

## George Chester Harrison

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### EDUCATION

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<b>University of Virginia, Charlottesville, VA</b> <b>Ph.D. in Mathematics</b> Dissertation: "On the Structure of (U,Fr)-Bordism"	<b>1973</b>
<b>Old Dominion University, Norfolk, VA</b> <b>M.S. in Computer Science</b> Thesis: "Generic Specifications in LIL and in Ada via Analogies" Honors: Outstanding Graduate Award	<b>1986</b>
<b>Wilkes College, Wilkes-Barre, PA</b> <b>B.A. in Mathematics</b> Honors: <i>Magna Cum Laude</i>	<b>1969</b>

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### AWARDS

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	<b>April 2010</b>
<b>2010 Executive of the Year:</b> Virginia Association of Education Office Personnel	
<b>2009 Administrator of the Year:</b> Tidewater Chapter of International Association of Administrative Personnel	<b>October 2009</b>

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### ACADEMIC EXPERIENCE

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<b>Norfolk State University, Norfolk VA</b> <b>Professor of Computer Science (1987)</b>	<b>1973 - Present</b>
<b>Department Chair Computer Science</b>	<b>July 2004 – June 2012</b>
<b>University of Virginia</b> <b>Instructor of Mathematics; Graduate Teaching Assistant;</b> <b>Graduate Research Assistant</b>	<b>1972 - 1973</b>

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## RELATED EXPERIENCE

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**Courses Taught:** *Computer Programming I and II, Data Structures, Unix and C++ Programming, Software Engineering, Systems Analysis, Design, and Implementation, Discrete Structures, Introduction to the Internet, Ada programming I and II, Computer Architecture, Computer Graphics, Operating Systems, File Management, Survey of Programming Languages, Artificial Intelligence (Undergraduate/Graduate), Senior Seminar I and II, Analysis of Algorithms (Graduate), Scientific Visualization (Graduate), Structured Programming, Theory of Computation.*

*In the Department of Mathematics: College Algebra, College Algebra and Trigonometry, Calculus I, II, and III, Modern Geometry I and II, Number Theory, Senior Seminar, Pre-calculus for Business Majors, Calculus for Business Majors, Differential Equations,*

**New Program Development:** Led the development of the Information Technology Curriculum designed for students who want to specialize in networking and / or web design and development. Approved as Computer Science track, February, 2008. Approved as new program, May 2012.

Worked with INSITE group to set up three new courses to improve student retention in Computer Science at the Freshman level.

**Courses Taught, Developed and Enhanced:** Develop and test web-based course materials for Computer Programming I and II, Data Structures, UNIX and C++ Programming, Software Engineering, Systems Analysis, Design, and Implementation, Analysis of Algorithms, Core Programming Courses Group Leader

**Courses Taught when Associated with Mathematics Department:** taught basic mathematics courses, calculus, college geometry, differential equations, topology, set theory, advanced calculus

**Committees: Computer Science Department:**

**CURRENT:**

**Convener, Faculty Evaluation Peer Review Committee**

**Chair, Graduate Program Assessment Committee**

**Course Alignment Committee**

**Graduate Program Committee**

**Graduate Admissions Committee**

**Faculty Search Committee**

**ITE ABET Accreditation Committee**

**Transfer Student Assistant**

**Department of Computer Science, Faculty Senate Representative**

**FORMER:**

Director, Undergraduate Computer Science Program

Chair: Department Head Search Committee

Chair: Peer Review Committee

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Faculty Evaluation Committee  
Graduate Assessment Committees  
Chairperson, Departmental Budget Committee  
Chairperson, Curriculum Committee  
Chairperson, Accreditation Committee  
Chair: Faculty Search Committee  
Engineering Department: Department Head Search Committee  
Recruitment Committee

**Committees: College of Science, Engineering, and Technology**

Curriculum Committee  
Facilities Committee  
Director, CS Scholars Scholarship Project  
Scholarship and Awards Committee  
Chair, Distinguished Faculty Awards Committee

**Committees: University**

<p><b>CURRENT:</b> <b>Academic Credits and Standards Committee</b> <b>Chair, Ad-Hoc Faculty Senate Administrator Evaluation Committee</b> <b>Chair, Faculty Emeritus Committee</b> <b>Chair, Faculty Performance Evaluation Systems Committee</b> <b>General Education Council</b> <b>Human Subjects Protection Committee / Institutional Review Board</b> <b>SACS 5 year Interim Report Committee</b> <b>Office of Student Rights and Responsibilities, Hearing Officer (8-4-13)</b></p>
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**FORMER:**

Ad Hoc Academic Realignment Working Group  
Ad Hoc Founders' Day Committee  
Ad Hoc Student Information System Software Acquisition Committee  
Chair, 65<sup>th</sup> Anniversary Recognition Committee  
Chair, Ad-Hoc, Neo-Evaluation Committee  
Co-Chair, Academic Credits and Standards Committee  
Commencement Committee  
Curriculum Committee  
Distinguished Faculty Scholar Teaching Awards Committee  
Former Chairperson, Insurance and Selling Practices Committee  
Former Chairperson, Roy A. Woods Teacher of the Year Committee  
Presidential Task Force on New Funding Sources

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## RESEARCH and DEVELOPMENT DUTIES

Summer 2013 Research and report "Simulating Social Networks."

Proposal: Principal Investigator Virginia is for Coders: Building a Solid Foundation in Computer Science National Science Foundation, March 2013. With Dr. Manorama Talaiver, Longwood University. Not funded.

Summer 2012 Research and report "On the Structure of Social Networks."

Technology Lead: SkillTek Project (Virginia Department of Transportation) to develop curriculum modules using simulations and visualization techniques to encourage high school students to consider occupations with VDOT. (1/16/04 - 2007)

Co-principal Investigator: SkillTek (Department of Labor) grant to use and develop interactive skill development software using simulations and visualization techniques. (5/1/01 - 7/31/02)

Faculty Associate: Internet Security on Wired and Wireless Communications. Security management, security implementation, implementation security on the Helicopter Association International (HAI) web server, wired web security Starter's Kit, wireless data communication, wireless security implementations (with implementations on HAI server), and wireless web security Starter's Kit. Funded by the Federal Aviation Administration. (8/23/98 - 6/15/00)

Co-Investigator: Investigations of Processing & Communication Bottlenecks in designing a 3-tier Client/Server System. User interface requirements and multi-processing database considerations for a system that provides critical information to persons required to make critical decisions regarding the statistics and historical records generated from the database. Funded by the Federal Aviation Administration. (6/16/97 - 6/15/98)

Curriculum Developer: Title III (Department of Education) grant to upgrade non-traditional approaches to computer science education. (10/1/97 - 9/30/02)

Principal Investigator: Laboratory Experiences in Ada and Data Structures - an educational research grant to study methods of teaching Ada and Data Structures in an intermediate data structures course. Funded by U.S. Air Force and ARPA. (6/20/94 - 3/6/95)

Principal Investigator: A Comprehensive Software Engineering Educational Experience - an educational research grant to study methods of teaching software engineering and the Ada programming language using a comprehensive project-oriented approach. Funded by ARPA. (7/1/92 - 8/15/93)

Curriculum Developer: Title III Curriculum Developer for core computer science courses. (10/1/92 - 9/30/97) Developed laboratories and multi-media course tools for Computer Programming I and II, Data Structures, and Discrete Structures.

Principal Investigator: Piano Mover's Project - Student-directed research project under a contract with McDonnell Douglas Technologies, Inc. (6/1/91 - 12/31/91)

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Principal Investigator: National Science Foundation CISE Institutional Infrastructure Planning Grant (6/16/89 -11/1/90)

Project Director: Research, Development, Training and Education in Ada (ReDTEA) - U.S. Army Research Grant (9/1/87 - 5/31/89). Major research project based on the Ada programming language with five Computer Science Program researchers, computer assisted instruction projects and six student research assistants.

Project Director: Pre-college Educational Enrichment Program - Virginia Council on Higher Education Grant (7/1/84 - 6/31/85). Summer (1985) program for high school seniors primarily based on basic computer science education and the enrollment of other-race students in Virginia Colleges and Universities.

**Directed Theses:**

1. Velma Canaday: Interactive Agent Assisted Tutorial, May 2005
2. Helene Rose: Apply Genetic Algorithms to Postsecondary Faculty Scheduling, May 2005
3. Lei Gu: Persuasibility Design and Its Assessment in the System Life-Cycle, August 2005
4. Richard de Paulo: The Effect of 3d Data Visualization on High School Students' Conceptualization Of Quadratic Equations For Virginia Algebra II Standards Of Learning, February 2006
5. Kiam-Kia Moore: Applying 3d Virtual Learning Environments to Multidimensional Geometry February 2006
6. Kennville Thompson: XML Access Control via Data Association, February 2006

**Research Activities with Graduate Students**

**Project Advisor**

**Mary Massey, Computer Science, Project (Completed)**

**Ricardo James, Computer Science, Project**

**Zenora Spellman, Computer Science, Project**

**Dissertation Committee**

**Lei Gu, Ph.D. Dissertation Committee, Material Science and Engineering (Completed)**

With graduate student Arun Chandran, work with Office of Institutional Effectiveness and Assessment on an automated curriculum mapping system. 2006

With graduate students Zenora Spellman, Jennifer Jenkins and Kiamkia Moore: Norfolk African-American Cemetery Project (data mining and animated mappings) and Portsmouth Underground Railroad Project (virtual tour of starting point of Atlantic coast movement of escaped slaves) (2004-present)

With graduate student Velma Canaday: Synergy of concepts of persuasive computing and intelligent, emotional agents. (2003-2004)

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## **Other Research**

With graduate students: observations on the topology of social networks

Scientific Visualization applications especially using the Visualization Tool Kit to support visualization solutions

Enterprise database comparisons; Internet security: encryption methods, security applications, scientific visualization, etc.

Software Engineering: Metrics, CASE Tools, Reusability Theory, Program Verification, Ada education

Artificial Intelligence: Ada language models for distributive node processing algorithms in Neural Networks; Heuristic Search Methods; Genetic Algorithms, Evolutionary Computing

Conducted research and testing on applying genetic algorithms to total signature minimal radar detection problems with McDonnell Douglas Technologies, Inc.

[with E. Lumsdon] LRMReader software submitted to and accepted into the "PAL" Ada Repository (U.S. Army) - an Ada Language Reference Manual automated access system written in Ada.

## **Led student projects with topics including**

Cluster Structures in Social Networks

Comparisons of mathematical routines on various Ada compilers

CPU time and memory comparisons of dynamic and static structures in Pascal and in Ada

Data mining

Electronic commerce security

Electronic mail security

Encryption: Data Encryption Standard (DES) and RSA

Error correcting code algorithms

Expert systems

File compression methods,

Genetic algorithms and finding optimal values of functions

Genetic algorithms and networks,

Genetic algorithms and social science

Haptic device use in occupational therapy (2004)

Heart animation and visualization: normal and with congenital defect

Internet security: language issues and encryption, Java intrusion

Java applications

Logical organization of a formal evaluation process needed for potential graduates (2004)

LU-decomposition algorithms using Ada's tasking features

Network - Internet firewalls

Network simulations

Neural network algorithms

Neural networks models

New  $n \log_2$  sort routine

Object-oriented databases

Object-oriented design of DirectX graphics

Operating system emulations

Robotic Algorithms

Source code formatting (pretty-printing) methods

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Spell checking algorithms  
Web site standards for academic information  
Windows graphic packages  
Year 2000 problem demonstrations

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## **PUBLICATIONS AND PAPERS**

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Summer 2012 Research and report "On the Structure of Social Networks." Norfolk State University, July, 2012.

Enhancing Education with Computer Simulations To Assist At-Risk Youth Understand Workforce Opportunities (co-authored with Thomas W. Mastaglio) EISTA Conference, July, 2003.

Technology-Based Training for Job Skills (co-authored with Thomas W. Mastaglio and Narquita Snowden) Final Report submitted to the Department of Labor, July 31, 2002.

SkillTek: Technology-Based Training for Job Skills (co-authored with Thomas W. Mastaglio and Narquita Snowden) I/ITSEC Conference, July 5, 2002

Web Security Starter's Kit for Wired Data Networks (co-authored with Mou-Liang Kung) submitted to FAA. November 1999

Phase I Report of Internet Security on Wired Communications submitted to FAA. January 1999.

Phase II Report of Investigation of Processing & Communications Bottlenecks in designing a 3-tier Client/Server System submitted to FAA. June 1998.

Phase I Report of Investigation of Processing & Communications Bottlenecks in designing a 3-tier Client/Server System submitted to FAA. October 1997.

"A Comprehensive Software Engineering Educational Experience", Proceedings of the Twelfth Annual Conference on Ada Technology, March 1994.

Final Technical Reports and Course Materials to ARPA for A Comprehensive Software Engineering Educational Project, 1993.

Genetic Algorithm Applications to Total Signature Base Avoidance Methods (Internal reports and presentations to McDonnell Douglas Technologies, Inc.), 1991.

"AdaL, An Automated Code Reuse System", Proceedings of the Seventh Annual Conference on Ada Technology, March, 1989.

"An Automated Method of Referencing Ada Reusable Code Using LIL", Proceedings of the Fifth Annual Conference on Ada Technology, March 1987.

"Generic Implementations Via Analogies in the Ada Programming Language", ACM AdaLETTERS, Vol. VI, Num. 4, July, August 1986, pp. vi4-34 to vi4-43 (with Dar-Biau Liu).

"Is the Venn Diagram Good Enough?" College Mathematics Journal, Vol. 15, No. 1, pp 48-50, 1984 (with Mou-Liang Kung).

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## EDUCATIONAL ACTIVITIES

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### Manuscript reviewer: IEEE Transactions in Education (2002-present)

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- - Manuscript reviewer: Annual SIGCSE Symposium (2000-2006)
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  - Helped revise the assessment standards by changing the departmental objectives. Led the changes in departmental curricula to assure that all curricula are accreditable. (2002-2004)
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  - Edited and / or led the written portion of five accreditation self-studies for the Computer Science Accreditation Board and the Computing Accreditation Commission of ABET: 1990, 1993, 1999, 2005, 2011.
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  - Developed courses:
    - Structured Programming
    - Scientific Visualization
    - Analysis of Algorithms
    - Software Engineering,
    - Ada Programming, I and II
  - 
  - Taught two-week summer workshop to faculty and staff on Ada and Software Engineering (1988).
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  - Taught a workshop on the Ada Programming Language at the 1986 NAVY Micro Conference.
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  - Experienced Ada Programmer since 1985. Written professional Ada code including 1) AdaL: Ada Source Code reusability tool, 2) Language Reference Manual automated reader (with Esther Lumsdon, below) and 3) an interactive file viewer. Have done Ada task modeling work for parallel processing algorithms and for neural network demonstrations.
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  - Co-taught workshops on computer and World Wide Web, Internet literacy to Norfolk State Faculty and to university faculty in special education departments throughout the United States.
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  - Textbook reviewer for IPC, Brooks/Cole, Wiley, W.W. Norton, Wadsworth, Jones and Bartlett, and D.C. Heath.
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## PROFESSIONAL ASSOCIATIONS

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- - **Member of the Computing Accreditation Commission of ABET. 2012-2015: Interim Report Reviewer and General Review Team Chair.**
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  - **ABET Peer Evaluator Training Mentor, 2013-2015.**
  - **ABET New Team Chair Mentor, 2013-2014**
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  - Proposal Reviewer for Department of Mathematics and Computer Science, NSF S-STEM program, Virginia State University, August 2013
  - Program Evaluation Visitor for Computing Accreditation Commission of ABET to seven colleges and universities (2011, 2010, 2009, 2007, 2003, 2002, 2001).
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  - Consultant to Virginia State University to assist them in getting ready for their Computing Accreditation Commission of ABET evaluation (2006-2008)
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  - SIGCSE Conference Local Events Coordinator (2003-2004)
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  - Thompson Learning (Brooks/Cole Publishing) consultant developing web-based content for two data structures textbooks, 2000.
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  - ECPI Technical Institute consultant evaluating faculty for regional accreditation, 1998.
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  - Appointment by the Governor L. Douglas Wilder of the Commonwealth of Virginia as a Department of Education Representation on Commonwealth of Virginia's Key Advantage Employee Advisory Committee (State Health Benefit Plan) (1992) Cochairman of the Hampton Roads Key Advantage Employee Advisory Subcommittee (1992)
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  - Consultant and Reader for the College Board's Advance Placement tests in computer science (1992-1997, 2001-2002)
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  - Professor Representative on Commonwealth of Virginia's Health Insurance Benefits Advisory Committee (1988 -1992)
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  - Appointment by the Governor's Office of the Commonwealth of Virginia to be a member of the Review Panel for the Optional Retirement Plans for faculty in state-supported institutions (1990)
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  - Researcher Member of Board of the Annual National Conference on Ada Technology (1988 - 1990) Member of the Board of the Annual National Conference on Software Technology (1993 - 1996)
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• Memberships:

- - **CSTA: Computer Science Teachers Association**
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  - **MAA: Mathematical Association of America**
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  - **ACM: Association for Computing Machinery; SIGCSE: Special Interest Group: Computer Science Education**
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  - **IEEE Computer Society**
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  - **Phi Kappa Phi Honor Society (Installed 1986)**
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  - **Upsilon Pi Epsilon Honor Society**
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### **COMMUNITY ACTIVITIES**

Royster Memorial Presbyterian Church (Presbyterian Church USA)  
Active Elder (2004-2007), Chairperson, Evangelism Committee  
(Webmaster) (2003-2006)

Oakdale Presbyterian Church (1973-2002)  
Clerk of Session, Trustee, Former Treasurer, Elder, Deacon, Chairman of  
Worship, Budget and Witness – Stewardship, Administration  
Committees, Trustee

Presbytery of Eastern Virginia (Presbyterian Church (USA))  
Chairman of the Committee on Nominations (January 1997 - January  
2003)  
Member Office of Church Order (1997 - 2003)  
Developer of the Committee on Representation to assure  
representation on committees, commissions, and hiring of  
persons of racial-ethnic characteristics, youth, persons with  
disabilities, and of an equity of male and female representation.  
(1998)

Synod of the Mid-Atlantic, Presbyterian Church (U.S.A.)  
Member of Synod (Ruling) Council of the Synod of the Mid-Atlantic.  
(July 1996 - December 2002)  
Chairman of Communications Committee (1999 - 2002)  
Chairman, Search Committee for a Synod of the Mid-Atlantic Executive  
(October 2002 - June 2003)

Revised October 27, 2014