

## TIMOTHY R. COOLEY, PH.D.

Curriculum Vitae

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7979 Red Rock Circle  
Larkspur, CO 80118

(303)-681-3320 (home) (719)-338-8511 (cell)  
E-mail: [tcooley@dynamx.org](mailto:tcooley@dynamx.org)

### Education

- Ph.D. (BioMedical Engineering/Computer Science), Rutgers University, New Brunswick, NJ, 1996. Thesis: *An Automated System for the Classification of Mammograms*, Advisor: Dr. Evangelia Micheli-Tzanakou
- M.S. (Computer Science), Rutgers University, New Brunswick, NJ, 1984
- B.S. (Applied Mathematics and Computer Science with Honors)  
UNION College, Schenectady, NY, magna cum laude, 1982  
Honors Project: *Site Directed Percolation*

### Professional Experience

- 10/05 – Present      President, DynamX Consulting, Larkspur, CO
- Training analysis for USMC
  - Medical Modeling and Simulation ROI research for USN
  - Classified research on supply chains for WMD
  - Economics of Modeling and Simulation Studies
  - AF Combat Analysis Course Development and Delivery
  - Course Development and on-line delivery for Colorado State University-Global
  - Simulation education and training
  - Wargame competition coordination and evaluation
  - Mentor of student researchers
- 01/08 – 05/08      Volunteer Mentor of Operations Research Capstone Projects, USAF Academy, Colorado Springs, CO
- 08/07 – 05/08      Calculus III Instructor, Douglas County High School, Department of Mathematics, Castle Rock, CO [Professional in Residence Program]
- 10/05 – 12/07      AF Agency for Modeling and Simulation, Modeling and Simulation Chair, Center for Educational Excellence, Dean of the Faculty, USAF Academy, CO

08/04 – 09/05	Defense Modeling and Simulation Office, Modeling and Simulation Chair, Department of Computer Science, USAF Academy, CO
06/01 – 06/04	Deputy Department Head for Academics and Associate Professor, Department of Mathematical Sciences, USAF Academy, CO
06/00 – 06/01	Deputy Department Head for Research and Technology and Associate Professor, Department of Mathematical Sciences, USAF Academy, CO
01/99 – 06/00	Division Chief, Engineering Math Division, and Associate Professor, Department of Mathematical Sciences, USAF Academy, CO
06/97 – 01/99	Division Chief, Engineering Math Division, and Assistant Professor, Department of Mathematical Sciences, USAF Academy, CO
07/96 – 06/97	Assistant Professor, Department of Mathematical Sciences, USAF Academy, CO
07/90 – 07/92	Course Director and Instructor, Department of Mathematical Sciences, USAF Academy, CO
07/87 – 07/90	Deputy Commander, and Director of Communications Operations, 1987th Communications Squadron, Lowry Air Force Base, CO
03/84 – 07/87	Communications and Computer Plans Officer, Cheyenne Mountain Air Force Station, Colorado Springs, CO
09/82 – 12/83	Teaching Assistant, Department of Computer Science, Rutgers University, Piscataway, NJ
06/82 – 07/82	Adjunct Faculty, UNION College, Continuing Education Division, Schenectady, NY

## **Publications**

- Cooley, T., and Oswald, I, “*Current Trends in M&S ROI Calculation*”, M&S Journal, Fall 2012, accepted.
- Cooley, T., and Gordon, S., “*Cost Avoidance for M&S Training Systems*”, M&S Journal, Fall 2012, accepted.

- Cooley, T., “*A Brief History of Modeling and Simulation*”, Chapter in *A Primer on Modeling and Simulation*, produced for the Congressional Caucus on Modeling and Simulation, August 2011.
- Oswalt, I., Cooley, T., Waite, W., Waite, E., et al, “*Calculating Return on Investment for U.S. Department of Defense Modeling and Simulation*”, Defense Acquisition Research Journal, vol 18, No. 2, Issue 58, April 2011.
- Waite, B., Cooley, T., Gordon, S., Oswalt, I, et al, “*Metrics for Modeling and Simulation Investment*”, report to the DoD Modeling and Simulation Office, November 2008.
- Cooley, T., “*Modeling and Simulation*”, Chapter in USAF Academy on-line textbook for Introduction to Computer Science (non-refereed), 2005.
- Egleston P., Cooley T., Brilleslyper M., Rolf J., “*How Laptop Computers are Forcing Changes in Mathematical Education,*” 2004 Academic Chairpersons Conference Proceedings.
- Cooley T., Brilleslyper M., Rolf J., Diaz G., “*The Challenges of Integrating Technology into Curricula,*” 2003 Academic Chairpersons Conference Proceedings.
- Cooley T. and Micheli-Tzanakou E., “*The Classification of Mammograms Using a Modular Neural Network,*” Journal of Intelligent Systems, 1998
- Micheli-Tzanakou E. and Cooley, T., “*A Mobile Automated Mammography System,*” Journal of Medical Systems, 1997
- Cooley T., and Micheli-Tzanakou E., “*A Modular Neural Network for Classifying Mammograms,*” Proceedings of the 1996 World Conference on Neural Networks.
- Cooley T., and Micheli-Tzanakou E., “*A Mobile Automated Mammography System,*” Proceedings of the 22nd IEEE Northeast BioEngineering Conference, 1996.
- Cooley T., and Reich G., “*Site Directed Percolation,*” 1982 Northeast Conference on Undergraduate Research.

## **Presentations**

- “Calculation Return on Investment for U.S. Department of Defense Modeling and Simulation”, 2011 Hirsch Research Prize Presentation, Defense Acquisition University 2011 Acquisition Conference.

- “The Challenges of Providing Data to Unclassified Users”, Spring 2011 Simulation Interoperability Standards Organization Simulation Interoperability Workshop, Cross-Domain Interoperability Panel, April 2011.
- “Calculating Return on Investment for the U.S. Department of Defense”, Invited Presentation, Spring 2011 meeting of SimSummit, April 2011, Boston, MA.
- “A Career in Modeling and Simulation – the ins and outs of M&S”, tutorial for the Spring Simulation meeting of the Society for Modeling and Simulation International, April 2011.
- “Modeling and Simulation, An Introduction”, Invited Presentation, University of Colorado – Colorado Springs, CO, Nov 2009.
- “Metrics for Modeling and Simulation Investment”, Fall 2009 Simulation Interoperability Standards Organization Simulation Interoperability Workshop, Economics Modeling and Simulation Study Group, 2009, Orlando, FL.
- “The Conception and Life of Quick-Turn Analysis”, 2008 MORS Education Colloquium, AFIT, Dayton, OH
- “Educating the AF Analyst at the United States Air Force Academy,” 2007 MORS Combat Analyst Workshop, McLean, VA
- “Modeling and Simulation at the United States Air Force Academy,” I/ITSEC 2006, Orlando, FL
- Invited panelist, “Education for a Gaming Career”, The indus Entrepreneur’s Rocky Mountain (TiE-Rockies) Fall Conference 2006, Denver, CO
- “Modeling and Simulation Initiatives at the United States Air Force Academy,” Georgia Tech Research Institute, Atlanta, GA, 2006
- “USAFA Modeling and Simulation,” DoD Modeling and Simulation Conference, Baltimore, MD, 2006
- “USAFA Modeling and Simulation,” Presentation to AF Scientific Advisory Board, USAF Academy, 2006
- “How Laptop Computers are Forcing Changes in Mathematical Education,” 2004 Academic Chairperson’s Conference, Orlando, FL
- “”The Challenge of Integrating Technology into Curricula,” 2003 Academic Chairperson’s Conference, Orlando, FL

- “A Modular Neural Network for Classifying Mammograms,” 1996 World Conference on Neural Networks, San Diego, CA
- “A Mobile Automated Mammography System,” 22<sup>nd</sup> IEEE Northeast BioEngineering Conference, New Brunswick, NJ, 1996

### **Professional Societies**

Founding Committee – National Modeling and Simulation Coalition  
 Simulation Interoperability Standards Organization  
 - Chair, Standing Subcommittee on the Economics of Modeling and Simulation  
 Society for Modeling and Simulation International  
 Phi Beta Kappa, inducted in 1982  
 Sigma Xi, The Scientific Research Society – Life Member  
 Military Operations Research Society

### **Conferences Attended**

2011 Industry/Interservice Training, Simulation, and Education Conference  
 2011 Simulation Interoperability Standards Organization Fall Simulation Interoperability Workshop  
 2011 Defense Acquisition University Acquisition Conference  
 2011 Society for Modeling and Simulation International Spring Simulation Multi-Conference  
 2011 Modeling and Simulation Leadership Congressional Caucus  
 2010 Industry/Interservice Training, Simulation, and Education Conference  
 2010 Simulation Interoperability Standards Organization Fall Simulation Interoperability Workshop  
 2010 Military Operations Research Society Education Colloquium  
 2010 Society for Modeling and Simulation International Spring Simulation Multi-Conference  
 2010 Modeling and Simulation Leadership Congressional Caucus  
 2009 Industry/Interservice Training, Simulation, and Education Conference  
 2009 Simulation Interoperability Standards Organization Fall Simulation Interoperability Workshop  
 2009 Simulation Interoperability Standards Organization Spring Interoperability Workshop  
 2008 Industry/Interservice Training, Simulation, and Education Conference  
 2008 Simulation Interoperability Standards Organization Fall Simulation Interoperability Workshop  
 2008 Simulation Interoperability Standards Organization Spring Interoperability Workshop  
 2008 Modeling and Simulation Leadership Congressional Caucus  
 2007 Industry/Interservice Training, Simulation, and Education Conference  
 2007 Department of Defense Modeling and Simulation Conference

2007 Simulation Interoperability Standards Organization Spring Simulation Multi-Conference  
2007 Modeling and Simulation Leadership Congressional Caucus  
2007 Military Operations Research Society Combat Analyst Workshop  
2006 Industry/Interservice Training, Simulation, and Education Conference  
2006 Simulation Interoperability Standards Organization Fall Simulation Interoperability Workshop  
2006 Military Operations Research Society Symposium  
2006 Department of Defense Modeling and Simulation Conference  
2006 Simulation Interoperability Standards Organization Spring Simulation Multi-Conference  
2005 Industry/Interservice Training, Simulation, and Education Conference  
2005 Simulation Interoperability Standards Organization Spring Simulation Multi-Conference  
2005 AF Agency for Modeling and Simulation Conference  
2004 Industry/Interservice Training, Simulation, and Education Conference  
2004 Frontiers in Education Conference  
2004 Connections Conference  
2004 Academic Chairpersons Conference, Kansas State University  
2003 Academic Chairpersons Conference, Kansas State University  
2002 Academic Chairpersons Conference, Kansas State University  
2000 IEEE Conference on Image Processing  
1999 IEEE World Congress on Neural Networks  
1998 IEEE World Congress on Neural Networks  
1997 IEEE Conference on Systems, Man and Cybernetics  
1997 IEEE World Congress on Neural Networks  
1996 INNS World Congress on Neural Networks  
1996 IEEE Northeast BioEngineering Conference  
1995 IEEE Conference on Image Processing  
1994 IEEE World Congress on Computational Intelligence  
1992 International Association for Mathematics and Computers in Simulation Conference on Numerical Solutions to Partial Differential Equations

## **Courses Taught**

Quick Turn Analyses (2 times)  
Computer Simulation  
AF Combat Analysis Short Course (6 times)  
Probabilistic Models  
Introduction to Operations Research (4 times)  
Introduction to Computer Science (2 times)  
Differential Calculus  
Integral Calculus (4 times)  
Multi-variate Calculus (9 times)  
Differential Equations (3 times)  
Introduction to Statistics (2 times)

Numerical Analysis (3 times)  
Foundations of Mathematics (2 times)  
Mathematical Physics  
Introduction to FORTRAN  
Introduction to Real-World Problem Solving (on-line)

### **Summary of Service to USAF Academy**

Mentor, Operations Research Capstone Course, 2005-2011

Officer-In-Charge, USAF Academy Show Choir, 1998 – 2004, 2005-2009

Dean of the Faculty representative, Freshman Academic Review Committee, 2000 - 2004

Member, Department of Math Sciences Civilian Faculty Search Committee, 2002-2003

Member, Dean's Core Curriculum Review Committee, 2001-2002

Research advisor, C1C J. Renae Wiseman, 2000-2001

Member, Faculty Forum Graded Event Committee, 1999-2000

Chair, Department of Math Sciences Cadet Summer Research Program, 1997-1999

Member, Mathematical Software Review Committee, 1997, 2003

Dean's Representative, USAFA Superintendent's Core Values Committee, 1991-1992

Chair, Department of Mathematical Sciences Summer Scientific Seminar program, 1991

Academic Advisor for an average of four students per year majoring in Mathematical Sciences, Operations Research, and Basic Sciences, 1990-1992, 1996-2007

### **Summary of Service to Douglas County High School**

Faculty Advisor for the Consortium for Mathematics and its Applications High School Mathematical Contest in Modeling DCHS team, 2007.

### **Significant Awards**

2011 Defense Acquisition University Research Paper of the Year and Hirsch Prize recipient

1990 Young AFCEAN of the Year Award, Presented by the Armed Forces Communications-Electronics Association, one of 23 given world-wide in a 37,000 member organization.

1989 HQ Air Training Command Computer Systems Professionalism Award

1989 HQ Air Force Communications Command Computer Systems Professionalism Award

Three Air Force Meritorious Service Medals

**References**

Available upon request.

**US Citizen with Top Secret/SSBI clearance**