

JOHN R GOODALL

Team Leader, Situation Awareness and Visual Analytics Research Team

Oak Ridge National Laboratory
Computational Sciences & Engineering Division <<http://computing.ornl.gov/cse/>>
1 Bethel Valley Rd., P.O. Box 2008, Oak Ridge TN 37831-6418

jgoodall at orn1 dot gov
<http://jgoodall.me/>
865.446-0611

Education

Ph.D.	2006	University of Maryland, Baltimore County (UMBC): Information Systems
M.S.	2003	University of Maryland, Baltimore County (UMBC): Information Systems
B.A.	1998	Binghamton University: History

Research Interests

Visualization for cyber security, information visualization, visual analytics, human-computer interaction (HCI), large-scale data analysis, collaborative visualization, computer network defense, computer-supported cooperative work (CSCW), qualitative research methods.

Refereed Journal Publications

Czejdo, Bogdan, Erik M. Ferragut, John R Goodall, and Jason Laska. "Data warehouse for event streams violating rules." *Foundations of Computing and Decision Sciences* **38**(2), 2013, 87–96.

Czejdo, Bogdan D., Erik M. Ferragut, John R. Goodall, and Jason Laska. "Network Intrusion Detection and Visualization Using Aggregations in a Cyber Security Data Warehouse." *International Journal of Communications, Network and System Sciences* **5**(9a), Scientific Research Publishing Inc., 2012, 593–602.

Goodall, John R. "An Evaluation of Visual and Textual Network Analysis Tools." *Information Visualization* **10**(2), SAGE Publications, 2011, 145-157.

Goodall, John R., Wayne G. Lutters, and Anita Komlodi. "Developing Expertise for Network Intrusion Detection." *Information Technology & People* **22**(2), Emerald Group Publishing Limited, 2009, 92-108.

Goodall, John R., Wayne G. Lutters, and Anita Komlodi. "Supporting Intrusion Detection Work Practice." *Journal of Information System Security* **5**(2), The Information Institute, 2009, 43-74.

D'Amico, Anita D., John R. Goodall, Daniel R. Tesone, and Jason K. Kopylec. "Visual Discovery in Computer Network Defense." *IEEE Computer Graphics & Applications* **27**(5), IEEE Press, 2007, 20-27.

Goodall, John R., Wayne G. Lutters, Penny Rheingans, and Anita Komlodi. "Focusing on Context in Network Traffic Analysis." *IEEE Computer Graphics & Applications* **26**(2), IEEE Press, 2006, 72-80.

Refereed Conference Publications

Ragan, Eric D., John R. Goodall, Albert Tung. "Evaluating How Level of Detail of Visual History Affects Process Memory." Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), ACM Press, 2015, 2711-2720.

Jones, Corinne L., Robert A. Bridges, Kelly M. T. Huffer, and John R. Goodall. "Towards a Relation Extraction Framework for Cyber-Security Concepts." Proceedings of the 10th Annual Cyber and Information Security Research Conference (CISR). ACM International Conference Proceedings Series, 2015.

Iannacone, Michael, Shawn Bohn, Grant Nakamura, John Gerth, Kelly Huffer, Robert Bridges, Erik Ferragut, and John R. Goodall. Developing an Ontology for Cyber Security Knowledge Graphs. Proceedings of the 10th Annual Cyber and Information Security Research Conference (CISR). ACM International Conference Proceedings Series, 2015.

Ragan, Eric and John R. Goodall. Evaluation Methodology for Comparing Memory and Communication of Analytic Processes in Visual Analytics, Proceedings of the Fifth Workshop on Beyond Time and Errors: Novel Evaluation Methods for Visualization (BELIV). ACM Press, 2014, 27-34.

Bridges, Robert A., Corinne L. Jones, Michael D. Iannacone, Kelly M. Testa, John R. Goodall. "Automatic Labeling for Entity Extraction in Cyber Security." *ASE Third International Conference on Cyber Security*, Academy of Science and Engineering (ASE), 2014.

Czejdo, Bogdan, Michael D. Iannacone, Robert A. Bridges, Erik M. Ferragut, and John R. Goodall. "Integration of External Data Sources with Cyber Security Data Warehouse." *Proceedings of the 9th Annual Cyber and Information Security Research Conference*. ACM International Conference Proceedings Series, 2014, 49-52.

McNeil, Nikki, Robert A. Bridges, Michael D. Iannacone, Bogdan Czejdo, Nicolas E. Perez, and John R. Goodall. "PACE: Pattern Accurate Computationally Efficient Bootstrapping for Timely Discovery of Cyber-Security Concepts." *International Conference on Machine Learning and Applications (ICMLA)*. IEEE Press, 2013, 60-65

Harrison, Lane, Riley Spahn, Michael Iannacone, Evan Downing, and John R. Goodall. "NV: Nessus Vulnerability Visualization for the Web." *Proceedings of the Symposium on Visualization for Computer Security (VizSec)*, ACM International Conference Proceedings Series, 2012, 25-32.

Goodall, John R., Hassan Radwan and Lenny Halseth. "Visual Analysis of Code Security." *Proceedings of the Symposium on Visualization for Computer Security (VizSec)*, ACM International Conference Proceedings Series, 2010, 46-51.

D'Amico, Anita, Laurin Buchanan, John R. Goodall and Paul Walczak. "Mission Impact of Cyber Events: Scenarios and Ontology to Express the Relationships Between Cyber Assets, Missions and Users." *Proceedings of the 5th International Conference on Information Warfare and Security (ICIW)*, Thomson Reuters ISI, 2010, 388-397.

Goodall, John R., Anita D. D'Amico and Jason K. Kopylec. "Camus: Automatically Mapping Cyber Assets to Missions and Users." *Proceedings of the Military Communications Conference (MILCOM)*, IEEE Press, 2009.

Goodall, John R. "Visualization is Better! A Comparative Evaluation." *Proceedings of the Workshop on Visualization for Computer Security (VizSec)*, IEEE Press, 2009, 57-68.

Goodall, John R. and Mark Sowul. "VIAssist: Visual Analytics for Cyber Defense." *Proceedings of the IEEE International Conference on Technologies for Homeland Security (HST)*, IEEE Press, 2009, 143-150.

Goodall, John R. and Daniel T. Tesone. "Visual Analytics for Network Flow Analysis." *Proceedings of the Cybersecurity Applications & Technology Conference For Homeland Security (CATCH)*, IEEE Press, 2009, 199-204.

Prole, Kenneth, John R. Goodall, Anita D. D'Amico, and Jason K. Kopylec. "Wireless Cyber Assets Discovery Visualization." *Proceedings of the Workshop on Visualization for Computer Security (VizSec)*, Springer LNCS, 2008, 136-143.

Tesone, Daniel T. and John R. Goodall. "Balancing Interactive Data Management of Massive Data with Situational Awareness through Smart Aggregation." *Proceedings of the IEEE Symposium on Visual Analytics Science and Technology (VAST)*, IEEE Press, 2007, 67-74.

Goodall, John R., Wayne G. Lutters, Penny Rheingans, and Anita Komlodi. "Preserving the Big Picture: Visual Network Traffic Analysis with TNV." *Proceedings of the Workshop on Visualization for Computer Security (VizSec)*, IEEE Press, 2005, 47-54.

Komlodi, Anita, Penny Rheingans, Utkarsha Ayachit, John R. Goodall, and Amit Joshi. "A User-Centered Look at Glyph-Based Security Visualization." *Proceedings of the Workshop on Visualization for Computer Security (VizSec)*, IEEE Press, 2005, 21-28.

Goodall, John R. "User Requirements and Design of a Visualization for Intrusion Detection Analysis." *Proceedings of the IEEE SMC Information Assurance Workshop (IAW)*, IEEE Press, 2005, 394-401.

Goodall, John R., A. Ant Ozok, Wayne G. Lutters, Penny Rheingans, and Anita Komlodi. "A User-Centered Approach to Visualizing Network Traffic for Intrusion Detection." *Extended Abstracts of the ACM Conference on Human Factors in Computing Systems (CHI)*, ACM Press, 2005, 1403-1406.

Goodall, John R., Wayne G. Lutters, and Anita Komlodi. "I Know My Network: Collaboration and Expertise in Intrusion Detection." *Proceedings of the ACM Conference on Computer-Supported Cooperative Work (CSCW)*, ACM Press, 2004, 342-345.

Goodall, John R., Wayne G. Lutters, and Anita Komlodi. "The Work of Intrusion Detection: Rethinking the Role of Security Analysts." *Proceedings of the Americas Conference on Information Systems (AMCIS)*, AIS Press, 2004, 1421-1427.

Komlodi, Anita, John R. Goodall, and Wayne G. Lutters. "An Information Visualization Framework for Intrusion Detection." *Extended Abstracts of the ACM Conference on Human Factors in Computing Systems (CHI)*, ACM Press, 2004, 1743-1746.

Books

Goodall, John R., Gregory Conti, and Kwan-Liu Ma (eds.). *Visualization for Computer Security: 5th International Workshop, VizSec 2008*. Springer Lecture Notes in Computer Science Series, Berlin, 2008.

Goodall, John R., Gregory Conti, and Kwan-Liu Ma (eds.). *VizSec 2007: Proceedings of the Workshop on Visualization for Computer Security*. Springer, Berlin, 2008.

Book Chapters

Goodall, John R. "Introduction to Visualization for Computer Security." In John R. Goodall, Gregory Conti, and Kwan-Liu Ma (eds.), *VizSec 2007: Proceedings of the Workshop on Visualization for Computer Security*. Springer, Berlin, 2008, 1-17.

Kopylec, Jason K., Anita D. D'Amico, and John R. Goodall. "Visualizing Cascading Failures in Critical Cyber Infrastructure." In Eric Goetz and Sujeet Shenoi (eds.), *Critical Infrastructure Protection*. Springer, Boston, MA, 2007, 351-366.

Panels and Presentations

Harrison, Lane, Jason Laska, Riley Spahn, Michael Iannacone, Evan Downing, Erik M. Ferragut and John R. Goodall. "situ: Situational Understanding and Discovery for Cyber Attacks". *IEEE Symposium on Visual Analytics Science and Technology Challenge Entry*, 2012.

Steed, Chad, Thomas Potak, Robert Patton, John R. Goodall, Christopher Maness, and James Senter. "Interactive Visual Analysis of High Throughput Text Streams." Poster & Presentation. *2nd IEEE Workshop on Interactive Visual Text Analytics*, Seattle, WA, October 15, 2012.

Goodall, John R. "Visualization for Text Analysis," Keynote. *Text Mining 2011*, Mesa AZ, April 30, 2011.

Goodall, John R. "Visualization for Cyber Security," Panel: Visual analytics for the security sector. *Visual Analytics Community Consortium Meeting*, College Park MD, August 31-September 1, 2010.

Goodall, John R. "VIAssist: Visual Analytics for Cyber Defense," Panel: DHS Science & Technology Emerging Technologies. *GFIRST National Conference*, Atlanta GA, August 23-28, 2009.

Goodall, John R. "Information Visualization," Panel: Visualization for Cyber Security. *USSS Global Cyber Security Conference*, Washington DC, August 4-6, 2009.

Goodall, John R. and Jason K. Kopylec. "VIAssist: Visual Analytics for NetFlow Data," *FloCon*, Scottsdale AZ, January 12-15, 2009.

Goodall, John R. "Visualizing Network Traffic for Intrusion Detection," Doctoral Symposium, *Proceedings of the ACM Conference on Designing Interactive Systems (DIS)*, ACM Press, 2006, 363-364.

Goodall, John R., Anita Komlodi, and Wayne G. Lutters. "Information Visualization for Intrusion Detection Analysis: A Needs Assessment of Systems and Network Security Experts." *Workshop on Statistical and Machine Learning Techniques in Computer Intrusion Detection*, Fairfax VA, September 24-26, 2003.

Dissertation

Goodall, John R. "Defending the Network: Visualizing Network Packets for Intrusion Detection Analysis," *Ph.D. Dissertation*, University of Maryland, Baltimore County (UMBC), 2006.

Professional Experience

2010-present	Oak Ridge National Laboratory - Computational Sciences & Engineering division, Oak Ridge TN Research Scientist / Team Leader
2006-2010	Applied Visions Inc. - Secure Decisions division, Albany NY Research Scientist
2001-2006	University of Maryland, Baltimore County (UMBC), Baltimore MD Unix Systems Administrator
1998-2001	TVData Technologies, Glens Falls NY Unix Systems Administrator

Teaching Experience

2004-2006	University of Maryland, Baltimore County (UMBC), Baltimore MD Department of Information Systems Instructor , User interface design upper-level undergraduate course
2003, 04, 06	Student Supervisor , NSF Research for Undergraduates Experience
2005	Student Supervisor , students group's senior project, industry grant

Professional Service

Conference Committee

- 2008 - present Steering Committee, VizSec Symposium on Visualization for Cyber Security
- 2013 Chair, VizSec Symposium on Visualization for Cyber Security
 In conjunction with IEEE Vis Week
- 2012 Publications Chair, VizSec Symposium on Visualization for Cyber Security
 In conjunction with IEEE Vis Week
- 2011 Co-Chair, Visual Analysis of Massive Data for Decision Support and Operational Management
 Minitrack, Hawaii International Conference for Systems Science
- 2010 Publications Chair, VizSec Symposium on Visualization for Cyber Security
 In conjunction with Recent Advances in Intrusion Detection (RAID)
- 2009 Co-Chair, VizSec Workshop on Visualization for Cyber Security
 In conjunction with IEEE Vis & IEEE InfoVis
- 2008 Chair, VizSec Workshop on Visualization for Cyber Security
 In conjunction with Recent Advances in Intrusion Detection (RAID)
- 2007 Chair, VizSec Workshop on Visualization for Cyber Security
 In conjunction with IEEE Vis & IEEE InfoVis

Program Committee

- 2015 IEEE Symposium on Visual Analytics Science and Technology (VAST)
- 2011 – 13 IEEE Information Visualization Conference (InfoVis)
- 2011 VizSec Symposium on Visualization for Cyber Security
- 2008 – 09 ACM Computer Human Interaction for the Management of Information Technology (CHIMIT)
- 2005 VizSec Workshop on Visualization for Computer Security
 In conjunction with IEEE Vis & InfoVis
- 2004 VizSec Workshop on Visualization & Data Mining for Cyber Security
 In conjunction with ACM Conf. on Computer and Communications Security

Conference Reviewing

- 2008, 2011-12 IEEE Symposium on Visual Analytics Science and Technology (VAST)
- 2008, 2011 IEEE & Eurographics Symposium on Visualization (EuroVis)
- 2008, 2010 IEEE Information Visualization Conference (InfoVis)
- 2010 IEEE Visualization Conference (Vis)
- 2006 ACM Conference on Human Factors in Computing Systems (CHI)
- 2005 ACM Conference on Supporting Group Work (GROUP)
- 2005 IEEE Information Assurance Workshop (IAW)

Journal Reviewing

- 2009 International Journal of Human Computer Studies
- 2009 IEEE Security and Privacy
- 2009 IEEE Transactions on Information Forensics and Security
- 2005, 2009 IEEE Transactions on Visualization & Computer Graphics

2005 IEEE Computer Graphics and Applications

Proposal Reviewing

2015 National Science Foundation, Division of Information & Intelligent Systems (IIS)

2012 National Science Foundation, Division of Information & Intelligent Systems (IIS)

Technical Book Reviewing

2008 *Applied Security Visualization*, Raffael Marty. Addison Wesley

2007 *Security Data Visualization: Graphical Techniques for Network Analysis*, Greg Conti. No Starch Press

Honors & Awards

1994-1998 Morris Gitlitz Memorial Academic Scholar, Binghamton University

Software

Stucco A Cyber Intelligence Platform <http://stucco.github.io/>
Released under the MIT License.

TNV Computer network traffic visualization tool <http://tnv.sourceforge.net/>
Released under the MIT License.