J. Lane Thames, PhD

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I. EDUCATION

Ph.D., Electrical and Computer Engineering
Georgia Institute of Technology
December, 2012
(Major) Electrical and Computer Engineering
(Minor) Mathematics
GPA: 3.70

Dissertation Title: ***Advancing Cyber Security with a Semantic Path Merger Packet Classification Algorithm***

Dissertation Description: My dissertation was an investigation revolving around three primary research thrusts: (1) large-scale, distributed, active-response firewall architectures for Internet security, (2) computational intelligence algorithms such as artificial neural networks, genetic algorithms, self-organizing maps, Bayesian learning networks, and hybridizations thereof for the detection of computer and network attacks, and (3) high-speed, energy-efficient, hardware-implementable algorithms for the multidimensional packet classification and packet filter lookup problem, which is equivalent to the d-dimensional point location problem from computational geometry.

Dissertation Advisor: Dr. Randal Abler

M.S., Electrical and Computer Engineering
Georgia Institute of Technology
May, 2006
(Major) Electrical and Computer Engineering
(Minor) Mathematics
GPA: 3.69

B.S., Computer Engineering
Georgia Institute of Technology
December, 2003
Graduated with *Highest Honors*
GPA: 3.61

II. PUBLICATIONS

Peer Reviewed Journals (Published or In Press)

1. Dazhong Wu, **J. Lane Thames**, David Rosen, Dirk Schaefer (2013): "Enhancing the Product Realization Process with Cloud-Based Design and Manufacturing Systems", *ASME Journal of Computing & Information Science in Engineering (JCISE)*, Vol. 13, No. 4, 2013, Article #041004.
2. **J. Lane Thames**, Oliver Eck, and Dirk Schaefer (2012): "A Semantic Association Hardware Acceleration System for Integrated Product Data Management", *ASME Journal of Computing & Information Science in Engineering (JCISE)*, Vol. 12, No. 3, 2012, Article #031009.
3. Dirk Schaefer, Jitesh H. Panchal, **J. Lane Thames**, Sammy Haroon, and Farrokh Mistree (2012): "Educating Engineers for the Near Tomorrow", *International Journal of Engineering Education (IJEE)*, Vol. 28, No. 2, 2012, pp. 381-396.
4. Dirk Schaefer, **J. Lane Thames**, Robert Wellman, Dazhong Wu, Sungshik Yim, and David Rosen (2012): "Distributed Collaborative Design and Manufacture in the Cloud—Motivation, Infrastructure, and Education", *ASEE Computers in Education Journal (CIE)*, Vol. 3, No. 4, 2012, pp. 1-16.

Books (Published or In Press)

1. **J. Lane Thames** (2013): Advancing Cyber Security: A Semantic Computing Approach, Lambert Academic Publishing, ISBN-10: 3659299901, ISBN-13: 978-3659299902.

Book Chapters (Published or In Press)

1. **J. Lane Thames** (2014): "Distributed, Collaborative, and Automated Cybersecurity Infrastructures for Cloud-based Design and Manufacturing Systems", In: D. Schaefer (Ed.): Cloud-Based Design and Manufacturing (CBDM): A Service-Oriented Product Development Paradigm for the 21st Century, Springer Publishing, In Press: To appear mid-2014.
2. **J. Lane Thames** (2014): "Semantic Association Systems for Product Data Integration in the Socio-sphere", In: D. Schaefer (Ed.): Product Development in the Socio-sphere: Game Changing Paradigms for 21st Century Breakthrough Product Development and Innovation, Springer Publishing, In Press: To appear mid-2014.
3. **J. Lane Thames**, Randal Abler, Andrew Hyder, Robert Wellman, and Dirk Schaefer (2011): "Architectures and Design Methodologies for Scalable and Sustainable Remote Laboratory Infrastructures", In: Azad, Auer, and Judson (Eds.): *Internet Accessible Remote Laboratories: Scalable E-learning Tools for Engineering and Science Disciplines*, IGI Global Publishing, ISBN 978-1-61350-186-3, Chapter 13, pp. 254-275.

Peer Reviewed Conference Proceedings (Published or In Press)

1. Dirk Schaefer, **J. Lane Thames**, Robert Wellman, Dazhong Wu, Sungshik Yim, and David Rosen (2012): "Distributed Collaborative Design and Manufacture in the Cloud—Motivation, Infrastructure, and Education", *ASEE 2012 Annual Conference & Exposition*, San Antonio, Texas, June 10-13, 2012, Paper# AC2012-3017.
2. Dazhong Wu, **J. Lane Thames**, David Rosen, and Dirk Schaefer (2012): "Towards a Cloud-Based Design and Manufacturing Paradigm: Looking Backward, Looking Forward", *ASME 2012 International Design Engineering Technical Conference & Computers and Information in Engineering Conference (IDETC/CIE)*, Chicago, Illinois, August 12-15, 2012, Paper# DETC2012-70780.

3. **J. Lane Thames** and Randal Abler (2012): "SAPC: A High-Speed Low-Power Multidimensional Packet Classification System for Next Generation Internet Protocol Networks", *2012 Georgia Tech Research & Innovation Conference (GTRIC)*, Atlanta, Georgia, February 7, 2012. **Received $1500.00 conference travel award and certificate for outstanding poster presentation.*

4. Dirk Schaefer, **J. Lane Thames**, Jitesh H. Panchal, Sammy Haroon, and Farrokh Mistree (2011): "Innovative Design Education in a Global Distance Learning Setting", *Harvey Mudd Design Workshop VIII on "Design Education: Innovation and Entrepreneurship"*, Harvey Mudd College, Center for Design Education, Claremont, California, May 26-28, 2011.

5. **J. Lane Thames**, Randal Abler, and Dirk Schaefer (2011): "Parametric Optimization of Artificial Neural Networks for Signal Approximation Applications", *49th Annual ACM Southeast Regional Conference (ACM SE)*, Kennesaw, Georgia, March 24-26, 2011.

6. **J. Lane Thames**, Andrew C. Hyder, Robert Wellman, and Dirk Schaefer (2009): "An Information Technology Infrastructure for Internet-Enabled Remote and Portable Laboratories", *ASME 2009 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE)*, San Diego, California, August 30 – September 2, 2009, Paper# DETC2009-87112.

7. Andrew C. Hyder, **J. Lane Thames**, and Dirk Schaefer (2009): "Enhancing Mechanical Engineering Distance Education Through IT-Enabled Remote Laboratories", *ASME 2009 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE)*, San Diego, California, August 30 – September 2, 2009, Paper# DETC2009-87456.

8. **J. Lane Thames**, Randal Abler, and David Keeling (2009): "Bit Vector Algorithms Enabling High-Speed and Memory-Efficient Firewall Blacklisting", *47th Annual ACM Southeast Regional Conference (ACM SE)*, Clemson, South Carolina, March 19-21, 2009.

9. **J. Lane Thames** and Randal Abler (2008): "WIP: Mentoring Undergraduate Students Preparing for Graduate Study in Engineering—A CREATE Case Study", *38th Annual ASEE/IEEE Frontiers in Education Conference (FIE)*, Saratoga Springs, New York, October 22-25, 2008.

10. **J. Lane Thames**, Randal Abler, and David Keeling (2008): "A Distributed Active Response Architecture for Preventing SSH Dictionary Attacks", *IEEE 2008 Southeast Conference (IEEE SoutheastCon)*, Huntsville, Alabama, April 3-6, 2008.

11. **J. Lane Thames**, Randal Abler, and David Keeling (2008): "A Distributed Firewall and Active Response Architecture Providing Preemptive Protection", *46th Annual ACM Southeast Regional Conference (ACM SE)*, Auburn, Alabama, March 28-29, 2008.

12. **J. Lane Thames** and Randal Abler (2007): "Implementing Distributed Internet Security using a Firewall Collaboration Framework", *IEEE 2007 Southeast Conference (IEEE SoutheastCon)*, Richmond, Virginia, March 22-25, 2007.

13. **J. Lane Thames**, Randal Abler, and Ashraf Saad (2006): "Hybrid Intelligent Systems for Network Security", *44th Annual ACM Southeast Regional Conference (ACM SE)*, Melbourne, Florida, March 10-12, 2006.

III. PROFESSIONAL EXPERIENCE

Tripwire, Inc.[1]
Research & Development Department
Vulnerability and Exposure Research Team (VERT)
November 2012 – Present

Roles

Software Development Engineer III **November 2012 – Present**

Responsibilities

- Conduct applied research and development for cybersecurity applications
- Investigate cyber security vulnerabilities and vulnerability management techniques and develop vulnerability detection, fingerprinting, and scanning software with Python and the Advanced Security Profiling Language (ASPL):
  - As a member of VERT, I develop tens of thousands of lines of code (mostly Python) per year that detect (over IP networks using agentless technology) applications, operating systems, and vulnerabilities installed on customer systems.
- Deploy diverse IT systems/servers/platforms with VMware ESXi and vSphere virtualization technology for vulnerability research and for developing vulnerability detection algorithms and software:
  - These systems include but are not limited to: Linux Technologies (RedHat, CentOS, Fedora, Ubuntu), All Windows platforms (Desktop: XP – Windows 8.1; Server: 2003 – 2012R2; Server Applications: AD, Exchange, SharePoint, Lync), Oracle technologies (MySQL, Oracle DB, Oracle Enterprise Linux), IBM technologies (AIX, Tivoli, DB2, WebSphere), Vyatta Network OS devices, Solaris, FreeBSD.
- Serve as a member of Tripwire's Secure Software Development Group
- Develop software packaging tools/scripts
- Develop Quality Assurance (QA) automation tools
- Analyze software and perform penetration testing to find new vulnerabilities
- Write security-based blogs for social media efforts: http://www.tripwire.com/state-of-security/contributors/lane-thames/

Georgia Institute of Technology
Information Technology Department
December 2006 – November 2012

Roles

Systems Support Engineer II **March 2011 – November 2012**
Systems Analyst III **December 2006 – February 2011**

Responsibilities

Systems Engineering & Administration:

- Research and recommendation of software and hardware to upper management for business critical and research critical IT infrastructure.
- Design, coordinate, and deploy business critical and research critical IT infrastructure.
- Perform N-tier system administration of Linux and Windows server systems including (but not limited to):
  - Apache web servers, Sendmail-based email servers, Windows file servers, DNS caching name servers, DHCP servers, Nagios IT infrastructure monitoring servers, Backup servers, MySQL database servers, SVN version control servers, SSH/SFTP

[1] Via acquisition of nCircle Network Security in April 2013.

gateway servers, VMware ESX servers, and various application servers such as DyKnow, Geographic Information Systems (GIS), OpenVPN, and Moodle Learning Management System (LMS).

- Perform N-tier system administration of Beowulf-based high performance computing (HPC) cluster.
- Perform server-side change management and configuration engineering.
- Perform N-tier end-user (client-side) support including (but not limited to) printer, operating system, network, and application support on Linux, Windows, and Mac platforms.
- Responsible for management of data backup and retention, which currently includes responsibility for over 60 TB of data storage.
- Provide training for junior system administrators in the IT group.

Application Development (Programming & Scripting):

- Develop database and reporting applications with Java, Perl, and PHP programming/scripting languages:
  - Developed a monthly IT workload application that extracted text-based data from our BMC Remedy Action Request application, calculated workload statistics (such as total jobs assigned, requested, and complete), and printed the monthly summaries that was used to communicate IT performance metrics to upper management. The application generated visual charts such as pie charts using Java and the JFreeChart Java library. The report was fully automated via cron jobs that ran on the last day of every month and was delivered to management automatically via email.
  - Developed a monthly reporting application used by the student services group. The application was developed with Perl and Bash scripting, which issued SQL queries to a PrintManager database application, calculated total pages printed and total print costs per student user, formatted the final report, and delivered the report via email. The report was fully automated via cron jobs that ran on the last day of every month.
- Develop server-side automation and reporting scripts:
  - Develop Nagios server & network monitoring plugins with Java, Perl, and Bash.
  - Develop automated server performance analysis, activity monitoring, and maintenance scripts with Bash and Perl.
  - Developed an automated blacklisting application with Perl and Bash scripts to protect SSH/SFTP gateway servers from SSH dictionary attacks. The application monitors login activities and inserts new firewall rules (iptables) that block the attacker's connection requests.
- Develop web-based server applications:
  - Design and develop web-based registration and payment gateway applications using HTML, PHP, MySQL, and TouchNet Marketplace Suite 4.0 (epayment system) for Georgia Tech faculty (conference websites) and the Georgia Center of Innovation for Logistics (yearly summit).
  - Design and develop web-based applications using HTML, forms, PHP, and MySQL for internal and external service, information, and event registration requests.
  - Designed and developed a Library book inventory, checkin-checkout, and reporting application with PHP, Bash, and MySQL. The application stored book inventory in a MySQL database, provided a basic web interface for querying inventory, checking books into and out of inventory, and delivered an report of all books checked out on the last day of each month.
- Develop server stress testing and performance measuring applications with Bash scripts.
- Develop PBS (portable batch system) scripts and debug MPI codes for HPC cluster users.
- Develop server-side backup scripts written with Bash that perform daily backups and rsync on production servers

- Between October 2010 and March 2011, worked with web developer and assistant director of communications & marketing to redesign and deploy the main website for the Georgia Tech Savannah campus.
    - Converted content from a FarCry CMS to a Drupal CMS.
    - Worked with web developer to implement a new information architecture for the site.
    - Collected and analyzed user/stakeholder feedback for the redesign process.
    - We won the *Recognition of Excellence Award* at the *2011 Georgia Tech Gold Tower Awards Ceremony* based on our new website.

Security Engineering & Administration:

- Manage server-side firewall system design, configuration, correctness, and compliance.
- Manage (in conjunction with Georgia Tech's information security group) perimeter firewalls.
- Provide vulnerability and risk management/assessment for server systems:
    - Use open source software tools such as nmap, nessus, tcpdump, wireshark, and snort to monitor for system vulnerabilities, weaknesses, and attacks.
    - Ensure server-side software systems (kernel space and user space) are within acceptable levels of risk with respect to known software-level and architectural-level weaknesses.
    - Manage and maintain server-side software (kernel space and user space) security updates and patches.
    - Manage server-side applications and processes for correct configuration and inter-process dependencies before, during, and after software update processes.

Network Engineering & Administration:

- Interface with Georgia Tech's networking group for system level maintenance/deployment of networking infrastructure.
- Design and deploy production and research networks.
- Configure networking devices including Cisco 2000/3000/4000 series VLAN switches.
- Provide end-user networking support.
- Interface with board of regents' networking group for routine maintenance of the Peachnet fiber trunk traversing the Savannah campus.

Research & Development Projects:

- **Manufacturing Experimentation and Outreach (MENTOR):** Designed and developed a large-scale, distributed design-and-manufacturing IT infrastructure for the US Military's Defense Advanced Research Projects Agency (DARPA) under their Adaptive Vehicle Make (AVM) program.
    - Delivered an integrated design and manufacturing infrastructure (IDMI) on top of the Moodle LMS (PHP and MySQL codebase). The IDMI operates as a centralized collaboration platform from the user perspective and as a centralized communication & management framework for the distributed systems being integrated, which include CAD/CAE/CAM design software servers, Additive Manufacturing equipment such as 3D printers, and other network-enabled manufacturing equipment such as computer numerically controlled machines.
    - Implement middleware and service communication interfaces for distributed systems using Perl and PHP.
    - Develop user interfaces with HTML and PHP.
- **Distributed Internet Security:**
    - Design and develop distributed firewall and active response architectures for distributed Internet security.
    - Design and develop computational intelligence applications with Java and Matlab using neural networks, genetic algorithms, self-organizing maps, and Bayesian learning networks for data mining applications and automated detection of computer and network attacks.
- **Multi-Dimensional Packet Classification Algorithms:**

- Design and develop packet classification and packet filter lookup algorithms with Java.
- Simulate these algorithms and measure performance metrics such as classification time versus total number (N) of filters (database rules).
- Design high-speed, energy-efficient, hardware-implementable algorithms and simulate their performance metrics (energy per lookup, time per lookup, chip area) versus algorithm and chip-level parameters with the CACTI memory simulator.
    - Received outstanding poster presentation award when presenting this research at the 2012 Georgia Tech Research and Innovation Conference.
- Designed a novel 9-transistor Passive-Read/Active-Write SRAM cell architecture for high-frequency-read/low-frequency-write associative memory applications.
- Designed and developed with Java a novel partitioning algorithm for IPv4/v6 forwarding table storage and lookup operations.

VeriSign, Inc.
Communication Services Division
July 2005 – November 2006

Roles

Software Development Engineer II **May 2006 – November 2006**
Customer Support Operations Specialist I **July 2005 – April 2006**

Responsibilities

Data Conversion Group:

- Responsible for converting data from a legacy cellular billing and operations application (Cellular Information Management System) into a next-generation cellular billing and operations application (VeriSign Billing and Operations Systems Software).
    - Develop database applications with the PL-SQL language.
    - Convert customer data from legacy database and populate Oracle database/tables within new software system.
- Developed and delivered an 'Historical Parallels' inventory data conversion project.
    - Simulated a month of inventory transactions using production data extracted from tape archival. The simulation was used as a user acceptance testing process to verify correct conversion of inventory data while preparing for 'Go Live' for our MetroPCS cellular billing client.
- Develop Unix shell scripts with Bash and Ksh for monitoring software processes such as billing and airtime programs.
- Developed and deployed an upgraded switch monitoring application with Java that queried system log files and alerted data center personnel via automated email upon detection of failed cellular phone switch provisioning.

Data Center Operations:

- Provide operating system, network system, and billing software support to an internal and external customer base consisting of 1000+ users.
- Scheduled daily batch operations for the Global Network Operations Center on behalf of service bureau clients.
- Coordinated scheduled projects and maintenance.
- Tier 1 Unix system administration (AIX, SCO, and Linux).
- Develop Unix shell scripts for monitoring software processes.
- Manage tape backup and retention processes for local user acceptance testing and development servers; restore file systems from tape archives.
- Develop and maintain software system documentation.
- Provide training for junior team members.

Georgia Institute of Technology
May 2001 – August 2006

Roles

Graduate Research Assistant	**January 2004 – August 2006**
Network Administration	**March 2003 – December 2003**
Lead Teaching Assistant	**May 2001 – February 2003**

Responsibilities

Distributed Networked Applications Laboratory:

- Perform research funded by the National Science Foundation (NSF) for a project titled *Network Security via Large Scale Simulation*.
  - Using C++, developed simulation programs for models of large-scale networks under various attack scenarios such as worm propagation and distributed denial of service using the Georgia Tech Network Simulator (GTNetS).
  - Developed Perl scripts to extract simulation outputs for performance analysis.
- Design and develop network security applications with C, C++, Java, and Perl that classify malicious network traffic.
- Design and develop honey-net networks for monitoring and detecting malicious computer-network activity and for testing security software and concepts.
- Design and develop client-server socket-based software with C, C++, Java, and Perl for testing network and security protocols.
- Design and implement embedded systems software (such as embedded web servers) with C and Microchip assembly language.
- System administrator for Unix (Solaris and Linux) and Windows operating systems (N-Tier administration).
- Administer and configure Cisco 2000, 3000, and 7000 series switches/routers and 500 series firewalls.
- Gave periodic lectures and served as lead teaching assistant for the following classes: *ECE 4110 Internetwork Programming* and *ECE 4175 Embedded Microcontroller Design*.
- Develop distributed computing systems using the JINI service oriented architecture, C, Java, Microchip assembly language, Microchip microcontrollers, and rapid prototyping development boards.

Information Technology Department:

- Resided on a team that designed and implemented the initial Georgia Tech Savannah campus network and information technology infrastructure.
- Designed, installed, and maintained the campus's wired and wireless local area networks.
- Administered DHCP and DNS servers, Cisco 2900 series switches, and Cisco 3500 routers.

Teaching Assistance:

- Teach engineering laboratory classes in digital systems, computer architecture, and micro-electronics.
  - These classes include the following: *ECE 2031 Digital Design Laboratory, ECE 2040 Circuit Analysis, ECE 3040 Microelectronic Circuits, ECE 3041 Instrumentation and Circuits Laboratory,* and *ECE 3042 Microelectronics Circuits Laboratory*
- Develop CPU hardware-software CPLD/FPGA interfaces for amigobot robots using VHDL and Verilog hardware description languages.
- Develop embedded system applications for amigobot robots and robotics control applications using C and assembly languages (in-house CPU machine language, WinTim32 meta assembler, and Microchip microcontroller units and its assemble language).
- Perform maintenance of laboratory computers, software, amigobot robots, and measurement equipment.
- Develop and maintain laboratory websites with HTML, Perl, and CGI.

IV. CONFERENCE PRESENTATIONS

1. ***SAPC: A High-Speed Low-Power Multidimensional Packet Classification System for Next Generation Internet Protocol Networks,*** GTRIC, The 2012 Georgia Tech Research & Innovation Conference, Presented February 2012. **Received $1500.00 conference travel award and certificate for outstanding poster presentation.*
2. ***Distributed Collaborative Design and Manufacture in the Cloud—Motivation, Infrastructure, and Education***, Technical Paper Presentation, ASEE Annual Conference & Exposition, Presented June 2012.
3. ***An Information Technology Infrastructure for Internet-Enabled Remote and Portable Laboratories***, Technical Paper Presentation, ASME 2009 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, Presented September 2009.
4. ***Bit Vector Algorithms Enabling High-Speed and Memory-Efficient Firewall Blacklisting***, Technical Paper Presentation, ACM Southeast Conference, Presented March 2009.
5. ***WIP: Mentoring Undergraduate Students Preparing for Graduate Study in Engineering—A CREATE Case Study***, Technical Paper Presentation, ASEE/IEEE Frontiers in Education Conference, Presented October 2008.
6. ***A Distributed Active Response Architecture for Preventing SSH Dictionary Attacks***, Technical Paper Presentation, IEEE Southeast Conference, Presented April 2008.
7. ***A Distributed Firewall and Active Response Architecture Providing Preemptive Protection***, Technical Paper Presentation, ACM Southeast Conference, Presented March 2008.
8. ***Implementing Distributed Internet Security using a Firewall Collaboration Framework***, Technical Paper Presentation, IEEE Southeast Conference, Presented March 2007.
9. ***Hybrid Intelligent Systems for Network Security***, Technical Paper Presentation, ACM Southeast Conference, Presented March 2006.

V. GRANTS AND FUNDED ACTIVITIES

2011 **Proposal Contributor,** *Manufacturing Experimentation and Outreach (MENTOR)*, DARPA-BAA-11-19

- Provided technical contribution during development of this proposal delivered to (and awarded by) the Defense Advanced Research Projects Agency. Provided IT infrastructure designs, requirements, budgets, and statement of work for the development of an Integrated Design and Manufacturing IT Infrastructure.

  Co-PI: Dr. D. Schrange, Georgia Institute of Technology
  Co-PI: Dr. D. Rosen, Georgia Institute of Technology
  Co-PI: Dr. D. Schaefer, Georgia Institute of Technology
  Amount Rewarded: $1,000,000 (1-year project funding)

2009 **Proposal Author,** *Georgia Tech Technology Fee Proposal*, Georgia Tech Annual Request for Proposals for Technology Fee Funding

- Provided student impact statements, budget, and budget justification for this internal request for proposal.

  Amount Rewarded: $53,000

VI. COMPUTING AND SOFTWARE SKILLS

Server Operating Systems: Unix-based: Linux (Redhat, CentOS, Fedora, Ubuntu); FreeBSD, Solaris; Windows-based: Server 2003, Server 2008, Server 2012
Programming & Scripting Languages: Python, Java, Perl, PHP, C, C++, PL-SQL, Bash Shell Scripting, C Programming for Embedded Systems, Assembly Language
Hardware Description Languages: VHDL, Verilog
Hardware Systems: PC and server hardware, Microchip microcontrollers, Altera CPLD and FPGA devices, 3Ware RAID Controllers
Software Packages: VMware Technologies, Sendmail, MailScanner, MailWatch, Spam Assassin, Apache Web, OpenVPN, Nagios, Toad for Oracle, Sql*Plus, NetBeans, Microchip MPLAB, Altera Max Plus 2, Quartus II, Matlab, Maple, nmap, Nessus, tcpdump, Wireshark (Ethereal), BMC Remedy Action Request, Proteus IPAM DNS Management Platform, WinSCP, SecureCRT, SSH, SFTP, Rsync, PBS (Portable Batch System Job Scheduler), PHPMyAdmin, Farcry CMS, Microsoft Office Suite, Visio
Database Technologies: Oracle, MySQL

VII. PROFESSIONAL TRAINING

- Dassault Systemes V6 Academic ENOVIA Training, May 2012.
- Georgia Tech, Office of Sponsored Projects Training:
  - ***Proposal Preparation and Submission***, April 2010.
  - ***Budget, Justification, and Templates***, April 2010.
  - ***Public Responsibility and Research Commitments***, April 2010.
  - ***Grants and Contracts Accounting***, April 2010.
  - ***Post Award Issues***, April 2010.
- Georgia Tech, Office of Organizational Development Training, ***Fundamentals of Good Leadership***, September 2010.
- Microsoft Course 2273: ***Managing and Maintaining a Microsoft Windows Server 2003 Environment***, July 2007.

VIII. AWARDS AND SCHOLARSHIPS

- *November 2012*, Science Applications International Corporation (SAIC), **SAIC-Georgia Tech Student Paper Competition**, Received first place award for paper titled "A Semantic Association Hardware Acceleration System for Integrated Product Data Management".
- *February 2012*, Georgia Tech Research & Innovation Conference (GTRIC), Conference travel award and certificate for ***Outstanding Poster Presentation.***
- *November 2011*, Georgia Tech, ***2011 Gold Tower Awards***, Recognition of Excellence Award for the *Websites and Microsites* category.
- *Spring 2009*, Georgia Tech Savannah, SGA (Student Government Association), & COE (College of Engineering), ***Conference Grant***
- *Spring 2008*, Georgia Tech Savannah, SGA, & COE, ***Conference Grant***
- *Spring 2007*, Georgia Tech Savannah, SGA, & COE, ***Conference Grant***
- *Spring 2006*, Georgia Tech Savannah, SGA, & COE, ***Conference Grant***
- *October 2005*, VeriSign, ***Customer Care Recognition Award***.
- *Spring 2003*, Georgia Tech, ***John Staton Scholarship***
- *Fall 2000*, Armstrong Atlantic State University, ***General Scholarship***
- *1999 – 2002*, State of Georgia, ***HOPE Scholarship***

IX. PROFESSIONAL ORGANIZATIONS

- Member, Tau Beta Pi National Engineering Honor Society
- Member, IEEE (Institute of Electrical and Electronic Engineers)
- Member, IEEE Computer Society
- Member, ACM (Association for Computing Machinery)
- Member, ACM SIGCOMM (Communications Special Interest Group)

X. LEADERSHIP AND PROFESSIONAL SERVICE ACTIVITIES

- 2012-Present, **Member**, Center for 21st Century Universities, Georgia Tech
- 2012, **Thesis Reading Committee Member and Co-Advisor**, Serve as a reading committee member and co-advisor for Tim Tocci (MFA Student) with the Savannah College of Art & Design (SCAD) in conjunction with Victor Ermoli (Dean of the School of Design, SCAD) and Robert Fee (Program coordinator and design management, SCAD). Thesis Title: DREAMdev: A Co-Creative Framework to Catalyze Development in Emerging Economies
- 2009-Present, **Technical Paper Reviewer**, Serve as a reviewer for the following organizations and venues: IOS Press, International Journal of Intelligent Engineering and Systems, International Journal of Network Security, ASME IDETC/CIE Conference Track (2009-2012)
- 2011, **Project Judge**, 2011 Georgia Tech Savannah Regional Science and Engineering Fair. Served concurrently as **Category Leader** for the following categories: Computer Science, Electrical Engineering, and Mechanical Engineering.
- 2010-2011, **Member**, Policy Advisory Committee, GT Savannah
- 2010, **Chair**, Laboratory Manager Search Committee, GT Savannah
- 2010, **Chair,** Web Developer Search Committee, GT Savannah
- 2010, **Member**, Computer Support Specialist Search Committee, GT Savannah
- 2009-2011, **Member**, Web Advisory Committee, Georgia Tech Savannah
- 2009, **Member**, Strategic Planning Committee, Georgia Tech Savannah
- 2007-2011, **Founding Member**, New Student Orientation Committee, GT Savannah
- 2007, **Technical Support Lead**, 2007 National Conference on the Advancement of Research
- 2007, **Judge**, Coastal Kids FIRST Robotics Competition
- 2007, **Mentor**, Collaborative Research Experiences in Advanced Technology and Engineering
- 2004, **Founding Member**, Student Advisory Board, Georgia Tech Savannah
- 2003, **IEEE Mentor**, H.V. Jenkins High School FIRST Robotics Team