Message from the ADMI President

Welcome to the 2009 Symposium of the Association of Computer and Information Science and Engineering Departments at Minority Institutions (ADMI). This is the fourteenth symposium to include presentations by both faculty and students. We are happy that Morgan State University invited us. This is the first time we have met on Morgan State University's beautiful campus and I hope that it will not be the last. The theme this year is "Emerging Trends and Technologies." This continues our endeavors to remain on the cutting edge of technology. Presentations will focus on current developments in our member institutions and in the computer science discipline.

Student research presentations, reports by faculty on successful experiences, reports on ways to search for success, a research opportunities workshop, poster presentations, a graduate opportunities workshop, and an opportunities fair round out the program.

One important part of this symposium is an opportunity for interaction among faculty, students, graduate program representatives, and representatives of agencies, organizations, and industry. Connections formed through such interactions have been an important result of previous symposiums.

We hope that you enjoy the Symposium and that you will participate in a variety of activities. The ADMI Board of Directors, the members of ADMI and I welcome you to ADMI 2009.

Robert A. Willis Jr.
ADMI President

Friday, April 17, 2009 (Student Agenda)

8:00 – 4:00	**Registration** (Room 212)
8:00 – 9:00	**Breakfast** (Room 316)
9:00 – 9:15	**Welcome** Robert Willis, President of ADMI William Lupton, Conference Host, Morgan State University (Room 210)
9:15 – 10:15	**Emerging Trends and Entrepreneurship** Juan Gilbert, Auburn University (Room 210)
10:15-10:30	Break
10:30- 12:00	**Graduate School Fair** (Room 210)
12:00 – 1:45 **Lunch** (Room 316) **Speaker : Warren Judge** Office of Personnel Management United States Coast Guard	
2 :00 – 3 :30	**Panel: Graduate Education** Facilitator – Cheryl Seals, Auburn University (Room 210) Panelists: Andrea Lawrence, Spelman College Masters-Level Graduate Students
3:30 – 3:45	Break
3:45 – 5:00	"Graduate Education" panel continued

Friday, April 17, 2009 (Faculty Agenda)	
8:00 – 4:00	**Registration** (Room 212)
8:00 – 9:00	**Breakfast** (Room 316)
9:00- 9:15	**Welcome** Robert Willis, President of ADMI William Lupton, Conference Host, Morgan State University (Room 210)
9:15 – 10:15	**Faculty Papers** (Room 212) - Muhammad Ali – " The Development of a Security Engineering Course at Tuskegee University " - Chutima Boonthum - "Robotics Introductory Course with NXT at Hampton University" - David Barnett – "Using Simulation Tools in Teaching Digital Logic and Organization" - Hira Narang – "Introducing a Cryptography Course in the Computer Science Undergraduate Program"
10:15-10:30	Break
10:30 -12:00	**Panel :Research Opportunities, DHS and NSF** Facilitator – Loretta Moore, Jackson State University (Room 212) <u>Panelists:</u> Lenell Allen, National Science Foundation Joan Peckham, National Science Foundation Stephanie Willett, Department of Homeland Security
12:00 – 1:45 **Lunch** (Room 316) **Speaker : Warren Judge** Office of Personnel Management United States Coast Guard	
2 :00 – 3 :30	**Panel: Ethical Hacking** Facilitator – Robert Willis, Hampton University (Room 212) <u>Panelists:</u> Corey Schou, Idaho State University
3:30 – 3:45	Break
3:45 – 5:00	**A4RC for Change: Do You Wanna Hook-Up?** Gerry Dozier, North Carolina A &T University (Room 212)

Saturday, April 18, 2009		
8:00 – 4:00	**Registration** (Room 212)	
8:00 – 9:00	**Breakfast** (Room 316)	
	Student Research Presentations (Room 212)	
	Author	Title
9:00 – 10:45	DeMarcus Thomas	*Mississippi Valley State University* Creating Application Shutdown Scripts for the Caterpillar Server Maintenance Process
	Stacey Downing	*Norfolk State University* Medication Dispenser Robot
	Martin Brown	*Florida A & M University* A Simulation of Parallel Testing for Large Scale Data Applications
	Soufiane Berouel	*University of the District of Columbia* ShopSyS: Management Software for Small Businesses
	Andre Nkokwo	*Morgan State University* The Importance of PERL in Biological Computation
10:45 -11:00	Break	
11:00 -12:00	**Opportunities for ADMI students: Implementation of a POLARGRID Cluster** Je'aime Powell, Elizabeth City State University (Room 212)	

12:00 – 1:30
Lunch
(Room 316)
Computational Hip-Hop: Towards a New Music Genre
Presenters: Gerry Dozier, Kevin Moore, Marcus Hicks, Sir James Harvey
North Carolina A & T University

1:30 – 4:00
Student Poster Session
(Room 212)

4:00 – 5:00	Free Time

5:00 – 7:00
AWARDS CEREMONY
Ballroom, Second Floor

POSTER SESSION
Saturday, April 18, 2009
1:30 – 4:00

Author	Title
Ian Allick	*Morgan State University* Matrix Manipulation in C++
Carl Arrington Christopher Queen	*Hampton University* Developing a Web-Based Application to Visually Represent Satellite Data
Arielle Baine	*Spelman College* Multi-Dimensional Chromatography Informatics
Krystal Belfield	*Norfolk State University* Implementing A Planned Maintenance System Using RFID Technology
Blaze Blackmon	*Hampton University* RoboDog
Patrina Bly	*Elizabeth City State University* Designing and Developing a Portal for the Polar Grid High Performance Computing
Moyosore Bode-Omoleye	*Morgan State University* A Link List Program
Travis Branham	*University of the District of Columbia* Web-based Tracking of Discrete Location Updates for Remote Agents
Martin Brown	*Florida A & M University* A Case Study for Parallel Testing by Using SPRNG
Vernon Brown	*Elizabeth City State University* Installation of a 64-node Cluster and a Permanent Testing Cluster into a Raw Server Environment
Timothy Campbell	*Texas A & M University* Performance Analysis and Modeling of a Computational Biology Code on CMP Clusters
Justin Deloatch	*Elizabeth City State University* Redesign and Upgrade of the CERSER Website and Digital Image Library
Jude Desti	*Florida A & M University* Resilient Computing based on Virtual Machines
Robyn Evans	*Elizabeth City State University* Evaluation and Implementation of Web 2.0 Technologies in Support of Research Projects at ECSU
Lee Godley	*Elizabeth City State University* The Utilization of Polar Grid Resources to Analyze, Process, and Display Data from the National Data Buoy Center
Jessica Jones	*Hampton University* SnackBot
Christopher I. G. Lanclos	*Mississippi Valley State University* United States Grid Security and Reliability Control in High Load Conditions
Xian Long	*Florida A & M University* Implementation of a Hybrid Access Control Model for Web-based Digital Forensic
Brittany Maybin	*Spelman College* Poster Temporal and Spatial Variations of Clorophylla and Sea Surface Temperature in the Albemarle Sound and Pamlico Sound North Carolina Coastal Region

POSTER SESSION
Saturday, April 18, 2009
1:30 – 4:00

Author	Title
Samantha McDaniel	*Delaware State University* Adaptive Local Hyperplane for Classification of Spectroscopy Data
Gregory McGee II	*Mississippi Valley State University* LABVIEW System to Measure Acoustic Impedance
Gabrielle Meeks	*Mississippi Valley State University* Technical Library Database Update
Michael Jefferson	*Elizabeth City State University* The Modeling of Beach Erosion and Shoreline Changes Supported by Prior Research
Saa Millimono Tamira Ortiz	*Norfolk State University* Rescue Mission in the Maze
Denita Snow	*Winston Salem State University* Semantic Web for E-Learning: Metadata and Ontologies for Describing Learning Resources
Julian Strothers	*Hampton University* Tick Away: The Mobile Alarm Clock

Dr. Juan E. Gilbert is the T-SYS Distinguished Professor in the Computer Science and Software Engineering Department and a Fellow in the Center for Governmental Services at Auburn University where he directs the Human-Centered Computing (HCC) Lab. Dr. Gilbert has research projects in spoken language systems, advanced learning technologies, usability and accessibility, Ethnocomputing (Culturally Relevant Computing) and databases/data mining. He has published more than 75 articles, given more than 120 talks and obtained more than $9 million dollars in research funding in his nine years at Auburn University. In 2002, Dr. Gilbert was named one of the nation's top African-American Scholars by Diverse Issues in Higher Education. He was recently named a national role model by Minority Access Inc. At Auburn University, Dr. Gilbert has been honored with the Auburn University Alumni Engineering Council Junior Faculty Research Award, Auburn University Alumni Outstanding Minority Achievement Award and the Auburn University Distinguished Diversity Researcher Award. He is also a National Associate of the National Research Council of the National Academies, an ACM Distinguished Speaker and a Senior Member of the IEEE Computer Society. Recently, Dr. Gilbert was named a Master of Innovation by Black Enterprise Magazine, a Modern-Day Technology Leader by the Black Engineer of the Year Award Conference, the Pioneer of the Year by the National Society of Black Engineers and he received the Black Data Processing Association (BDPA) Epsilon Award for Outstanding Technical Contribution. Dr. Gilbert recently testified before the Congress on the Bipartisan Electronic Voting Reform Act of 2008 for his innovative work in electronic voting. In 2006, Dr. Gilbert was honored with a mural painting in New York City by City Year New York, a non-profit organization that unites a diverse group of 17 to 24 year-old young people for a year of full-time, rigorous community service, leadership, development, and civic engagement.

Emerging Trends and Entrepreneurship

ABSTRACT

In these economic times, universities are being asked to increase their funding levels. Typically, this is accomplished through research grants, fund raising with alumni, etc. However, new innovative models are being explored that involve entrepreneurial pursuits by faculty, staff and students. In this talk, Dr. Gilbert will discuss some emerging trends within the academy and the ever increasing role entrepreneurship is playing within the academy.

Lieutenant Commander (LCDR) Warren D. Judge joined the team of the Career Management Branch, Office of Personnel Management (OPM) in July 2007 and assumed the duties of the Career Management Branch Chief in May 2008. In this role at OPM, he provides essential career development and management for more than 8,100 officers in the United States Coast Guard (USCG) and graduating officers from the United States Coast Guard Academy, Coast Guard Officer Candidate School and a number of other officer accessions.

LCDR Judge has 22 years of distinguished service in the United States Coast Guard with occupational specialty in the area of C4IT (Command, Control, Computers and Communications). LCDR Judge recently completed a temporarily deployment as a Military Assistant to support the Armed Forces Inaugural Committee during the 56th Inauguration of the United States where Barack Obama was sworn in as the nation's 44th President.

With a consummate goal to pursue the best, LCDR Judge has achieved a stellar list of military and civilian educational accomplishments. His military education includes successful completion of Radiomen 'A' School; Advanced Communications; Search and Rescue Training, and Command Intelligence Course. Moreover, he completed his Bachelor of Science degree in Computer Science at Elizabeth City State University in Elizabeth City, NC in 1997 as a part of Pre-commissioning Program for Enlisted Personnel (PPEP) where he earned the distinguished Ronald E. McNair Scholarship. He attended/completed Officer Candidate School in Yorktown, VA in 1997. He later earned his first Master of Science degree in Computer Science from historic Howard University in 2004 and then his second Master of Science degree in System Quality Management (Six Sigma emphasis) from the National Graduate School in Falmouth, MA in 2007. Lastly, he completed Officer Personnel Management Leadership Potential Seminar in Sheperdstown, WV in 2008.

LCDR Judge is a highly decorated officer honored to have served as a former member of the Commandant's Leadership Advisory Council (2004-08). With greater than 30 medals, honors and commendations to his credit, some of the most prominent include two (2) Coast Guard Commendation Medals, one in 2007 for work conducted during Hurricane Katrina leading teams to rebuild the Coast Guard's lower gulf coast command and control infrastructure and the other in 2002 for his role in assisting in saving a life of a severely injured accident victim; two (2) Coast Guard Achievement Medals, one in 2002 and the other in 2000; three (3) Coast Guard Good Conduct Medals; six (6) Coast Guard Meritorious Team Commendations; one (1) Armed Forces Service Medal and one (1) Secretary DOT Gold Medal.

A native of Tampa, Florida, LCDR Judge is the father of two: a 21 year-old son and 16 year-old daughter. He is also a lifetime member of Kappa Alpha Psi fraternity. Bringing the same military leadership into his personal life, he is the Past Polemarch of the Gretna, LA Alumni Chapter, the Elizabeth City, NC Alumni Chapter, and the Epsilon Alpha Undergraduate Chapter and currently he is a member of the Alexandria-Fairfax Alumni Chapter of Kappa Alpha Psi. An avid racquetball player, LCDR Judge is sponsored by E-Force to teach the sport and give demonstrations.

Dr. Gerry Vernon Dozier is a Professor & Chair of the Computer Science Department at North Carolina A&T State University. He is the Principal Investigator for the A4RC Alliance. Gerry is also the Director of the Office of the Director of National Intelligence Science & Technology Center of Academic Excellence in Advanced Biometrics at North Carolina A&T. He has published over 90 conference and journal publications and has served as an Associate Editor of the IEEE Transactions on Evolutionary Computation and the International Journal of Automation & Soft Computing. Gerry is a member of the Editorial Board for the International Journal of Intelligent Computing & Cybernetics. His research interests include: Artificial & Computational Intelligence, Genetic, Evolutionary, and Neural Computing, Biometrics, Distributed Constraint Reasoning, Artificial Immune Systems, Machine Learning and Network Intrusion Detection. Gerry received his Ph.D. from North Carolina State University.

A4RC for Change: Do You Wanna Hook-Up?

ABSTRACT

This presentation will introduce the audience to an exciting and effective National Science Foundation Broadening Participation in Computing program known as The Alliance for the Advancement of African-American Researchers in Computing (A4RC). The goal of A4RC is to increase the number of African-American students receiving advanced degrees (particularly PhDs) in Computing. The A4RC Research Pod Model will be discussed as well as how interested individuals can become A4RC Affiliates.

Computational Hip-Hop: Towards a New Music Genre

Presenters: Gerry Dozier, Kevin Moore, Marcus Hicks, Sir James Harvey

ABSTRACT

This presentation will introduce the audience to a new music genre called Computational Hip-Hop. Students at North Carolina A&T State University are applying the Computational Intelligence techniques of Genetic, Evolutionary, and Neural Computing in an effort to develop Hip-Hop music. In addition to being a new way of generating Hip-Hop music, Computational Hip-Hop seeks to develop lyrics that are positive, uplifting, and inspirational. The Aggie Hip-Hop Box will be demonstrated as well as a number of Computational Hip-Hop songs developed by Kevin Moore, Marcus Hicks, Sir James Harvey, and other Computer Science students at North Carolina A&T State University.

Panel Members:
- Lenell Allen, HRD/National Science Foundation
- Joan Peckham, CISE/National Science Foundation
- Stephanie Willett, Department of Homeland Security

Dr. Lenell Allen is Program Director for the Alliance for Graduate Education and the Professoriate (AGEP) in the Human Resource Development Division at the National Science Foundation (NSF). She provides leadership for the AGEP Program which is comprised of 120 doctoral and 80 minority serving institutions (20 alliances) with the primary goal to diversify the professoriate.

Prior to joining NSF, Dr. Allen served as a Senior Program Manager at the American Association for the Advancement of Science's (AAAS) Directorate for Education and Human Resources Program where she conducted research on science, technology, engineering and math (STEM) education and policy issues, with special emphasis on the representation of women and underrepresented minorities in STEM disciplines.

Dr. Allen has served as an Administrative Faculty and Program Director at North Central University in Minneapolis, Minnesota. In this capacity, she was instrumental in establishing the Adult Degree Completion Program, including the development of curriculum, program design and evaluation for the Business and Organizational Leadership Degree.

Abstract:

The purpose of this presentation is to familiarize conference participants with funding opportunities within the National Science Foundation (NSF) Division of Human Resource Development (HRD) to help support the research and/or teaching activities at Minority Serving Institutions. The Division's programs aim to increase the participation and advancement of underrepresented minorities and minority-serving institutions, women and girls, and persons with disabilities at every level of the science and engineering enterprise. HRD programs contribute to attainment of the PEOPLE outcome goal of the NSF Strategic Plan FY 2003-2008: A diverse, competitive, and globally engaged U. S. workforce of scientists, engineers, and well-prepared citizens. Programs within HRD have a strong focus on partnerships and collaborations in order to maximize the preparation of a well-trained scientific and instructional workforce for the new millennium. Additional information about the division and its programs can be found at (http://www.nsf.gov/div/index.jsp?div=HRD). The HRD programs that will be discussed include the following:

- ❖ Alliances for Broadening Participation in STEM
    - • Alliances for Graduate Education and the Professoriate Program (AGEP)
    - • The Louis Stokes Alliance for Minority Participation (LSAMP) and Bridges to the Doctorate (BD)
- ❖ ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers
- ❖ Centers for Research Excellence in Science and Technology (CREST)/HBCU-RISE
- ❖ Historically Black Colleges and Universities (HBCU-UP)
- ❖ Research in Disabilities Education (RDE)
- ❖ Research on Gender in Science and Engineering (GSE)
- ❖ Tribal Colleges and Universities Program (TCUP)

Dr. Joan Peckham is a professor of computer science at the University of Rhode Island (URI). Her primary area of expertise is conceptual data modeling; she has applied this to research in databases and software engineering, as well as interdisciplinary projects in bioinformatics and building evacuation simulations. She has also been active in several educational and institutional transformation efforts at URI. Currently on leave as a Program Director at the National Science Foundation, her primary area of responsibility is programs in the EWF (Education and Workforce) Cluster in the CISE (Computer and Information Science and Engineering) Directorate.

Abstract:

This presentation will provide information about the CISE (Computer and Information Science and Engineering) programs with attention to stronger requests for proposals with significant broader impacts as well as those that address computational thinking. The session will also highlight other funding opportunities of interest to college faculty. The primary emphasis will be upon programs in the Education and Workforce Cluster of the CISE directorate, but core research programs and crosscutting programs, as well as programs in EHR (Education and Human Resources) will be briefly mentioned. The presentation will provide time for questions from the audience.

Ms. Stephanie Willett is a career federal employee who recently transferred to DHS. Currently she is Director of Education, University Programs, Science and Technology Directorate. Her responsibilities include the planning, coordination and assessment of all K-12 and post-secondary programs and initiatives currently supported with UP S&T funding. In the five years prior to coming to DHS, she managed fellowship programs and other education-related activities within the National Center for Environmental Research, Office of Research and Development, US EPA. She held many other science administration positions within EPA during her 21 year tenure there. Stephanie started her career as a food safety chemist at USDA, and also worked briefly at the Department of Treasury as a physical scientist. Stephanie taught chemistry, biology and math at the high school and community college levels prior to starting her federal service. She has a B.S. degree in Chemistry from Virginia State University and a Masters in Public Health from Morgan State University.

Panel Members:

- Corey Schou, Idaho State University
- Robert Willis, Hampton University

Dr. Corey D. Schou is the University Professor of Informatics and the Associate Dean of the College of Business at Idaho State University. He has been involved in establishing computer security and information assurance training and standards for 25 years. His research interests include information assurance, ethics, privacy, and collaborative decision making. He was responsible for compiling and editing computer security standards and training materials for the Committee on National Security Systems.

Throughout his career, he has remained an active classroom teacher despite his research and service commitments. He is the founding director of the Informatics Research Institute and the National Information Assurance Training and Education Center (NIATEC) that was designated the National Center of Excellence in Information Assurance Education.

In 1996, his research center was cited by the Information Systems Security Association (ISSA) for Outstanding Contributions to the Security Profession and he was selected as the Educator of the Year by the Federal Information Systems Security Educators Association (FISSEA). In 2001, Schou was honored by (ISC)2 with the Tipton award for his work in professionalization and the development of the common body of knowledge in computer security.

Mr. Robert A. Willis is a Lecturer with the Department of Computer Science at Hampton University. He has been with the University for twenty-three years. Six of which he served as Chair of the Department of Computer Science. Mr. Willis earned his Bachelor's (B.S.) degree in Electronic Engineering Technology from Chapman College and Masters (M.S.) degrees in Computer Science from The College of William and Mary.

Mr. Willis has diverse research interests and has authored/co-authored several articles in his areas of research. His research interests include Software Engineering, Information Assurance, Programming Languages and Concurrency. He has taught and developed several courses in these areas. He has also mentored an impressive number of student research projects and presentations.

Mr. Willis recent service achievements are as follows: President of the Association of Departments of Computer, Information Science/Engineering at Minority Institutions (ADMI) 8/2007, Vice President (Virginia Academy of the Sciences) 2007, President (Virginia Academy of the Sciences) 2001. Vice-President of Programs, Association of Departments of Computer, Information Science/Engineering at Minority Institutions (ADMI) 7/00 – 2007

Mr. Willis is a member of Upsilon Pi Epsilon, a recipient of Hampton University's Lindback Distinguish Teacher's Award (1990), selected for Who's Who Among America's Teachers (1996, 1998, 2000, 2002, 2004) and Elected Fellow of the Virginia Academy of Science (2006)

Panel Summary

The focus of the panel is to discuss one of the most controversial topics in Information Assurance education. This topic impacts teachers, administrations, information technology departments and students. The panel will examine hacking from all viewpoints and attempt to determine if and how we should teach "ethical hacking".

Panel: Graduate Education

Panel Members:
- Cheryl Seals, Auburn University
- Andrea Lawrence, Spelman College

Dr. Cheryl Seals is an Associate Professor in the Computer Science and Software Engineering Department at Auburn University. Dr. Cheryl Seals is an assistant professor in Auburn University's Department of Computer Science and Software Engineering. She received her B.S. from Grambling State University, M.S. from North Carolina A&T State University and Ph.D. from Virginia Tech with all of her degrees in the area of Computer Science.

Dr. Seals studies the area of novice programmers utilizing visual programming techniques, user interface design projects to improve interaction design, and game design & development and the dimensions games can add to computer literacy. She has a vested interested in programs that are community centered, increase diversity in technology, and targeted at helping today's youth strive for a better tomorrow. Seals' continuously works with programs that provide computer interventions for students in the elementary, middle and high schools in the local area.

Dr. Andrea Lawrence has been a faculty member at Spelman College for several years and is Chairperson of the Computer Science Department. Her area of interest is HCI, but she is currently exploring Information Assurance and remote sensing of ice sheets. She works actively to increase the number of minority students who pursue computing graduate degrees. Dr. Lawrence has been involved with ADMI since its beginning and is currently past President of the ADMI Board. She works to increase the number of women and minorities in computing.

Panel Summary

Graduate school attendance has been shown to increase the earning power of attendees by a factor of 1.5 during their working career. This panel will focus on the plethora of decisions students must consider when making a choice regarding education beyond the baccalaureate degree.

Issues to be discussed include: 1) finances, 2) advisors and 3) graduate school selection.

Robotics: Medication Dispenser Robot

Student: Stacey Downing
Affiliation: Norfolk State University
Abstract

Home health care is the fastest-growing expense in the Medicare program because of the aging population, the increasing prevalence of chronic disease, the development of functional limitations and the increasing medication and hospital costs. In-home services that are available to help those maintain independent living is costly, and sometimes not readily available. Due to these limitations, home service robots have attracted much attention to improve the quality of human life. Aging and diseases are causes for people to be required to take medication periodically to relieve them of their symptoms. Due to physical limitations, busy schedules, or just forgetfulness people are not taking their medications as directed by physicians to maximize the function of the medicine. To resolve this issue, I have designed a simulation of a service robot to periodically retrieve medication, to help increase the efficiency of the medication process. My objective for this project was to build and program a robot to dispense medicine in intervals throughout a given time period, and to do this I used the Lego Mindstorms NXT Toolkit. Using LabVIEW, graphical programming software, I constructed a program that uses robotic movements combined with the use of sensors to enable the designed robot to retrieve pills and bring them to the patient throughout the day.

Importance of Perl in Biological Computation

Student: Andre Nkokwo
Affiliation: Morgan State University
Abstract

Over the years researchers have emphasized the increased efficiency in the development and incorporation of the computer programming language PERL in biological analysis. An overview of health technology assessment principles and methods will be discussed.

ShopSYS: Management Software for Small Business

Student: Soufiane Berouel
Affiliation: University of District of Columbia
Abstract

In this paper we present a software system, ShopSYS, which we developed for small business management. As large businesses, mini shops also need automated computer software systems to make management efficient. However, their small scale requires especially simple and easy-to-use software that is tailored to their basic needs. ShopSYS integrates several functions that a mini shop would use for their daily operation which allows a manager or employee to supervise and run stock, cash flow, and transactions in their business. Managers can also oversee and keep record of their employees using ShopSYS. This project was developed by two undergraduate computer science students as a course project for their Software Engineering class. In the development of this software, we applied the principles of software engineering to a simulated real-world scenario. This result was presented and demoed to the class.

Creating Application Shutdown Scripts for the Caterpillar Server Maintenance Process
Student: DeMarcus Thomas
Affiliation: Mississippi Valley State University
Abstract

This project was created in an effort to develop a methodology to generate an automated process of application shutdown at Caterpillar Inc. These processes would be used to improve total shutdown times for server maintenance, reduce personnel required to manually work on servers during change windows, and to initiate their course of action to decrease the separation of Information Technology groups within Caterpillar Inc. For this to be accomplished, application groups were consulted to provide requirements on how their applications could be shutdown and those requirements were implemented in shell scripts. A shell script provides an efficient means of server maintenance and reduces the chance of human error during work on mission critical server systems.

A Simulation of Parallel Testing for Large Scale Data Applications

Student: Martin Brown
Affiliation: Florida A & M University
Abstract

This paper discusses the effectiveness of combining parallel testing and white-box testing. We use the MPI specification for parallel programming and perform both parallel and non-parallel testing on the same modules and compare the results. We demonstrate that after preparing the parallel testing procedure, there can be a significant difference in CPU time and wall clock time compared to non-parallel testing. Arguments are made for the learning curve of being able to write effective parallel code, but we also discuss the cost of organizing the system to allow it to be tested in parallel. For large applications, it becomes evident that the time spent preparing the parallel testing procedure can be miniscule compared to the time saved by implementing parallel testing. In addition, we discuss the methods for parallelize random number generation.

INTRODUCING CRYPTOGRAPHY COURSE IN COMPUTER SCIENCE UNDERGRADUATE CURRICULA

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ABSTRACT

Discrete mathematics has been part of the Computer Science curricula for decades because of its many applications to computer science. However, many books in this field have covered contents in a way as if it has no relevance to computer science. May be, the authors of these books have been mainly mathematicians, and do not have background in Computer Science. As a result, Computer Science students take this course as if it was a mathematics course required by the curriculum. With the changing trends in Information technology, it is necessary that we incorporate essentials of discrete mathematics, which prepares students for this changing modern technology. At the least, we should incorporate the most essential mathematics in crucial areas such as the modular mathematics required for security. Background material such as data warehousing, data management, networking, viruses and hackers, electronic eavesdropping and electronic fraud and topics of security are paramount importance in computer science. Cryptography is the basis for security issues. It is essential that the mathematical background for cryptography should be covered in a discrete mathematics course.

This paper proposes the inclusion of introductory cryptography in the **discrete mathematics course** so that students majoring in computer science have sound knowledge of all essentials of discrete structures required for computer science.

ROBOTICS INTRODUCTORY WITH NXT AT HAMPTON UNIVERSITY

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ABSTRACT

A successful collaboration between Spelman College and Carnegie Mellon University led to an NSF-funded Broadening Participation in Computing project to set up robotics education laboratories and introduce undergraduate instruction in cognitive robotics at three other Historically Black Colleges and Universities (HBCUs). In this paper, we give a brief introduction of the robotics curriculum initiated at Hampton University, and describe our first robotics introductory curriculum (course is offered to computer science students who only had first year programming courses) using Lego Mindstorms NXT and our experiences from teaching this course.

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ABSTRACT

This paper discusses the rationale for a course in Security Engineering and its development in the Department of Computer Science, Tuskegee University. The development of the course is in line with the department's goal for starting an Information Assurance track. This course fills the gap between the theories of secure systems (mainly information systems) covered in Information Security courses and the skill based training of System Administrators. This course will increase the potential for our graduates to obtain jobs in a competitive field. This work was done under a grant from the National Security Agency.

USING SIMULATION TOOLS IN TEACHING DIGITAL LOGIC AND ORGANIZATION

David Barnett
Computer Science & Information Technology Department
University of the District of Columbia

ABSTRACT

An interactive circuit design software package (LogicWorks) is used to implement a single cycle computer design from basic logic gates. The design will be discussed along with the instruction set and example programs demonstrated which perform addition, multiplication and sorting. The author will also discuss his experiences using LogicWorks in Digital Logic and Organization classes. Future directions include developing multiple cycle computer designs and instruction sets. Also additional feature enhancements such as floating point operations, software interrupts and system stacks will be implemented in the future.

Graduate Fair Participants

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Sponsors

ADMI Participating Schools
Elizabeth City State University
Hampton University
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Jackson State University
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Winston Salem State University
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Florida A& M University
Morgan State University