

# Josh Pauli, Ph.D.

## EDUCATION

North Dakota State University | Fargo, ND  
**Ph.D. in Software Engineering** **2003-2006**  
Emphasis area: Security Requirements Engineering

Dakota State University | Madison, SD  
**M.S. in Information Systems** **2002-2003**  
Emphasis Area: Database Management

Dakota State University | Madison, SD  
**B.S. in Computer Information Systems** **1998-2002**

## FACULTY EXPERIENCE

**Professor | Dakota State University | Madison, SD** **2015-Present**

- Developed courses in cyber operations and cyber security as specified by the NSA's Center of Academic Excellence in Cyber Operations requirements. Taught undergraduate and graduate courses in software security, ethical hacking, secure software engineering, risk management, and related areas.
- Director of the Classified Cyber Operations Laboratory (Cyclops Lab) as funded by state and federal funds to conduct classified and unclassified R&D in cyber operations topics. I currently have an active TS/SCI full scope polygraph from the Department of Defense.
- Lead faculty for DSU's designation as one of the inaugural four NSA Centers of Academic Excellence in Cyber Operations in charge of applying for the designation, organizing faculty and curriculum, and working with NSA personnel on the designation process.
- Primary investigator for the DSU Cyber Corps Scholarship Program funded by the National Science Foundation that provides full-ride scholarships to cyber security students.

**Associate Professor | Dakota State University | Madison, SD****2010-2015**

- Developed courses in cyber operations and cyber security as specified by the NSA's Center of Academic Excellence in Cyber Operations requirements. Taught undergraduate and graduate courses in web software security, ethical hacking, secure software engineering, intrusion detection, risk management, and related areas.
- Lead faculty for DSU's designation as one of the inaugural four NSA Centers of Academic Excellence in Cyber Operations in charge of applying for the designation, organizing faculty and curriculum, and working with NSA personnel on the designation process.
- Primary investigator for the DSU Cyber Corps Scholarship Program funded by the National Science Foundation that provides full-ride scholarships to cyber security students.
- Author of *The Basics of Web Hacking: Tools and Techniques to Attack the Web* from Syngress Publishing.
- Named the 2011 DSU Researcher of the Year for external grants awarded related to cyber security.

**Assistant Professor | Dakota State University | Madison, SD****2006-2010**

- Taught undergraduate and graduate courses in web software security, ethical hacking, secure software engineering, intrusion detection, risk management, and related areas.
- Lead faculty for the creation the North Central region of the Collegiate Cyber Defense Competition (CCDC).
- Member of the DSU Research Committee

**Instructor | Dakota State University | Madison, SD****2004-2006**

- Developed and taught courses in systems analysis & design, introduction to programming, database management, and decision support systems.
- Faculty athletic representative in charge of certifying student-athlete eligibility per NAIA national bylaws.

**Teaching Assistant | North Dakota State University | Fargo, ND****2003-2004**

- Developed and taught a COBOL programming course for engineering majors. I taught one section of this course to approximately 30 engineering undergraduate students. Also held weekly tutor sessions for COBOL, C, Visual Basic, and other technology-related areas offered at NDSU.

**Teaching Assistant | Dakota State University | Madison, SD****2002-2003**

- Developed and taught a Visual Basic programming course as a general education course at DSU. I taught two sections of this class to approximately 50 students total.

**RELEVANT COURSES TAUGHT**

- CSC 245 Information Security Fundamentals
- CSC 332 Systems Analysis & Design
- CSC 434 Software Security
- CSC 470 Software Engineering
- CSC 716 Secure Software Engineering
- CSC 748 Software Exploitation
- CSC 840 Full Scope Security Testing
- CSC 842 Security Tool Development
- INFA 729 Advanced Web Hacking
- INFA 734 Web Hacking

**RESEARCH GRANTS AND PUBLICATIONS****Grants:**

1. Aug. 2016: PI on \$191,600 South Dakota Board of Regents R&D Innovation Grant. [awarded]
2. Aug. 2015: PI on \$142,784 Department of Defense Information Assurance Scholarship Program (DoD IASP) grant. [awarded]
3. Aug. 2014: PI on \$5,192,691 National Science Foundation Scholarship for Service (NSF-SFS) grant titled "DSU Cyber Corps Renewal". [awarded DGE-1423208]
4. May 2014: PI on \$98,566 Department of Defense Information Assurance Scholarship Program (DoD IASP) grant. [awarded]
5. Jan. 2014: PI on \$18,170 National Science Foundation grant titled "Expansion of CyberSTARS Summer Camp for 10-12 graders". [awarded DUE-1026114]

6. Aug. 2013: PI on \$99,346 National Science Foundation grant titled "CyberSTARS Summer Camp for 10-12 graders". [awarded NSF award DUE-1026114]
7. Feb. 2013: PI on \$98,079.33 Department of Defense Information Assurance Scholarship Program (DoD IASP) grant. [awarded]
8. Feb. 2012: PI on \$46,081.41 Department of Defense Information Assurance Scholarship Program (DoD IASP) grant. [awarded]
9. Jan. 2012: PI on \$15,000 US Air Force Research Laboratory & University of Texas - San Antonio sub-award for administering the 2012 North Central Region of the Collegiate Cyber Defense Competition. [awarded]
10. Aug. 2011: PI on \$93,000 National Science Foundation grant titled "Online Banking Systems Security Research". [awarded NSF award DUE-1153336]
11. Aug. 2011: Co-PI on \$400,000 National Science Foundation grant titled "MRI: Acquisition of an Online Banking System for Information Assurance Research". [awarded NSF award CNS-1123220]
12. Feb. 2011: PI on \$70,926 Department of Defense Information Assurance Scholarship Program (DoD IASP) grant. [awarded]
13. Jan. 2011: PI on \$1,305,565 National Science Foundation - Scholarship for Service (NSF-SFS) grant titled "Dakota Defenders Information Assurance Scholarship Program". [awarded NSF award DUE-1026114]
14. Oct. 2010: PI on \$10,000 Department of Homeland Security (DHS) grant for administering the 2010 North Central Region of the Collegiate Cyber Defense Competition. [awarded]
15. Oct. 2010: PI on \$14,050 Department of Homeland Security (DHS) grant for administering the 2011 North Central Region of the Collegiate Cyber Defense Competition. [awarded]
16. Mar. 2010: Co-PI on \$328,427 National Science Foundation - Research Experience for Undergraduates titled "REU Site: Information Assurance and Security". [awarded NSF award CNS-1004843]
17. Jan. 2010: PI on \$35,291.13 Department of Defense Information Assurance Scholarship Program (DoD IASP) grant. [awarded]

**Publications:**

1. J. Pauli. "Refining Use/Misuse/Mitigation Use Cases for Security Requirements". *Journal of Software Engineering and Applications (JSEA) Volume 7 No. 8 2014*.
2. J. Pauli and K. Haubris. "Improving the Efficiency and Effectiveness of Penetration Test Automation". *Proc. of the 9th International Conference on Information Technology: New Generations (ITNG'13)*. April 2013, Las Vegas, NV, USA

3. T. Perez and J. Pauli: "Municipal E-Government Security: Insights from Municipalities in Orange County, California". *Proc. of the The 2012 International Conference on e-Learning, e-Business, Enterprise Information Systems, and e-Government (EEE'12)*. July 2012, Las Vegas, NV, USA
4. A. Podhradsky, J. Pauli, K. Streff, and P. Engebretson (2012): "A Restructured Information Technology Risk Assessment Model for Small and Medium-Sized Financial Institutions." *Journal of Accounting and Finance*. ISSN# 2158-3625. In Press.
5. R. Woelfel and J. Pauli. "Towards Tool-Driven Penetration Testing for Form-Based Authentication". *Proc. of ISCA 27th INTERNATIONAL CONFERENCE ON COMPUTERS AND THEIR APPLICATIONS*. March 2012, Las Vegas, NV, USA
6. A. Klindworth and J. Pauli. "An Introductory Look at Vulnerability Hunting". *Proc. of the ISCA 27th INTERNATIONAL CONFERENCE ON COMPUTERS AND THEIR APPLICATIONS*. March 2012, Las Vegas
7. H. Kam and J. Pauli. "Web Penetration Testing: Effectiveness of Student Learning in Web Application Security". *Proc. of 2011 IEEE Frontiers in Education (FIE)*. October 2011. Rapid City, SD
8. A. Podhradsky, P. Engebretson, J. Pauli, and K. Streff. "A Restructured Information Technology Risk Assessment Model for Small and Medium-sized Financial Institutions". *Proc. of 11th Annual Hawaii International Conference on Business*. May 2011. Honolulu, HI, USA.
9. J. Pauli, M. Ham, M. Zautke, and P. Engebretson. "CookieMonster: Automated Session Hijacking Archival and Analysis". *Proc. of the 7th International Conference on Information Technology: New Generations (ITNG 2011)*. April 2011, Las Vegas, NV, USA
10. P. Engebretson, J. Burroughs, and J. Pauli. "Attack Traffic Libraries for Testing and Teaching Intrusion Detection Systems". *Proc. of Information Systems Analysis and Synthesis: (ISAS 2011)*. March 2011. Orlando, FL, USA.
11. J. Windsor and J. Pauli. "Smashing Web Goat for Fun and Research: Static Code Scanner Evaluation", *Proc of the 2010 OWASP AppSec DC Conference*. Nov. 2010, Washington, DC, USA
12. J. Pauli and P. Engebretson. "Cradle-To-Grave Approach to Retaining Students in Information Security Programs ". *Proc. of the 2010 International Conference on Security and Management (SAM'10)*. July 2010, Las Vegas, NV, USA
13. P. Engebretson, J. Pauli, and J. Bosma. "Lessons Learned From an Evolving Information Assurance Lab". *Proc. of the 2010 International Conference on Security and Management (SAM'10)*. July 2010, Las Vegas, NV, USA
14. P. Engebretson and J. Pauli. "Leveraging Parent Mitigations and Threats for CAPEC-Driven Hierarchies". *Proc. of the 6th International Conference on Information Technology: New Generations (ITNG 2009)*. April 2009, Las Vegas, NV, USA
15. P. Engebretson and J. Pauli. "Realizing Knock-Out Effect and Parent Mitigation Power for Detailed Attack Patterns: A Case Study". *Proc. of the 9th IASTED International Conference on Software Engineering and Applications (SEA 2008)*. November 2008. Orlando, FL, USA

16. P. Engebretson, J. Pauli and K. Streff. "Abstracting Parent Mitigations from the CAPEC Attack Pattern Dictionary". *Proc. of the 2008 International Conference on Security and Management (SAM'08)*. July 2008, Las Vegas, NV, USA
17. J. Pauli, P. Engebretson, and K. Streff. "An Ethical Network Hacking Contest for Undergraduate Student Recruitment". *Proc. of the 2008 International Conference on Frontiers in Education: Computer Science and Computer Engineering (FECS'08)*. July 2008, Las Vegas, NV, USA
18. J. Pauli. "Incentive-based Technology Start-up Program for Undergraduate Students". *Proc. of the 5th International Conference on Information Technology: New Generations (ITNG 2008)*. April 2008, Las Vegas, NV, USA
19. P. Engebretson and J. Pauli. "Towards a Specification Prototype for Hierarchy-Driven Attack Patterns". *Proc. of the 5th International Conference on Information Technology: New Generations (ITNG 2008)*. April 2008, Las Vegas, NV, USA
20. J. Pauli and P. Engebretson. "Hierarchy-Driven Approach for Attack Patterns in Software Security Education". *Proc. of the 5th International Conference on Information Technology: New Generations (ITNG 2008)*. April 2008, Las Vegas, NV, USA
21. J. Pauli. "Breaking "Extends" Relationships for Use/Misuse/Mitigation Use Case Refinement". *Proc. of the 16th International Conference on Software Engineering and Data Engineering (SEDE 2007)*. July 2007, Las Vegas, NV, USA
22. J. Pauli. "Leveraging the TabletPC in Systems Analysis and Design Courses". *Proc. of the 16th International Conference on Software Engineering and Data Engineering (SEDE 2007)*. July 2007, Las Vegas, NV, USA
23. D. Xu and J. Pauli, "Threat-Driven Design and Analysis of Secure Software Architectures", *Journal of Information Assurance (JIAS)*, Issue 3, Volume 1, 2006
24. J. Pauli. "The Role of Sequence Diagrams in Use/Misuse Case Decomposition for Secure Systems". *Proc. of the 7th IASTED International Conference on Software Engineering and Applications (SEA 2006)*. November 2006. Dallas, TX, USA
25. J. Pauli and D. Xu, "Integrating Functional and Security Requirements with Use Case Decomposition", *Proc. of the 11th International Conference on Engineering of Complex Computer Systems (ICECCS 2006)*. August 2006, Palo Alto, CA, USA
26. J. Pauli and D. Xu, "Ensuring Consistent Use/Misuse Case Decomposition for Secure Systems", *Proc. of the 18th International Conference on Software Engineering and Knowledge Engineering (SEKE 2006)*. July 2006, San Francisco, CA, USA
27. J. Pauli and D. Xu, "Threat-driven Architectural Design of Secure Information Systems", *Proc. of the 7th International Conference on Enterprise Information Systems (ICEIS 2005)*. May 2005, Miami, FL

28. J. Pauli and D. Xu, "Trade-off Analysis of Misuse Case-based Secure Software Architectures: A Case Study", *Proc. of the 3rd International Workshop on Verification & Validation of Enterprise Information Systems (VVEIS 2005)*. May 2005, Miami, FL, USA
29. J. Pauli and D. Xu, "Misuse Case-Based Design and Analysis of Secure Software Architecture", *Proc. of the International Conference on Information Technology Coding and Computing (ITCC 2005)*. April 2005, Las Vegas, NV, USA