

**AUBURN UNIVERSITY**  
**Standard Biographical Data**  
**for Submission with Promotion/Tenure Review**

Name John A. Hamilton, Jr.

Department Computer Science & Software Engineering College Engineering

Present Rank Alumni Professor Years Completed in Present Rank 1

Years in Faculty Service at AU 9 Years in Faculty Service Elsewhere 4 (after Ph.D.)

Type of Current Appointment:  Tenured  Non-Tenured

Pay Basis:  9mo.  12 mo. Graduate Faculty Status:  Member  None

Date Awarded: June 2006

| Education: Institution<br>List most recent first. | Degree          | Major                   | Date Awarded     |
|---|-----------------|-------------------------|------------------|
| <u>Texas A&amp;M University</u>                   | <u>Ph.D.</u>    | <u>Computer Science</u> | <u>Aug. 1996</u> |
| <u>Vanderbilt University</u>                      | <u>M.S.</u>     | <u>Computer Science</u> | <u>May 1990</u>  |
| <u>University of So. California</u>               | <u>M.S.S.M.</u> | <u>Sys. Mngt. (MIS)</u> | <u>Aug. 1987</u> |

| Professional Experience: Institution<br>Include AU Experience. List most recent first. | Rank                              | Period of Appointment    |
|--|-----------------------------------|--------------------------|
| <u>Auburn University</u>   | <u>Associate Professor</u>        | <u>Aug. 01 – Oct. 09</u> |
| <u>US Naval Postgraduate School</u>  | <u>Visiting Associate Prof.</u>   | <u>Aug. 99 - Aug. 01</u> |
| <u>Space &amp; Naval Warfare Systems Command</u>                                       | <u>Joint Forces P.O. Director</u> | <u>Sep. 98 - Aug. 01</u> |
| <u>US Military Academy, West Point</u>   | <u>Assistant Professor</u>        | <u>Jul. 96 - Sep. 98</u> |
| <u>Ada Joint Program Office</u>  | <u>Director</u>                   | <u>Jan. 97 - Jul. 97</u> |

2. Time and Effort Allocation

| <b>Academic Term</b> | <b>Teaching</b> | <b>Research</b>        | <b>Service</b> |
|----------------------|-----------------|------------------------|----------------|
| Summer 2011          | 0%              | 100% (CMTI)            | 0%             |
| AY 2010-2011         | 31.5%           | 65                     | 3.5%           |
| Summer 2010          | 0%              | 100% (MDA) (NSF)       | 0%             |
| AY 2009-2010         | 46%             | 50%                    | 4%             |
| Summer 2009          | 0%              | 100% (NSF) (NSA) (MDA) | 0%             |
| AY 2008-2009         | 46%             | 50%                    | 4%             |
| Summer 2008          | 0%              | 100% (NSF) (NSA)       | 0%             |
| AY 2007-2008         | 47%             | 49%                    | 4%             |
| Summer 2007          | 0%              | 100% (NSF) (NSA)       | 0%             |
| AY 2006-2007         | 49%             | 40%                    | 11%            |
| Summer 2006          | 0%              | 100% (NSF) (NSA)       | 0%             |
| AY 2005-2006         | 60%             | 34%                    | 6%             |
| Summer 2005          | 0%              | 100% (UAV)             | 0%             |
| AY 2004-2005         | 40.5%           | 52.5%                  | 7%             |
| Summer 2004          | 0%              | 100% (MDA)             | 0%             |
| AY 2003-2004         | 52.5%           | 40.5%                  | 7%             |
| Summer 2003          | 0%              | 100% (MDA)             | 0%             |
| AY 2002-2003         | 30%             | 65%                    | 5%             |
| Summer 2002          | 0%              | 100% (MDA)             | 0%             |
| AY 2001-2002         | 30%             | 65%                    | 5%             |

3. Honors and Awards

- a. SCS Presidential Service Award, 29 October 2010.
- b. Alumni Professorship, Auburn University Alumni Association, 2010 – 2015.
- c. 2010 Adjunct Professor, Air Command & Staff College, Maxwell, AFB.
- d. 2009 Maquis Who's Who in America.
- e. 2009 Curriculum Award, Committee on National Security Systems and the National Security Agency, "Information Assurance Risk Analysis" CNSS 4016.
- f. Joint Appointment AU Department of Management, 2009 – 2013.
- g. SCS Distinguished Service Award, 16 June 2008.
- h. Responsible for Auburn's efforts to be competitively designated as a Center of Academic Excellence in Information Assurance Research for five years by the National Security Agency, 2008 – 2013.
- i. 2008 Best Paper Award, Amer\*, S.H., Hamilton, J.A., Jr. (30%), *Understanding Security Architecture, 2008 SCS/ACM DOD Architecture Framework Modeling, Spring Simulation Multiconference*, Ottawa, Ontario, 13 – 17 April, 2008.
- j. 2008 Outstanding Conference Contribution Award, *SCS/ACM Spring Simulation Multiconference*, Ottawa, Ontario, 13 – 17 April, 2008.
- k. 2007 Best Paper Award, Richardson\*, K. P., Hamilton, J.A., Jr. (30%), Carlisle, M.C., *A Performance Analysis of the SPRiNG Protocol Through*

Simulation, 2007 SCS/ACM Simulation Software Security Symposium, Spring Simulation Multiconference, Norfolk, Va., 25 – 29 March, 2007.

- l. 2007 Elected Senior Member of the ACM.
- m. 2006 named to Who’s Who in Engineering Education, American Society of Engineering Education.
- n. 2006 Curriculum Award, Committee on National Security Systems and the National Security Agency, “Senior System Managers” (for information assurance) CNSS 4012.
- o. 2006 Curriculum Award, Committee on National Security Systems and the National Security Agency, “System Administrators” (for information assurance) CNSS 4013, beginning, intermediate and advanced levels.
- p. Responsible for Auburn’s efforts to be competitively re-designated as a Center of Academic Excellence in Information Assurance Education by the National Security Agency, 2006, 2009.
- q. 2005 – Present SCS Distinguished Lecturer (<http://www.scs.org/DLP.cfm>).
- r. 2005 Letter of Appreciation, Colonel M.S. Bohn, USMC, Director, US Marine Corps Operational Test and Evaluation Activity.
- s. 2004 Outstanding CSSE Faculty.
- t. 2004 Auburn Engineering Senior Research Award for Excellence.
- u. 2004 Letter of Appreciation, Ms. Tara Ragan, Director of Software Engineering, Space & Missile Defense Command.
- v. Responsible for Auburn’s efforts to be competitively designated as a Center of Academic Excellence by the National Security Agency, 2003 and re-designated for another three years in 2006.
- w. 2003 Elected Senior Member of the IEEE.
- x. 2002 Curriculum Award, Committee on National Security Systems and the National Security Agency, “Training Standard for Information Systems Security Professionals” NSTISSI 4011.
- y. 2002 Curriculum Award, Committee on National Security Systems and the National Security Agency, “Designated Approving Authority” (for information security) NSTISSI 4012.
- z. Auburn University Alumni Council, College of Engineering, \$20,000.00 Fellowship, 2002.

4. Scholarly Contributions

- a. Teaching
  - 1) Courses Taught

| <b>Term</b>  | <b>Course (% taught)</b>  | <b>Credit</b> | <b>Enrollment</b> |
|--------------|---|---------------|-------------------|
| Fall<br>2010 | COMP 5370/6370 Computer and Network Security (100%)                               | 3             | 12/14             |
|              | INSY 8970 Systems Engineering for Secure Computing-Intensive Environments I (30%) | 3             | 1                 |
|              | INSY 7970/7976 Systems Engineering for Secure Computing-Intensive Environments I  | 3             | 6/5               |

|             |  |       |         |
|-------------|--|-------|---------|
|             | (30%)<br>COMP 8970 Systems Engineering for Secure Computing-Intensive Environments I (30%) | 3     | 1       |
|             | COMP 7970/7976 Systems Engineering for Secure Computing-Intensive Environments I (30%)     | 3     | 15/5    |
|             | COMP 4970 Systems Engineering for Secure Computing-Intensive Environments I (30%)          | 3     | 3       |
| Spring 2010 | COMP 7700/7706 Software Architecture (100%)  | 3     | 18/5    |
| Fall 2009   | COMP 5370/6370 Computer and Network Security (100%)  | 3     | 15/12   |
| Spring 2009 | COMP 4970 Digital Forensics (100%)   | 3     | 18      |
|             | COMP 7970 Digital Forensics (100%)   | 3     | 12      |
| Fall 2008   | COMP 5370/6370 Computer and Network Security (100%)  | 3     | 16 / 11 |
|             | COMP 7700/7706 Software Architecture (100%)  | 3     | 8 / 8   |
|             | COMP 8700 Adv. Software Architecture (100%)  | 3     | 2       |
|             | COMP 4970 Digital Forensics (100%)   | 3     | 1       |
| Spring 2008 | COMP 5340/6340 Network Quality Assurance and Simulation (100%)                             | 3     | 1/1     |
| Fall 2007   | COMP 5370/6370 Computer and Network Security (100%)  | 3     | 14 / 12 |
|             | COMP 7700/7706 Software Architecture (100%)  | 3     | 18 / 3  |
| Spring 2007 | COMP 7970 Computer Forensics (100%) (1 <sup>st</sup> time taught)                          | 3     | 15      |
| Fall 2006   | COMP 5370/6370 Computer and Network Security (100%)  | 3 / 3 | 11 / 13 |
|             | COMP 7700/7706 Software Architecture (100%)  | 3 / 3 | 8 / 4   |
|             | COMP 7970 Special Topics in Network Simulation (100%)                                      | 3     | 6       |
| Spring 2006 | COMP 7700/7706 Software Architecture (100%)  | 3 / 3 | 6 / 3   |
|             | COMP 7370 Advanced Computer and Network Security (100%)                                    | 3     | 3       |
| Fall 2005   | COMP 5340 Network Quality Assurance and Simulation (100%)                                  | 3     | 4       |
|             | COMP 7440 Network Simulation(100%)   | 3     | 3       |
| Spring 2005 | COMP 5370/6370 Computer and Network Security (100%)  | 3 / 3 | 15 / 10 |
|             | COMP 7700/7706 Software Architecture   | 3 / 3 | 11 / 8  |

|             |   |       |         |
|-------------|---|-------|---------|
| Spring 2005 | COMP 5370/6370 Computer and Network Security (100%)       | 3 / 3 | 15 / 10 |
|             | COMP 7700/7706 Software Architecture (100%)               | 3 / 3 | 11 / 8  |
| Fall 2004   | COMP 4970 Network Quality Assurance and Simulation (100%) | 3     | 2       |
|             | COMP 7970 Network Quality Assurance and Simulation (100%) | 3     | 3       |
|             | COMP 8700 Simulation of Computer Networks (100%)          | 3     | 6       |
| Spring 2004 | COMP 8700 Network Simulation (100%)                       | 3     | 5       |
|             | COMP 8970 Adv. Comp. Security (100%)                      | 3     | 6       |
| Fall 2003   | COMP 6370 Computer Security (100%)                        | 3     | 26      |
|             | COMP 7700 Software Architecture (100%)                    | 3     | 17      |
| Spring 2003 | COMP 8700 Network Simulation (100%)                       | 3     | 10      |
|             | COMP 4970 Network Simulation (100%)                       | 3     | 3       |
| Fall 2002   | COMP 6370 Computer Security (100%)                        | 3     | 22      |
| Spring      | COMP 8700 Network Simulation (100%)                       | 3     | 9       |

2) Graduate Students: Completed Work

a) Major Professor

| <b>Degree</b> | <b>Name</b>        | <b>Completion</b>  |
|---------------|--------------------|--|
| M.Swe.        | Sriharsha Banavara | Spring 2011<br>Project: Software Architecture for Delta 3D and id Tech 3 Game Engine using DoDAF   |
| M.Swe.        | Radha Kuskuntla    | Fall 2010<br>Project: Modern Browsers Losing Security: Browser History is not Really Private   |
| M.Swe.        | C.W. Perr          | Fall 2010<br>Project: Department of Defense Architecture Format (DoDAF) Generation from Strongly Formed Programming Language Source Code |
| M.Swe.        | Mathew Beaubouef   | Fall 2010<br>Project: Certification & Accreditation of the Delta 3D Gaming Engine  |
| Ph.D.         | George Trawick     | Summer 2010<br>Dissertation: Digital Forensics Detection of JPEG Steganography   |
| M.S.          | Ryan O'Farrell     | Fall 2009<br>Thesis: Development of a Software Architecture Method for Software Product  |

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|--------|------------------------|---|
|        |                        | Families and its Application to the Aubiesat Satellite Program  |
| Ph.D.  | Winard Britt           | Summer 2009<br>Dissertation: Autonomous Control and Navigation of a Trained Canine  |
| Ph.D.  | Derek Sanders          | Summer 2009<br>Dissertation: A Single-Hop Medium Access Control Layer For Noisy Channels  |
| Ph.D.  | Mark Kuhr              | Spring 2009<br>Dissertation: An Adaptive Jam-Resistant Cross-Layer Protocol for Mobile Ad-Hoc Networks In Noisy Environments                    |
| M.Swe. | Tiffanie Jones         | Spring 2009<br>Project: The Albany Police Department Mobile Data Unit (AMDU) "Enforcing the law in an Efficient and Secure Manner"              |
| M.Swe. | William Conkling       | Spring 2009<br>Project: Applet Based Visualizer for NS3 Simulations   |
| Ph.D.  | Idongesit Mkpog-Ruffin | Spring 2009 (co-chair w/ Dr. Umphress)<br>Dissertation: Quantitative Software Risk Assessment Model in the Design Phase of Software Development |
| Ph.D.  | Stephen Torri          | Spring 2009<br>Dissertation: Generic Reverse Engineering Architecture with Compiler and Compression Classification Components                   |
| Ph.D.  | Suhair Amer            | Spring 2008<br>Dissertation: Host-Based Intrusion Detection System Enhanced with Danger Theory of Artificial Immune Systems                     |
| Ph.D.  | Eric Imsand            | Spring 2008<br>Dissertation: Applications of GUI Usage Analysis   |
| M.Swe. | Gerry Hicks            | Spring 2008<br>Project: Cyber Analysis Tool: Collecting Sensitive/Confidential Information Through an Automated Search                          |
| M.Swe. | Daniel Box             | Spring 2008<br>Project: Anti-Terrorism Profiling Using Data Mining  |
| M.Swe. | Jonathan MacDonald     | Spring 2008<br>Project: Fraud-ARC: An Investigative Data Mining Engine For Identity Fraud Analysis  |
| M.Swe. | Bob Leithiser          | Spring 2008<br>Project: Enabling Collaboration in Artifact  |

|        |                        |  |
|--------|------------------------|--|
|        |                        | Modeling Through the Use of Relational State Tracking  |
| M.Swe. | Derek Sanders          | Spring 2008<br>Project: Investigating a Cryptographic Coprocessor  |
| M.Swe. | Major Stephen Hamilton | Spring 2008<br>Project: Secure Jam Resistant Key Transfer  |
| M.Swe. | Mark Kuhr              | Spring 2008<br>Project: Virtual Privacy Appliance with Geo-Perspective Access  |
| M.Swe. | Adam Sachitano         | Spring 2008<br>Project: Detecting Abnormal Usage of a Software Version Control Repository  |
| Ph.D.  | Xuan Yu                | Spring 2007<br>Dissertation: A Defense System on DDOS Attacks in Mobile Ad Hoc Networks  |
| M.Swe. | Kevin Richardson       | Spring 2007<br>Project: Safely Redistributing Untrusted Code using .NET  |
| M.Swe. | Alan Hunt              | Fall 2005<br>Project: Synclynk Connectivity  |
| M.Swe. | Adam Hathcock          | Fall 2005<br>Project: Implementation of Secure Overlay Services in Java  |
| M.S.   | Brian Eoff             | Fall 2005<br>Thesis: Using Genetic Programming to Quantify the Effectiveness of Similar User Cluster History as a Personalized Search Metric |
| Ph.D.  | Jay-Evan Tevis         | Summer 2005<br>Dissertation: Automatic Detection of Software Security Vulnerabilities in Executable Program Files                            |
| M.Swe. | Pamela Sanders         | Fall 2004<br>Project: Computer-Assisted Therapy: A Personal Digital Assistant Application for Generalized Anxiety Disorder                   |
| M.S.   | Wade Chatam            | Summer 2004<br>Thesis: Strategic Firewall Placement  |
| M.Swe. | Van Norris             | Spring 2004<br>Project: Open Source Parameter Search   |
| M.S.   | Eric Imsand            | Fall 2003<br>Thesis: Using Genetic Algorithms to Aid in a Vulnerability Analysis of National Missile Defense Simulation Software             |
| M.S.   | Mark Peters            | Summer 2003  |

|  |  |   |
|--|--|---|
|  |  | Thesis: Vulnerability of Wireless Position Location Systems to Spoofing |
|--|--|---|

b) Committee Member

| <b>Degree</b> | <b>Name</b>      | <b>Completion</b>                   |
|---------------|------------------|-------------------------------------|
| Ph.D.         | Joe Huscroft     | Fall 2010 (Outside Reader)          |
| M.S.          | Brandon Maharrey | Fall 2010                           |
| M.S.          | Anand Kulkarni   | Summer 2010                         |
| Ph.D.         | Yawen Dai        | Spring 2010                         |
| M.S.          | Kyeongdon Lee    | Spring 2010                         |
| M.S.          | Jung Hoon Lee    | Spring 2010                         |
| M.S.          | Uday Pidikit     | Fall 2009                           |
| M.S.          | A. Jayakeerthy   | Spring 2009                         |
| Ph.D.         | Volkun Ustun     | Spring 2009 (Outside Reader)        |
| Ph.D.         | R.K. Neelisetti  | Fall 2008                           |
| M.Swe.        | Jamey White      | Summer 2008                         |
| Ph.D.         | Ziliang Zong     | Summer 2008                         |
| Ph.D.         | Aaron Garrett    | Spring 2008                         |
| M.S.          | Bradley Mitchell | Fall 2007                           |
| M.S.          | Sean Cook        | Fall 2007                           |
| M.Swe.        | Megan Burton     | Fall 2007                           |
| M.Swe.        | Serhat Tekinalp  | Spring 2007                         |
| M.S.          | Win Britt        | Spring 2007                         |
| M.S.          | Avdhoot Saple    | Spring 2006                         |
| M.S.          | Shelby Darnell   | Fall 2005                           |
| Ph.D.         | Kenneth Knapp    | Summer 2005 (Outside Reader)        |
| M.S.          | Rahul Shah       | Summer 2005                         |
| M.S.          | Shuo Wang        | Summer 2005                         |
| M.Swe.        | Vince Cross      | Spring 2005                         |
| M.Swe.        | Hugo Troche      | Spring 2004                         |
| M.Swe.        | Han Chen         | Spring 2004                         |
| M.Swe.        | Ye Wu            | Spring 2004                         |
| Ph.D.         | Kevin Greaney    | Fall 2002 (Naval Postgraduate Sch.) |
| M.S.          | Yawen Dye        | Fall 2002                           |
| M.Swe.        | Michael Stokes   | Fall 2002                           |

3) Graduate Students: Serving as Major Professor

| <b>Degree</b> | <b>Name</b>      | <b>Completion</b>                   |
|---------------|------------------|-------------------------------------|
| Ph.D.         | Robert Leithiser | Summer 2012: passed orals, Outreach |
| Ph.D.         | Alex Mentis      | Spring 2014: Army Fellowship        |
| Ph.D.         | C.W. Perr        | Fall 2012: NFS Fellowship/GRA       |
| Ph.D.         | Alex Applegate   | Fall 2010: GRA                      |

|        |                  |                                  |
|--------|------------------|----------------------------------|
| Ph.D.  | Charles Carter   | Spring 2013: Outreach            |
| Ph.D.  | Devon Cook       | Spring 2013: GRA                 |
| Ph.D.  | Chris Harrison   | Spring 2013: GRA                 |
| M.Swe. | Jimmy Thompson   | Spring 2012: NFS Fellowship/GRA  |
| M.Swe. | Richard Alverson | Spring 2011: University Employee |
| M.Swe. | Steven Payne     | Spring 2011: Outreach            |
| M.Swe. | Chase Rushing    | Spring 2012: GRA                 |
| M.Swe. | Kurt Treanegan   | Summer 2011: GRA                 |
| M.Swe. | Stephen A. Hanna | Summer 2011: REU Scholarship     |

#### 4) Courses and Curricula Developed

##### At Auburn University:

1. COMP 3500 *Operating Systems*. Renovated Course. Objective: Provide upper division undergraduates with a thorough understanding of operating systems. Lecture notes, exams, projects developed and posted on the web.
2. COMP 5340 (first taught as COMP 4970) *Network Quality Assurance and Simulation*. New Course. Objective: Provide an undergraduate learning experience in designing network simulations. Lecture notes, exams, projects developed and posted on the web. Paperwork completed to add course (COMP 5340) to university course catalog.
3. COMP 5370/6370 *Computer and Network Security*. New Course. Objective: Practical experience in the areas of software and network security. Lecture notes, exams, projects developed and posted on the web. Paperwork completed to add course (COMP 5370/6370) to university course catalog.
4. COMP 5350/6350 *Digital Forensics*. New Course. Objective: This course will introduce the topics of computer compromises and computer forensics. Students will be required to learn different aspects of computer crime and ways in which to uncover, protect and exploit digital evidence. Paperwork completed to add course (COMP 5370/6370) to university course catalog. Concurrent course ISMN 5350/6350 to be offered to MIS majors.
5. COMP 7370 *Advanced Computer and Network Security*. New Course. Objective: Graduate research in the areas of software and network security. Lecture notes, exams, projects developed and posted on the web. Paperwork completed to add course (COMP 7370) to university course catalog.
6. COMP 7440 *Simulation of Computer Networks*. New Course. Objective: Graduate research experience in designing network simulations. Lecture notes, exams, projects developed and posted on the web. Paperwork completed to add course (COMP 7440) to university course catalog.

7. COMP 7700 *Software Architecture* (COMP 7706 distance learning version). Course listed in the catalog, but not previously offered. Objective: Gain practical experience in several software architecture methodologies, processes and description languages. Gain familiarity in current research trends in software architecture. Learn the capabilities and limitations of current software architecture techniques.
8. COMP 7970 *Computer Forensics* (to be listed in the catalog as: COMP5350/6350). Objective: A course open to non-CS major seniors and graduate students focusing on the technical, analytical and law enforcement issues associated with conducting forensic analysis of computer systems and networks.

At United States Military Academy:

CS 403 *Advanced Programming in Ada*. Renovated Course. Objective: Implementation of object-oriented designs developed to complement the two-semester capstone software engineering design sequence. Lecture notes, exams, projects developed and posted on the web.

CS 393 *Database Systems*. Renovated Course. Objective: Implementation of web-based database front-ends and design of database back-ends. Lecture notes, exams, projects developed and posted on the web.

5) Grants Received Related to Teaching

- \$250,000.00 Grant from the US Army Office of the Director, Information Systems for Command, Control, Communications and Computers (DISC4) to incorporate network simulation into the USMA Electrical Engineering and Computer Science curriculum. (1998)
- \$50,000.00 Research Grant from the Defense Information Systems Agency for Faculty Development. (1997)

6) Publications Pertaining to Teaching

See section 4.B.2

7) Other Contributions to Teaching

- Instructor/mentor 1997 Faculty Development Workshop, US Military Academy, West Point
- Instructor, Ada Refresher Course, Naval Postgraduate School 2000

8) Teaching Philosophy

**Context:** I began my teaching career teaching professional computer science and software engineering courses at the U.S. Army Computer Science School from 1990 - 1993. While at the Computer Science School, the U.S. Military Academy, West Point, selected me to join their faculty and after completing my doctorate in 1996, I taught undergraduate courses in the Department of Electrical Engineering and Computer Science. From the West Point Faculty, I was selected for an operational assignment at the Space and Naval Warfare Systems Command and concurrently appointed as a Visiting Associate Professor at the Naval Postgraduate School.

The engineering disciplines are unforgiving and must be taught to the highest standards. However, the men and women who teach engineers must assist students to achieve those high standards. Diversity is a critical component of engineering education. This goes far beyond the very important issues of fairness and opportunity. The United States needs more engineers. A major impact of the critical lack of women in engineering, for example, is that engineering schools are missing half of the available talent pool. Given the technical challenges of quality engineering education, every potential barrier to students must be aggressively removed.

I enjoy teaching security, software architecture, computer networks, software engineering, modeling and simulation and operating systems. Therefore my teaching interests are directly applicable to my research areas. I believe that teaching and research are highly interrelated. Putting research into the classroom excites students and ensures that your classroom material is fresh, relevant, and cutting edge. Excellence in the classroom inspires students towards research careers.

I believe strongly that engineering education must have a healthy balance of theory and practice. Appropriately constructed classroom assignments will have a strong design and implementation component that illustrates the underlying theory. For graduate and upper division undergraduates, this type of course design offers the students early publication opportunities.

Philosophically, I believe that every student should have a chance to make an "A" in every course. I absolutely reject the concept of grade curving. A professor should outline the required tasks and grading standards on the first day of class and adhere to those standards. Students should then be graded based on their individual performances measured against those standards.

Practicing engineers do not work by rote memorization; rather, they are problem solvers who use references when needed. Consequently, I believe engineering examinations should be open book and open note exams that evaluate a student's problem solving ability. Engineers must be more than just technically competent. They must be able to effectively communicate their ideas and designs. Therefore I believe that every course requires a significant writing requirement.

Finally, information technology is the domain of computer scientists and software engineers. It is important that those who teach IT be able to effectively use IT in the

delivery of instruction. I use web-based support for all of my classes. This not only facilitates resident instruction but also supports outreach.

Students are why we have universities. There should never be a question of teaching versus research. Excellence in teaching is the prerequisite of a strong research program.

My self-evaluation is that I am teaching to a high standard in accordance with the teaching philosophy outlined above. This is evidenced by my course critiques. More importantly, a review of my on-line classes will show that my class implementation is consistent with my stated teaching philosophy.

## B. Research/Creative Work

NB: Student co-authors are noted with an asterisk.

### 1. Books

1. Editors: Ades, M.J., Chinni, M.J., Hamilton, J.A., Jr., (20%), Hill, J.M.D., Rajaei, H. and Wu, C., *Proceedings of the 2007 Spring Simulation Multiconference*, vol. 2, ISBN 1-56555-314-4.
2. Editors: Hamilton, J.A., Jr., (70%), MacDonald, R., Chinni, M.J., *Proceedings of the 2006 Spring Simulation Multiconference*, vol. 1 ISBN 1-56555-304-7, vol. 2 ISBN 1-56555-303-9.
3. Hamilton, J.A., Jr., (80%) et al., *Modeling Command and Control Interoperability: Cutting the Gordian Knot*, SCS Press, San Diego, Calif. 2004. ISBN: 1-56555-281-4.
4. Hamilton, J.A., Jr., (60%) Nash, D.A., Pooch, U.W., *Distributed Simulation*, CRC Press, Boca Raton, Fla., 1997. ISBN: 0-8493-2590-0.

### 2) Article-length Publications

#### Refereed Journal Publications Submitted (Not yet accepted)

1. Imsand, E.S., Hamilton, J.A., Jr., (20%), "Authenticating Users through GUI Manipulation Profiling," submitted to: *ACM Transactions on Computer Human Interface*.

#### Refereed Journal Publications

\*indicates student author

1. Britt\*, W., Miller, J., Wagner, P., Bevely, D., Hamilton, J.A., Jr., (15%) *The Command and Navigation of a Trained Canine, Personal and Ubiquitous Computing*, Springer, published online 30 March 2010.

2. Hamilton, J.A., Jr., (100%), *SCS: Securing the Future of Simulation*, Simulation, Vol. 84, No. 12, Dec. 2008, pp 575-576.
3. Garrett\*, A. Hamilton, J.A., Jr., (25%), Dozier, G.V., *Generic Algorithm Techniques for the Cryptanalysis of TEA*, International Journal on Intelligent Control and Systems Special Session on Information Assurance. vol. 12, no. 4, Dec. 2007, pp 325 - 330.
4. Torri\*, S., Sanders\*, D., Evans, G. and Hamilton, J.A., Jr., (25%), *Java Obfuscation*, Crosstalk, the Journal of Defense Software Engineering, Hill AFB, Utah, December 2007, pp 19 – 23.
5. Mkpogon-Ruffin\*, I, Hamilton, J.A., Jr., (20%), Carlisle, M., *The New Java Security Architecture*, Crosstalk, the Journal of Defense Software Engineering, Hill AFB, Utah, July, 2006,  
<http://www.stsc.hill.af.mil/CrossTalk/2006/07/0607RuffinHamiltonCarlisle.html>.
6. Hamilton, J.A., Jr. (100%) *A Conceptual Model for Interoperable Command and Control Acquisition*, Journal of Defense Modeling and Simulation, vol. 3, no. 2, April 2006, pp 125 – 138.
7. Hamilton, J.A., Jr. (100%) *DODAF – Based Information Assurance Architectures*, Crosstalk, The Journal of Defense Software Engineering, vol. 19, No. 2, February 2006, pp 4 – 7.
8. Imsand\*, E.S., Evans, G., Dozier, G., Hamilton, J.A., Jr., (30%) *Using Genetic Algorithms to Aid in a Vulnerability Analysis of National Missile Defense Simulation Software*, Journal of Defense Modeling and Simulation, vol.1, no.4, October 2004, pp 215 – 224.
9. Hamilton, J.A., Jr., (75%) Greaney, K.J., Evans, G., *Defining a Process for Software Vulnerability Assessments*, Crosstalk, The Journal of Defense Software Engineering, vol. 16, No. 11, November 2003, pp 22 – 25.
10. Hamilton, J.A., Jr. (45%), Rosen, J.D. and Summers, P.A., *An Interoperability Roadmap for C4ISR Legacy Systems*, Acquisition Review Quarterly, vol. 28, Winter 2002, pp 17 – 31.
11. Bryan, J.D., Deal, J.C., Hamilton, J.A., Jr. (40%), *Army Enterprise XXI*, Army RD&A, September-October 1998, pp 18 - 20.
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1. Imsand, E.S., Hamilton, J.A., Jr. (30%), *Software Architecture for Simulation Integration*, 2010 Huntsville Simulation Conference, Huntsville, Ala. 22 - 28 October

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2. Hamilton\*, S.S., Imsand, E.S., Hamilton, J.A., Jr. (10%), *Increasing Organization Efficiency through Software Architecture A case study of the JTF-GNO*, IEEE MILCOM 2010, San Jose, Calif., 30 Oct. – 3 Nov.
3. Imsand, E.S., Hamilton, J.A., Jr. (30%), *Software Architecture for Simulation Integration.*, 2010 Huntsville Simulation Conference, Huntsville, Ala. 26 – 28 October 2010.
4. Amer, S.H., Hamilton, J.A., Jr. (30%), *A Danger Theory Model*, 2010 International Conference on Bioinformatics and Computational Biology (BIOCOMP'10), Las Vegas, Nev., 12 – 15 July, 2010.
5. Amer, S.H., Hamilton, J.A., Jr. (30%), *Resource Evaluation of Positive and Negative Selection*, 2010 International Conference on Security and Management (SAM '10), Las Vegas, Nev., 12 – 15 July, 2010.
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7. Banavara\*, S., Imsand, E.S., Hamilton, J.A., Jr. (10%), *Information Assurance in Video Streaming: A Case Study*, 5<sup>th</sup> Annual Symposium on Information Assurance (ASIA '10), New York State Cyber Security Conference, Albany, N.Y., June 16 – 17, 2010, pp 37 – 41.
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108. Hamilton, J.A., Jr. (60%), Ruocco, A.S., *Distributed Simulation Techniques using Conventional Simulation Languages*, 1997 Simulation Multiconference Proceedings,

April 6 - 10, 1997, Atlanta, Ga., pp 66- 71.

109. Brutch, P.B., Hamilton, J.A., Jr. (30%), Nash, D.A., Marti, W.F., Pooch, U.W., *A Formal Approach for the Simulation of Local Area Networks*, Conference on Communication Networks and Distributed Systems Modeling and Simulation, Jan 12 - 15, 1997, Phoenix, Az., pp 3 - 8.
110. Hamilton, J.A., Jr. (60%), Cook, D.A., *Ada Training and Education in the US Army and US Air Force*, Tri-Ada 96 Proceedings, Dec 3 - 7 1996, Philadelphia, Pa., pp 151 - 155.
111. Marti, W.F., Hamilton, J.A., Jr. (30%), Pooch, U.W., *Packet Tracing: A New Paradigm for Teaching Computer Network Courses*, SIGCSE/SIGCUE Joint Conference on Integrating Technology into Computer Science, June 2- 6 1996, Barcelona, Spain, published in *SIGCSE Bulletin*, vol. 28, pp 162 - 164.
112. Hamilton, J.A., Jr. (65%), Marti, W.F., Pooch, U.W., *Building Distributed Systems*, Eighth Annual Software Technology Conference, April 21 - 26, 1996, Salt Lake City, Utah.
113. Marti, W.F., Hamilton, J.A., Jr. (30%), *Packet Tracing: A Workshop on Teaching and Understanding Computer Networks*, Proceedings, ACM Special Interest Group in Computer Science Education Conference, Feb. 15 - 17, 1996, Philadelphia, Pa.
114. Hamilton, J.A., Jr. (75%), Bachus, B.D., Pooch, U.W., *Integrating Distributed Simulation into Force XXI Training*, 1996 SCS Simulation Multiconference Proceedings, April 8 - 11, 1996, New Orleans, La., pp 8 - 13.
115. Hamilton, J.A., Jr. (90%), Pooch, U.W., *An Open Simulation Architecture for Force XXI*, 1995 Winter Simulation Conference Proceedings, Dec 3 - 6, 1995, Arlington, Va., pp 1296 - 1303.
116. Hamilton, J.A., Jr. (80%), Cook, D.A., Pooch, U.W., *Distributed Simulation in Ada 95*, Tri-Ada '95 Proceedings, Nov 5 -10, 1995, Anaheim, Calif., pp 105 - 112.
117. Hamilton, J.A., Jr. (90%), Pooch, U.W., *A Survey of Object-Oriented Methodologies*, Tri-Ada '95 Proceedings, Nov 5 -10, 1995, Anaheim, Calif., pp 226 - 233.

### Video

Hamilton, J.A., Jr., 2000 *Joint Technical Architecture*, Air Force Institute of Technology, Wright-Patterson AFB, OH, 30 minutes.

3) Papers or Lectures

Amer\*, S. H., Hamilton, J.A., Jr., (20%), "Intrusion Detection Systems, (IDS) Taxonomy – A Short Review," *DOD Software Tech News*, vol. 13, no. 2, June 2010, DOD Data & Analysis Center for Software, Air Force Research Laboratory, Rome, N.Y., pp 23 - 30.

#### Professional Meetings (previous 3 years)

1. Hamilton, J.A., Jr., Invited Testimony: "An SCS Perspective on Modeling and Simulation," presented to the National Research Council Committee on Modeling, Simulation and Games, 12 January 2009.
2. Hamilton, J.A., Jr., O'Connell, L.H., "The Impact of JCIDS on Software-Intensive Acquisitions, 2008 Systems & Software Technology Conference, Las Vegas, Nev., 2 May 2008.
3. Hamilton, J.A., Jr., Invited Lecture: "Security and Missile Defense Software," Mississippi State University, Starkville, Miss., 20 February 2006.
4. Hamilton, J.A., Jr., "The Information Non-War of 2015," Space and Missile Defense Conference, Huntsville, AL, 15 – 18 Aug., 2005.

#### Keynote Addresses

1. *Critical Mass in Modeling & Simulation: the Alabama Example*, 2008 Huntsville Simulation Conference, keynote address, 22 – 23 October 2008, Huntsville, Ala.
2. *Advances in DODAF-Based Information Assurance Architectures*, 2008 Systems & Software Technology Conference, keynote address, 1 May 2008, Las Vegas, Nev.
3. *Critical Mass: SCS-SISO Cooperative Enterprises*, plenary address, 2007 SISO Fall Simulation Interoperability Workshop, 16-20 September 2007, Orlando Fla.
4. *A Brief History of Simulation & an SCS Update*, keynote address, SCS Summer Simulation Multiconference, Aug 15 – 18 2007, San Diego, Calif.
5. *Simulation Security: Securing the Future of Simulation*, keynote address, 17<sup>th</sup> European Simulation Symposium, Oct 20 - 23 2005, Marseille, France.
6. *Defense Interoperability: Software Engineering Comes of Age in the DoD*, interoperability keynote address, Software Technology Conference, April 29 - May 4, 2001, Salt Lake City, Utah.

7. *Programming Languages Do Make a Difference*, keynote address, ACM Tri-Ada '97 Conference, Nov 9 - 13 1997, St. Louis, Mo.
8. *Beyond the Mandate: Ada in the 21st Century*, keynote address, 14th Washington Ada Symposium, June 25 - 26, 1997, Washington, D.C.
9. *Implications of the NRC Report for the Department of Defense*, keynote address, 11th Annual Ada Software Engineering Education Symposium, Monmouth University, N.J., June 12 - 13 1997.

#### 4) Exhibitions

- Organized CSSE Exhibition 2002 DOD Software Technology Conference

#### 5) Performances

#### 6) Patents and Inventions

#### 7) Other Research/Creative Contributions

Grant-in-Kind: Thirty OPNET software licenses renewed semiannually. Estimated value: OPNET Modeler: \$30,000.00 each + Wireless Module: \$10,000.00 each + Terrain Module \$10,000.00 each + Application Characterization Environment \$10,000.00 + Flow Analysis Module \$10,000.00 each x 30 licenses equals \$2,100,000.00 worth of industrial software for Auburn students and faculty to use. Software is hosted on ENS servers and available to all users in the College of Engineering.

#### 8) Grants and Contracts

#### Research Proposals – FUNDED

1. 154,000.00 DOD University Affiliated Research Center (UARC) / Stevens Institute of Technology “Integration of M&S (Modeling and Simulation), Software Design and DoDAF (Department of Defense Architecture Framework) (Aug 2010 – July 2011) PI Hamilton (70%), Co-PI Imsand (30%) (Through DOD UARC Contract #: H98230-08-D-0171).
2. \$750,000.00 Joint IED Defeat Organization “Counter-IED Medical Technology Initiative,” (Sept 2010 – Sept 2011) PI Hamilton (50%), co-PI Imsand (25%), co-PI Biaz (10%), co-PI Chapman (10%), co-PI Chang (5%) (DOD Contract # HQ0034-10-C-0031).

3. \$120,000.00 2010 MDA Phase II SBIR with RAM Laboratories and Auburn University, "Real-time Application Security Analyzer," (Sept 2010 – Sept 2012) PI Hamilton (100%) *in contract negotiation*.
4. \$2,190.00 2010 DOD Information Assurance Partnership with the Information Resource Management College, (August 2010 – August 2011) PI Hamilton (100%).
5. \$200,000.00 DOD University Affiliated Research Center (UARC) / Stevens Institute of Technology, "Systems Engineering in a Secure Computing Intensive Environment," (June 2010 – June 2011) PI Umphress, Co-PI Smith, Co-PI Hamilton (30%), (Through DOD UARC Contract #: H98230-08-D-0171).
6. \$20,348.00 DOD University Affiliated Research Center (UARC) / Stevens Institute of Technology, "Security Engineering," (Nov 2009 – Apr 2010) PI Hamilton 100% (Through DOD UARC Contract #: H98230-08-D-0171).
7. \$40,000.00 "MDA Vulnerability Analysis," Grant from Missile Defense Agency to study simulation software vulnerabilities (Oct 2009 – Apr 2010) PI Hamilton 60%, Co-PI Imsand 40%, *publication restricted*.
8. \$27,000.00 DOD Joint IED Defeat Office / Bodiflo "Individual Blast Tracking System," (Oct 2009 – Dec 2009) PI Hamilton 60%, Co-PI Imsand (40%).
9. \$10,000.00 DOD Joint IED Defeat Office / ISHPI "Combat Medical Triage Simulation Software Evaluation," (Apr 2009 – Oct 2009) PI Hamilton (100%).
10. \$84,644.04 "Information Warfare Exercise / Intelligence Analysis and Information Assurance Education," DOD IASP Capacity Building Grant from the National Security Agency. (Aug 2009 – Aug 2010) PI Hamilton 70%, Co-PI Umphress 15%, Co-PI Norton 15% (NSA Contract Number NSA-H98230-09-1-0364).
11. \$149,999.00 NSF #0837341 "QoSec: A Novel Middleware-Based Approach to Teaching Computer Security Courses, \$149,999.00, PI Qin, Co-PI Ku, Co-PI Hamilton (25%), Co-PI Chang.
12. \$20,000.00 MDA Phase I SBIR B083-042-0063 "A Real-time Application Security Analyzer," (April 2009 – April 2010) RAM Labs PI McGraw, Auburn PI Hamilton 100% (MDA contract number HQ0006-09-C-7165).
13. \$60,000.00 Northrop Grumman #G00004246 "Mission/Business Effects of Technical Risks/DODAF Information Assurance Architecture," (Jan 2009 –

Dec 2009) PI Hamilton (100%).

14. \$26,280.00 “ A Single Hop MAC Layer for Noisy Channels,” Grant from RAM Laboratories. (May 2008 – May 2009) PI Hamilton 100%.
15. \$200,000.00 NSF #0831502 “CyberTrust -ISG: SPEAR: Space Encryption based Query Processing for Privacy-Aware Location-based Services,” (Aug 2008 – Aug 2011) PI Ku, Co-PIs Wang, Qin, Hamilton (15%), 15 pages.
16. \$325,000.00 (\$175,000.00 to Auburn) NSF #0830831 “Building Information Assurance Capacity with Albany State University,” (Sep 2008 – Sep 2010) PI Hamilton (70%) Co-PIs Ku (10%), Qin (10%) and Chang, (10%).
17. \$299,636.00 NSF #0753305 “CI-TEAM Implementation Project. Collaborative Project: A Digital Forensics Cyberinfrastructure Workforce Training Initiative for America's Veterans,” Collaborative Proposal with Mississippi State University, (Aug 2008 – Aug 2011), PI Hamilton 50%, Co-PI Qin 20%, Co-PI Ku, 20%, Co-PI Chang 10%.
18. \$117,914.07 “DOD Information Assurance Scholarship Program,” Grant from the National Security Agency. (Aug 2008 – Aug 2009) PI Hamilton 70%, Co-PI Chang 30% (NSA Contract # NSA-H98230-08-1-0212).
19. \$150,000.00 “MDA Vulnerability Analysis,” Grant from Missile Defense Agency to study simulation software vulnerabilities (Jan 2008 – Jan 2009) PI Hamilton 100%, (DOD Contract # HQ0006-02-2-0013), *publication restricted*.
20. \$227,945.35 “DOD Information Assurance Scholarship Program,” Grant from the National Security Agency. (Aug 2007 – Aug 2008) PI Hamilton 60%, Co-PI Chang 40% (NSA Contract # NSA-H98230-07-1-0224).
21. \$21,000.00 “Software Anti-Tamper Testbed,” Grant from RAM Laboratories. (Aug 2007 – May 2008) PI Hamilton 100%.
22. \$100,000.00 “MDA Vulnerability Analysis,” Grant from Missile Defense Agency to study simulation software vulnerabilities (Oct 2006 – Sept 2007) – PI Hamilton 100%, (DOD Contract # HQ0006-02-2-0013), *publication restricted*.
23. \$241,000.00 “Data Dissemination from Small Army UAV’s,” Army AMCOM, (Oct 2006 – Sept 2007) PI Chapman, Co-PI Hamilton 15%, Co-PI Umphress, Co-PI Crouse.
24. \$105,902.36 “DOD Information Assurance Scholarship Program,” Grant from the National Security Agency. (Sept 2006 – Sept 2008) PI Hamilton 60%,

Co-PI Chang 40% (NSA Contract # NSA-H98230-06-1-0115).

25. \$30,000.00 2006 DOD Information Assurance Capacity Building for Auburn University Proposal. Grant from the National Security Agency to conduct outreach to Redstone Arsenal and for new curriculum development. (Sept 2006 – Sept 2007) PI Hamilton 100%(NSA Contract # NSA-H98230-06-1-0115).
26. \$1,500,000.00 NSF #0621307 “SFS: Scholarship Partnership with Alabama State University and Tuskegee University.” (Sept 2006 – Sept 2009) PI Hamilton, 50%, Co-PI Chang, 20%, Co-PI Dozier 10%, Co-PI Wang, 10%, Co-PI Gilbert, 10%.
27. \$35,589.72 US Army Space and Missile Defense Command, “Secure Wireless for Future Operational Capability Tactical Operations Center II.” (Feb 2006 – Sept 2006) PI Hamilton 50%, Co-PI Wu 50%.
28. \$3000.00 British Aerospace Corporate Gift, Sponsorship of Auburn ACM Programming Contest Team, Nov 2005.
29. \$100,000.00 NSF #0516432 Collaborative Research: Building Information Assurance Education Capacity with Alabama State University Proposal. (Sept 2005 – Sept 2008) PI Hamilton, 50%, Co-PI Chang, 30%, Co-PI Dozier 10%, Co-PI Wang, 10%.
30. \$77,457.54 2005 DOD Information Assurance Capacity Building for Auburn University Proposal. Grant from the National Security Agency to conduct outreach to Redstone Arsenal, Alabama State University, US Air Force Academy and for new curriculum development. (Sept 2005 – Sept 2006) PI Hamilton 60%, Co-PI Chang 40% (NSA-H98230-05-1-0134).
31. \$3000.00 Scitor Corporate Gift, Sponsorship of Auburn Digital Combat Exercise Team, Mar 2005.
32. \$630,000.00 Army AMCOM “Wireless Network Software for Unmanned Aerial Vehicles”, (Mar 2005 – Sept 2007) PI Chapman, Co-PI Hamilton 15%, Co-PI Umphress, Co-PI Wu.
33. \$41,352.00 “Distance Learning to Redstone Arsenal,” Grant from the National Security Agency to develop and conduct Information Security (INFOSEC) qualification courses (Jul 2004 – Sept 2005) PI Hamilton (100%) (NSA Contract # H98230-04-1-0229).
34. \$100,000.00 “U.S. Air Force Academy Research, Development, and Education Support,” Grant from the U.S. Air Force Academy to study security architecture and denial of service attacks. (Aug 2004 – Sept 2005) – PI Hamilton (100%).

35. \$270,000.00 “MDA Vulnerability Analysis,” Grant from Missile Defense Agency to study simulation vulnerabilities (Sept 2003 – Sept 2004) PI Hamilton (100%),(DOD Contract # HQ0006-02-2-0013), *publication restricted*.
36. \$100,000.00 “MDA Vulnerability Analysis,” Grant from Missile Defense Agency to study simulation vulnerabilities (Sept 2003 – Sept 2005) PI Hamilton (100%),(DOD Contract # HQ0006-02-2-0013), *publication restricted*.
37. \$25,935.00 Research Grant from the Space and Naval Warfare Systems Command to study command system interoperability (June 2002 – Sept 2003) PI Hamilton (100%)
38. \$5000.00 Equipment Grant from the Space and Naval Warfare Systems Command to study command system interoperability (Oct 2001) PI Hamilton (100%)

Research Proposals – PENDING

Research Proposals – NOT FUNDED

1. NSF #0945575 “SFS: Scholarship Partnership with Alabama State University and Tuskegee University, \$147,176.00, PI Hamilton (25%), 15 pages.
2. NSF #0833200 “Parallel Programming Models for Data-Intensive Applications on Multicore-Based High-End Computing Systems,” \$527,678, PI Qin, Co-PI Hamilton (25%), Co-PI Chang, 15 pages.
3. STTR OSD08-T001: “Automatic Identification & Mitigation of Unauthorized Information Leaking from Enterprise Networks,” \$100,000, PI RAM Labs (70%), Co-PI Hamilton (30%) 25 pages.
4. NSF #0723628 “Collaborative Research: Building Information Assurance Education Capacity with Albany State University and Tuskegee University,” \$293,099.00, PI Hamilton (50%), Co-PI Chang (30%), Co-PI Dozier (10%), Co-PI Wang (10%), 15 pages.
5. STTR A07-T002: “Software Anti-Tamper for Matrix based Algorithms,” \$30,000, PI Hamilton (30%), Co-PI RAM Labs (70%) 25 pages.
6. NSF #0627637 “CT-ER: Collaborative Research - Handcuffing Software Components for Security,” \$149,816.00 PI Hamilton (33%), Co-PI Chang (33%), Co-PI Umphress (33%) and Co-PI M. Carlisle (0% USAF-funded), 15

pages.

7. NSF #0620632 “Collaborative Research: SFS: Building Information Assurance Education Capacity with Tuskegee University,” \$297,697.00 PI Hamilton (33%), Co-PI Chang (27%), Co-PI Cegielski (27%), Co-PI Dozier (7%), Co-PI Wang (7%) 15 pages.
8. MDA STTR: Cyber-Security. \$30,000, PI Ram Labs, 70%, Co-PI Hamilton, 30%, 20 pages.
9. MDA SBIR: Software Anti-Tampering Technologies. \$30,000. PI AEgis Technologies, Inc. 70%, Co-PI Hamilton, 30%, 20 pages.
10. MDA STTR: Screech Owl Information Assurance Organizational Metrics and Scorecard. PI ISAC, Inc. 70%, Co-PI Hamilton, 30%, 20 pages.
11. NSF #0627637 CT-ER: Collaborative Research - Handcuffing Software Components for Security. PI Hamilton, 25%, Co-PI Carlisle, 25%, Co-PI Umphress, 25%, Co-PI Chang, 25% 15 pages.
12. NSF #0620632 Collaborative Research: SFS: Building Information Assurance Education Capacity with Tuskegee University. PI Hamilton, 60%, Co-PI Chang, 10%, Co-PI Cegielski, 10%, Co-PI Wang, 10%, Co-PI Dozier, 10%.
13. NSF #0516837 SFS: Scholarship Partnership with Alabama State University and Tuskegee University Proposal. PI Hamilton, 50%, Chang, 30%, Dozier 10%, Wang, 10%, 15 pages.
14. 2005 EETEAMS Proposal: A Layered Defense for Denial of Service Attacks PI Hamilton 60%, Co-PI Chapman 20%, Co-PI Wu 20%, 10 pages.
15. Network Defense in Depth, Submitted in response to the Education and Employment for Technology Excellence in Aviation, Missiles and Space (EETEAMS) Grants for Colleges and Universities PI Hamilton 40%, Co-PI Chapman 30%, Co-PI Wu 30%, 10 pages.
16. #0416580 NSF Expanding Information Assurance Education Across Alabama, PI Hamilton 100%; 15 pages.
17. #0416602 NSF Scholarship for Service Auburn University, PI Hamilton 100%; 14 pages.
18. #0426532 NSF ITR Exploratory Conflict, PI Yilmaz, 60%, Co-PI Hamilton, 20%, Co-PI Oren 20%, 15 pages.
19. #0430236 NSF Cybertrust, Defense in Depth, PI Hamilton 40%, Co-PI

Chapman 30%, Co-PI Wu 30%, 15 pages.

20. #0433638 NSF Cyber Security Education and Research Alliance Center Proposal, PI Jack Stinson, ATI, 40%, Co-PIs Hamilton, 20%, Chapman 20%, Wu 20%, 15 pages.

21. 2004 DOD Information Assurance Scholarship Program Proposal PI Hamilton 100%, 10 pages.

#### 9) Research Statement

##### **Research Philosophy:**

My major research focus is software and network security. As we use networked software to increase international cooperation, it is vital that we understand fully what we are sharing when we share software and what vulnerabilities occur when we interconnect our systems. This has been the thrust of my research work for the Missile Defense Agency (MDA). Security restrictions limit publication of some of the technical results. However, our research group at Auburn developed a software vulnerability analysis methodology that has been adopted by MDA and used to evaluate software before it is exported. A prototype of our methodology was used to evaluate an MDA software product before it was approved for export to Turkey and our refined model has been used for additional export risk assessment evaluations.

With my research group I have been working on identifying vulnerabilities in executable code without the source code available. Organizations often contract for software without acquiring the rights to the source code and are then faced with trying to evaluate the vulnerabilities of the software. We have made progress in identifying potential buffer overflows, but have not solved the false positive problem. However, our methodology is useful for eliminating some sections of the software program from further consideration since we do not have any false negatives.

We are working to find new ways to defend networks against denial of service attacks. Forward deploying firewalls upstream from the receiver can achieve some protection and we are experimenting with secure overlay services to further safeguard a host. We have just completed the first, unclassified, implementation of secure overlays using the chord protocol. Preliminary results indicate that this implementation will significantly increase the number of attack nodes required to overwhelm the defended router with minimal additional latency. Most importantly, this defensive measure can be implemented without requiring any changes to any non-local routers.

My research in information assurance was evaluated by the National Security Agency in their overall determination to accredit Auburn University as a Center of Academic Excellence in Information Assurance Research.

I strongly believe that publishing security research is very important because so many vulnerabilities are unknown, or worse, known by the software developer and suppressed. I believe many software engineering paradigms will change when consumers become aware of the risks they face using insecure software.

My interest in modeling and simulation computer networks supports my efforts in network security. Simulation is only acceptable as a substitute for testing, when actual testing is infeasible. For example, “What is the effect of destructive worms propagating across the Internet backbone?” Simulation provides a safe and legal way to study the impact of widespread network outages. Information assurance for simulation is a very new field and one that we are on the leading edge of here at Auburn.

### C. Outreach

#### 1) Commentary

I have been very active in outreach activities in three major areas: student competitions, information assurance certifications of federal employees and teaching at neighboring HBCUs. I served as coach of Auburn programming contest teams from 2003 – 2006; coached two digital combat exercise teams in 2004 and 2005. Under the auspices of the NSA, I have conducted Information Assurance certification courses at Redstone Arsenal for the past three years. The success of this program can be seen by the increasing number of civil servants and uniformed military personnel participating: 9 in 2005, 25 in 2006 and 53 in 2007. I have gained extensive experience in working with HBCUs. What makes our partnerships real is the time I spend on the HBCU campuses instructing and interacting with the students. I have taught semester courses in information assurance at Alabama State University in spring 2006, at both Tuskegee University and Albany State University in spring 2007 and again at Albany State in spring 2008. There is no better way to prepare and recruit minority students to Auburn than by working with them during their undergraduate studies. As this outreach program continues to expand, Auburn colleagues (Xiao Qin and Jeff Ku) joined with me to teach IA courses at Alabama State and Tuskegee in Spring 2008.

#### 2) Specific accomplishments:

- Taught CMPS 480/580 Information Assurance Risk Analysis during Summer Semester 2009 at Western New Mexico University. Thirteen students took or audited the course and ten were certified.  
<http://www.eng.auburn.edu/users/hamilton/security/WNMU/>
- Team-Taught with an ASU colleague CSCI 4911 Information Assurance Management during Spring Semester 2008 on-site at Albany State

University. Thirteen students took the course and seven were certified.

- Taught CSCI 4911 Information Assurance Management during Spring Semester 2007 on-site at Albany State University. Twenty-four students took the course and seven were certified.  
<http://www.eng.auburn.edu/users/hamilton/security/ASURAMS/>
- Taught CSCI 0421 Information Assurance Management during Spring Semester 2007 on-site at Tuskegee University. Four students took the course and two were certified.  
<http://www.eng.auburn.edu/users/hamilton/security/Tuskegee/>
- Taught CS 490 Special Topics: INFOSEC Professional Certification Course during Spring Semester 2006 on-site at Alabama State University. Eleven students took the course and eight were certified.  
<http://www.eng.auburn.edu/users/hamilton/security/ASU/>
- Conducted 1 week NSA Senior System Manager Qualification Course in Huntsville, Ala., Jul. 2006 and Jul. 2007.
- Conducted 1 week NSA Information Security (INFOSEC) Qualification Course in Huntsville, Ala., Feb. 2005.
- Chairman, 2004 and 2005 Ph.D. Seminar, Southeast Software Engineering Conference, Huntsville, Ala.
- Coach/Judge, 2004 and 2005 Auburn Digital Combat Exercise Competitive Team, Southeast Software Engineering Conference, Huntsville, Ala. (2004, placed second out of six teams, 2005, placed second and third out of five teams.)
- Coach, 2003, 2004, 2005 and 2006 Auburn ACM programming contest team. (2003 placed twenty-third out of more than ninety teams at the Southeast Regional Competition, 2004 placed eleventh out of more than eighty-five teams at the South Central Regional Competition, 2005 placed thirty-first out of more than eighty-eight teams at the South Central Regional Competition.)
- Program Committee, Huntsville Simulation Conference, 2002 – present.

3) I annually teach COMP 7700 Software Architecture through Auburn's distance learning program.

#### D. Service

1) University Service (Auburn University)

| <b>Name</b>            | <b>Position</b> | <b>Level</b> | <b>Period</b>                       |
|------------------------|-----------------|--------------|-------------------------------------|
| Computer Security Team | Coach           | Department   | Mar 04 – Jan 06                     |
| ACM Programming Team   | Coach           | Department   | Sept 03 – Jan 06                    |
| ACM/IEEE CS            | Sponsor         | Department   | Dec 02 – Jan 07                     |
| E-Day Committee        | Member          | Department   | Aug 01 – Present                    |
| Promotion Committee    | Member          | Department   | Aug 01 – Present                    |
| Hiring Committee       | Member          | Department   | Aug 03 – Aug 04<br>Aug 06 – present |
| Recruitment Committee  | Member          | Department   | Aug 06 – present                    |

University Service (US Military Academy)

| <b>Name</b>        | <b>Position</b>   | <b>Level</b> | <b>Period</b>   |
|--------------------|-------------------|--------------|-----------------|
| Research Committee | Director          | Department   | Jun 97 - Sep 98 |
| Cadet Chapel Choir | Officer in Charge | University   | Jun 97 - Sep 98 |

2) Professional Service

Professional Associations

1. Society for Modeling & Computer Simulation International (Senior Member)
  - Society Immediate Past President 2009 - 2011
  - Society President 2006 - 2009
  - Society Senior Vice President 2004 - 2006
  - Society Secretary 2002 – 2004
  
2. Institute of Electrical and Electronics Engineers (Senior Member)
  - IEEE Computer Society
  - IEEE Communications Society
  
3. Association for Computing Machinery (Senior Member)
  - Elected Chair, 2010 – 2012, Special Interest Group Simulation (SIGSIM)
  - Elected Vice-Chair, 2008 – 2010, Special Interest Group Simulation (SIGSIM)
  - Secretary-Treasurer, 2004 – 2008, Special Interest Group Simulation (SIGSIM)
  
4. Conference Committee, Simulation Interoperability Standards Organization (SISO) 2004 – 2006.
  
5. Vice Chair, Professional Development Committee, Alabama Modeling and Simulation Council 2004 – 2006.
  
6. Chairman, Auburn University Council of the Modeling and Simulation

Network 2003 – present.

7. Elected, Board of Directors, Alabama Modeling and Simulation Council 2006 – 2010.

#### Editor/Reviewer

- Associate Editor, *Simulation: Transactions of the Society for Modeling and Simulation*, 2008 – present.
- Associate Editor, *Journal of Defense Modeling and Simulation*, 2006 – present.
- Consulting Editor, *Journal of Defense Modeling and Simulation*, 2003 – 2005.
- Member, Editorial Board, *Crosstalk: The Journal of Defense Software Engineering*, 2006 – present.
- Referee, *Simulation Journal*, 1999 – 2001.
- Reviewer, Software Technology Conference, 1994-2000.
- Referee, Special Interest Group on Computer Science Education, 1993-1996.

#### Conference Leadership

- Program Committee, SECRIPT 2009 – International Conference on Security and Cryptography, 2009 – present.
- Program Committee, IEEE Symposium on Computational Intelligence in Cyber Security, 2008 – present.
- Program Committee, IEEE Rapid Systems Prototyping Workshop, 2000 – present.
- Program Committee, IEEE Information Assurance Workshop, 2006 – 2007.
- Program Committee, International Conference on Information Warfare, 2006 – present.
- Conference Chairman, 2006 Spring Simulation Multiconference, Huntsville, Ala.
- Conference Chairman, 2005 Spring Simulation Multiconference, San Diego, Calif.
- Conference Chairman, 2004 Advanced Simulation Technologies Conference, Washington, D.C.
- Conference Vice-Chairman, 2003 Advanced Simulation Technologies Conference, Orlando, Fla.
- Vice-Chair 2003 SE Section (Software Engineering) American Society for Engineering Education, Macon, Ga.
- Conference Committee, 2001 Conference on Software Engineering and Training Symposium, Charlotte, N.C.
- Conference Chairman, 1999 Ada Software Engineering Education Team Conference, US Air Force Academy.
- Conference Chairman, 1998 Ada Software Engineering Education Team Conference, US Naval Postgraduate School.

- Conference Committee, 1997 Tri-Ada Conference, St. Louis, Mo.

#### Miscellaneous

- Life Member, Phi Kappa Phi (National Honor Society)
- Life Member, New Mexico Military Institute Alumni Association
- Member, Upsilon Pi Epsilon (National Honor Computer Science Fraternity)
- Member, Phi Rho Pi (National Honor Speech Fraternity)
- Alumni, National Society of Scabbard & Blade (ROTC Honor Society)
- Graduated with Distinction, Naval War College
- Life Member, Naval War College Foundation
- Life Member, Disabled American Veterans
- US Army Forces Command Fourth Estate Award for Outstanding Military Journalism

#### Military Professional Summary

- 1998 - 2001 Director, Joint Forces Program Office, Space and Naval Warfare Systems Command / Visiting Associate Professor, Naval Postgraduate School
- 1996 - 1998 Research Director & Assistant Professor, U. S. Military Academy
- 1997 (Jan-Jul) Director, Ada Joint Program Office, Defense Information Systems Agency
- 1993 - 1996 Fully-funded graduate studies, Texas A&M University
- 1993 Chief, Officer Training, US Army Computer Science School
- 1992 Chief, Software Engineering Branch, US Army Computer Science School
- 1988 - 1990 Fully-funded graduate studies, Vanderbilt University
- 1987 - 1988 Commanding Officer, Battery F, 7th Field Artillery
- 1987 - Field Artillery Intelligence Officer, 25th Infantry Division (L)
- 1985 - 1986 Commanding Officer, Service Battery, 1st Battalion, 8th Field Artillery
- 1983 - 1984 Commanding Officer, Battery A, 8th Battalion, 8th Field Artillery
- 1982 Commanding Officer, HQ & HQ Battery, 1st Battalion, 5th Field Artillery
- 1981 S1, Battalion Personnel Officer, 1st Battalion, 5th Field Artillery
- 1980 S4, Battalion Supply Officer, 1st Battalion, 5th Field Artillery
- 1979 Fire Support Team Chief, 1st Battalion, 5th Field Artillery