Student Branch (2007 - 2015)  
Treasurer, IEEE Student Branch (2011 - 2018)  
Faculty Advisor, IEEE SoutheastCon Trip (2007 - 2013)  
Sponsor / Host Family to 30+ Cadets (2007 - present)  
Faculty Advisor, Senior Class Officers, SCCC (2007 - 2008)

**Professional Service:** (\* indicates monetary compensation provided)

Service to the Community:

Leadership Day, FIRST Lego League Service Project (2011 - present)  
FIRST Robotics, Palmetto Regional Competition (2011)  
\*STEM (Science, Technology, Engineering, and Mathematics) Summer Camp,  
    Baptist Hill High School (2010)  
Engineering Outreach Visits, local schools (2008 - present)  
Engineering Outreach Visits, Columbia schools ALERT Program (2007 - present)



Service to the Discipline:

- \*College Board AP Engineering Research Study (2015)
- Reviewer, *Computers in Education Journal*, ASEE (2015 - present)
- Reviewer, Computers in Education Division, ASEE Annual Conference (2014 - present)
- Electronics Engineering Technology Advisory Committee, Trident Technical College  
(2010 - present)
- \*Reviewer, *Fundamentals of Digital and Computer Design with VHDL* (2010)
- Executive Committee, IEEE Coastal SC Section and Chapter (2007 - 2014)
- \* Panel Member, National Defense Science and Engineering Graduate Fellowship  
Program (2007 - 2012)