

MARK BOMI MOSS

Lecturer

Division of Computing Instruction (DCI)
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I. EARNED DEGREES

- **Ph.D., Computer Science**, Georgia Institute of Technology, 2009
DISSERTATION: *Assessing Operational Impact in Enterprise Systems with Dependency Discovery and Usage Mining*
- **M.S., Computer Science**, Stanford University, 1997
- **B.S., Mathematics w/Computer Science**, Massachusetts Institute of Technology, 1989

II. EMPLOYMENT HISTORY

Lecturer & OMSCS Instructor, Georgia Institute of Technology, Atlanta, GA, 2015 – Present

- Taught on-campus and online courses in Software Architecture and Engineering, Capstone Project Design, and Computer Organization and Systems
- Served as a Teaching Assistant for the *Software Development Process* course (OMSCS 6300)

Research Scientist, Johns Hopkins University, Applied Physics Lab, Laurel, MD, 2015 – 2017

- Developed and taught a course titled *Operating System Principles for Information Assurance* intended to provide a solid technical foundation to students entering the Information Assurance Program with minimal technical and computing experience
- Reviewed ten official proposals for the Virtual User Environment (VirtUE) Program sponsored by the Intelligence Advanced Research Projects Agency (IARPA), and developed evaluation metrics and testing procedures used to assess the prototypes and candidate systems

Adjunct Professor, Capitol Technology University, Laurel, MD, 2013 – 2015

- Taught online courses in Intelligent Systems, Data Mining and Operating Systems to classes averaging 15 students per session

Course Director & Lead Instructor, U.S. Cyber Command, Fort Meade, MD, 2011 – 2014

- Directed and taught the Joint Advanced Cyber Warfare Course (JACWC), which is a four-week course that provides the most current cyber operations related knowledge
- Synchronized the efforts of over 100 subject-matter experts in the fields of policy, cyber law, planning, operations, computing, technology, training and workforce management issues
- Provided instruction for 500 U.S. and Allied military and civilian students over 2½ years
- Designed and implemented the course Blackboard/e-Campus site, automating information distribution and archiving, along with the collection and analysis of student feedback

Assistant Professor, United States Military Academy, West Point, NY, 2008 – 2011

- Taught on-campus courses in Operating Systems, Software Engineering, Simulation and Modeling, and Introductory Computing to classes averaging 18 students per session
- Installed, configured and managed VMware vSphere and vCenter Server on a 24-server cluster to support experimentation with the VMotion and High Availability features

Communications Systems Analyst, U.S. European Command, Stuttgart, GE, 2002 – 2005

- Assessed the operational impact resulting from technical issues occurring on military systems and networks throughout the European Area of Responsibility for 2 years, and provided my assessments directly to the U.S. European Commander on a daily basis
- Investigated a network configuration problem affecting users in Stuttgart, Germany; actively discovered and reported key information that characterized and helped identify improperly restricted IP address ranges

Chief of Information Technology, U.S. Army, The Pentagon, Washington, D.C., 2000 – 2002

- Managed the computer support services for approximately 800 personnel located throughout the National Capitol Region, including help desk support, infrastructure management, application fielding and providing oversight for a budget of approximately \$900,000 per year
- Directed the restoration of computer services for my directorate after the September 11, 2001 attack on the Pentagon, including coordinating the reconfiguration of various modern and legacy applications
- Reversed-engineered and re-implemented sections of a web-based Personnel Management System; corrected the faults with minimal changes in 6 days, resulting in a savings of approx. \$75,000

Adjunct Professor, Southeastern University, Washington, D.C., 2000 – 2002

- Developed and taught on-campus courses in Assembly Language, Data Structures and Information Systems to classes averaging 20 students per session

Adjunct Professor, Northern Virginia Community College, Woodbridge, VA, 2000 – 2001

- Developed and taught on-campus courses in Database Systems to on-campus classes averaging 15 students per session

Assistant Professor, United States Military Academy, West Point, NY, 1997 – 2000

- Taught on-campus courses in Database Systems, Programming Languages and Introductory Computer Science to classes averaging 18 students per session
- Installed and administered multiple Sybase Enterprise-level and Adaptive Server-level database management systems for 2 years to support academic classes and research
- Reverse-engineered a Sybase Project Management System to undelete critical data in under 4 hours, resulting in saving over 400 man-hours of academic effort

III. HONORS AND AWARDS

- Recognition of Excellence, Insider Threat Research, National Information Assurance Workshop, Nashville, TN, 2011
- Fully-Funded Advanced Civil Schooling Scholarship: M.S./1995 – 1997 & Ph.D./2005 – 2009
- Fully-Funded Reserve Officer Training Corps (R.O.T.C.) Scholarship, 1986 – 1989

IV. EDUCATION AND MENTORSHIP

A. COURSES TAUGHT

- | <i>Term & Year</i> | <i>Course</i> | <i>Description / Number of Students</i> |
|---|---------------|---|
| Georgia Institute of Technology, Atlanta, GA | | |
| Fall 2015 – Summer 2018 | CS 6310 | Software Architecture & Design / ~250 |

- Summer 2018 CS 2200 Introduction to Systems & Networks / 41
- Summer 2018 CS 2340 Objects and Design / 48
- Spring 2018 CS 2110 Computer Organization & Programs / 172
- Fall 2017 CS 3300 Introduction to Software Design / 26
- Fall 2017 & Spring 2018 CS 3311 Junior Capstone Design / ~50

Capitol Technology University, Laurel, MD

- Fall 2014 – Summer 2015 CS 620 Operating System Principles / ~15
- Summer 2015 CS 710 Big Data Warehousing & Analytic Sys / 15
- Spring 2014 CS 710 Designing Intelligent Systems / 15

United States Cyber Command, Fort Meade, MD

- Fall 2011 – Spring 2014 JACWC Joint Adv. Cyber Warfare Course / ~40

Southeastern University, Washington, DC

- Winter 2001 – Spring 2002 COSC 318 Assembly Language / ~20
- Fall 2001 – Winter 2002 COSC 511 Data Structures / 20
- Spring 2001 ISMA 500 Managerial Information Sciences / 20

Northern Virginia Community College, Woodbridge, VA

- Fall 2001 IST 133 Database Design & Management Tech. using SQL / 15
- Fall 2001 CF Lev I-III Web Design with ColdFusion / 15

United States Military Academy, West Point, NY

- Spring 2011 CS 488 Language-Based Simulation Modeling / 18
- Spring 2010 CS 401 Software Systems Design I / 36
- Fall 2009 & Fall 2010 CS 481 Operating Systems / 18
- Fall 2008 – Spring 2009 IT 301 Intro to Computing & Info Technology / 72
- Spring 2000 CS 485 Information Warfare / 36
- Fall 1999 CS 478 Programming Languages / 18
- Spring 1999 – Spring 2000 CS 393 Database Design & Implementation / 54
- Fall 1997 – Fall 1998 CS 105 Introduction to Computing / 72

B. ACADEMIC AND CAREER ADVISING AND GUIDANCE RESPONSIBILITIES

United States Military Academy, West Point, NY, 1997 – 2000 & 2009 – 2011

- Chief Computer Science Academic Counselor for 20+ new Computer Science Majors per year, for a total of 100+ advisees
- Faculty Advisor and Assistant Coach, West Point Chess Club

C. RESEARCH ADVISING AND GUIDANCE

United States Military Academy, West Point, NY, 1997 – 2000 & 2008 – 2011

- Technical Advisor for 6 – 8 Senior Capstone Projects per year (~40 total projects)

D. EDUCATIONAL INNOVATIONS AND OTHER CONTRIBUTIONS

Capitol Technology University (formerly Capitol College), Laurel, MD

- Developed and taught a course titled *Operating System Principles for Information Assurance* intended to provide a solid technical foundation to students entering the Information Assurance Program with minimal technical and computing experience
- Developed and taught a course titled *Big Data Warehousing & Analytic Systems* intended to provide a hands-on introduction to fundamental data science concepts

United States Military Academy, West Point, NY, Summer 2010

- Worked directly with the Head of the Computer Science Department of the National Military Academy of Afghanistan to help them improve their curriculum and teaching effectiveness

E. EDUCATIONAL ADMINISTRATION AND LEADERSHIP

Georgia Institute of Technology, Atlanta, GA

- Admissions Application Reviewer, OMSCS Program, Fall 2015 – Winter 2016

United States Military Academy, West Point, NY

- Coordinator, Freshman “Tech Tour” of the Computer Science Department, Fall 1998

V. RESEARCH, SCHOLARSHIP AND CREATIVE ACTIVITIES

A. PUBLICATIONS

*M. Moss. [Dissertation] Assessing Operational Impact in Enterprise Systems with Dependency Discovery and Usage Mining. In *Georgia Tech Scholarly Materials and Research at Tech (SMART)*, <http://hdl.handle.net/1853/31795>, Georgia Institute of Technology, July 15, 2009.

*M. Moss. Comparing Centralized and Distributed Approaches for Operational Impact Analysis in Enterprise Systems. In *Proceedings of the 2007 IEEE International Conference on Granular Computing*, pages 765 – 769, IEEE Computer Society, San Jose, CA, November 2007.

*C. Pu, M. Moss. Assessing Operational Impact in Enterprise Systems by Mining Usage Patterns. In *Proceedings of the 18th IFIP/IEEE International Workshop on Distributed Systems: Operations and Management (DSOM 2007)*, pages 159 – 170, Springer, San Jose, CA, October 2007.

B. OTHER PUBLICATIONS AND CREATIVE PRODUCTS

Johns Hopkins University, Applied Physics Lab, Laurel, MD, 2015 – 2017

- Contributor to the Open Command & Control (OpenC2) Working Group’s efforts to develop a language to enable the automated command and control of cyber defensive system components
- Provided assessments and feedback on the development of future versions of the Structured Threat Information Expression (STIX), Cyber Observables Expression (CybOX) and Trusted Automated Exchange of Indicator Information (TAXII) protocols as part of the OASIS Cyber Threat Intelligence Technical Committee (CTI TC)
- Provided technical and operational assessments and expertise to United States Cyber Command as part of the Technology and Alternatives Working Group for the Unified Platform (TAWG UP), Fort Huachuca, AZ

C. PRESENTATIONS

N/A

D. GRANTS AND CONTRACTS

United States Military Academy, West Point, NY

- Title: Porting NATO Ballistic Missile Software to Handheld Devices for Battlefield Use
Agency: U.S. Army Armament Research, Development and Engineering Center
Total Dollar Amount: ~\$100,000 (USD)
Role: co-PI
Collaborators: Dr. Thomas Cook, U.S. Army, COL (co-PI)
Period of Contract: 6/23/2010 – 6/22/2011
Candidate’s Share: ~50%

- Title: Preventing, Detecting and Mitigating Insider Threats
Agencies: National Security Agency, Raytheon
Total Dollar Amount: ~\$200,000 (USD)
Role: PI
Collaborators: Senior Capstone Research Team (5 members)
Period of Contract: 6/23/2010 – 6/22/2011
Candidate's Share: ~100%

E. OTHER SCHOLARLY AND CREATIVE ACCOMPLISHMENTS

N/A

F. SOCIETAL AND POLICY IMPACTS

- The Enhance Shared Situational Awareness (ESSA) Initiative is intended to foster cyber security situational awareness, enable integrated operational actions, and improve the security of the U.S. Government and U.S. critical infrastructure
- The efforts to continually develop and strengthen the STIX, CybOX and TAXII protocols, along with the OpenC2 language, will improve the ability of organizations across the U.S. military, government, and commercial sectors to share critical cyber-related information more rapidly, and better defend systems of U.S. interest
- The Technology and Alternatives Working Group is one of several groups focused on improving the technical capabilities of U.S. Cyber Command, allowing them to protect U.S. military capabilities as required, and other non-military systems as directed

VI. SERVICE

A. PROFESSIONAL CONTRIBUTIONS

United States Military Academy, West Point, NY

- Faculty Advisor and Officer-In-Charge, National Society of Black Engineers (NSBE) Student Chapter at West Point, 1998 – 2000

B. PUBLIC AND COMMUNITY SERVICE

United States Military Academy, West Point, NY

- Mentored Student Programming Competition, Thunder Hill Elementary School, MD, 2016
- Judged STEM Fair Projects, Howard High School, MD, 2014 – 2015
- Conducted Computer Orientation Courses for the Wives Club, West Point, NY, 2010 – 2011
- Assisted the development of an Athletics Event Scheduling System to support the Special Olympics Staff, West Point, NY, 1998

C. INSTITUTE CONTRIBUTIONS

United States Military Academy, West Point, NY, 1997 – 2000

- Designed and implemented Event Management Systems for the 41st Academy Conference of Superintendents, and for managing the Class of 1969 and 1979 Reunions
- Assisted the Department of Housing and Public Works school-wide implementation of a Customer Service Web Site
- Beta-tested a new web-based student academic advising system, and provided valuable feedback before implementation by the Director Of Information Management (DOIM)

D. OTHER PROFESSIONAL ACTIVITIES

N/A

VII. PROFESSIONAL GROWTH AND DEVELOPMENT

- Applied Cyber Security Short Course, Massachusetts Institute of Technology, 2013
- Member, Association of Computing Machinery (ACM), 2012 – Present
- Certified Information Systems Security Professional (CISSP), #348816, (ISC)², 2009 – 2012
- Member, Upsilon Pi Epsilon, Honor Society in the Computing Sciences, 1998 – Present