Curriculum Vitae

(July 2023)

B. Clifford Neuman

Education:

- Ph. D. Computer Science, June 1992, University of Washington

  Thesis: The Virtual System Model, A Scalable Approach to Organizing Large Systems. Supervised by Professor Edward D. Lazowska

- M.S. Computer Science, May 1988, University of Washington

- S.B. Computer Science and Engineering June 1985, Massachusetts Institute of Technology

  Thesis: Sentry, A Discretionary Access Control Server.
  Supervised by Dr. David D. Clark

Employment:

- Research Scientist, Information Sciences Institute, University of Southern California, 1991-Present.

- Associate Division Director, Computer Networks Division, Information Sciences Institute, University of Southern California, 2001-June 2005.

- Director, Center for Computer Systems Security, University of Southern California, 2002-Present.

- Associate Professor of Computer Science Practice, Department of Computer Science, University of Southern California, 2016-.

- Research Associate Professor, Department of Computer Science, University of Southern California, 2008-2016.

- Research Assistant Professor, Department of Computer Science, University of Southern California, 1992-2008.

- Chief Scientist, CyberSafe Corporation, 1992 – 2001.

- Pre-Doctoral Research Associate, Department of Computer Science, University of Washington, 1987-1991.

- Project Athena, Massachusetts Institute of Technology 1985-1986.

- Systems Programmer, EECS Computer Facility, Massachusetts Institute of Technology 1982-1985.

Advisory Boards:

- NTT Communications Security Advisory Board, 2003-2006.
- Eyematic Corporation, 1999-2001.
- Net Research Inc / BayBuilder, 2000-2001.

Courses taught:

- DSci429/ENGR599, Security Privacy and Policy in the Age of the Internet. Fall 2019-2022.
- INF-523 Computer Systems Assurance, Spring 2016, Fall 2017-2021.
- INF 524 Distributed Systems and Network Security, Summer 2015
- INF-526 Secure System Administration, Summer 2016, Spring 2017, Spring 2021.
- INF 527 Secure Systems Engineering, Fall 2015
- INF/DSci 529 Privacy and Security for Informatics, Spring 2016-2023.
- CSci 530 Computer Security Systems (University of Southern California), Fall 2003-2022.
- CSci 555 Advanced Operating Systems (University of Southern California), Fall 1992-2003, 2006-2012, 2014, 2020.
- CSci599 Trusted Computing (University of Southern California), Spring 2007.
- CSci532 Hacking for Defense, Innovation for Defense Applications, Spring 2018, Spring 2019, Spring 2020, Spring 2022, Spring 2023.
- CSci 451 Operating Systems (for University of Washington Extension), Spring 1987.

Tutorials taught:

Electronic Payment Systems, presented at:

- Usenix Workshop on Electronic Commerce, New York, July 1995.
- Usenix Workshop on Electronic Commerce, Oakland, CA, November 1996.
- Internet Society Symposium on Network and Distributed Systems Security, March 1998.
- Usenix Workshop on Electronic Commerce, Boston, MA, September 1998.
- Internet Society Symposium on Network and Distributed Systems Security, February 1999.
- 8th International World Wide Web Conference, Toronto, Canada May 1999.

Web Security and Beyond: Protecting your Electronic Commerce Application, presented at:

- Internet Society Symposium on Network and Distributed Systems Security, March 1998.
- Internet Society Symposium on Network and Distributed Systems Security, February 1999.

Research Interests:

Dr. Neuman conducts research in distributed computer systems with emphasis on scalability and computer security, especially for cyber-physical systems and critical infrastructure.

In his research, Dr. Neuman works to design and develop scalable information, security, and computing infrastructure for the Internet. He is the principal designer of the Kerberos system, an encryption based authentication system used among other things as the primary authentication method for Microsoft's Windows 2000, XP and many other systems. He has used Kerberos as a base for more comprehensive computer security infrastructure providing authorization, accounting, and audit.

Recent research includes managing computer security policies in federated and coalition environments, and using policy as a unifying element for integrating all security services including authorization, audit, and intrusion detection with systems and applications. This work extends the application of trusted computing to protect mutually suspicious entities from one another and forms the basis for the TrustView security architecture.

Most recently, Dr. Neuman has focused on security for cyber-physical systems, with an emphasis on protection of critical infrastructure, including the power grid. Recent publications discuss cross-domain threat propagation in such systems, and mitigation techniques applied in both the cyber and physical domains.

Dr. Neuman has designed systems for network payment which build upon security infrastructure to provide a secure means to pay for services provided over the Internet. The NetCheque and NetCash systems, which are suitable for micropayments (payments on the order of pennies where the cost of clearing a credit card payment would be prohibitive). NetCheque provides accounting for the flow of funds through the system whereas NetCash supports anonymous transactions.

He is the principal designer of the Prospero system which is used to organize and retrieve information distributed on the Internet. The Prospero system applies the Virtual System Model to construct views of the information available on the network. Prospero is an embedded system that is used by several commercial products.

The Prospero Resource Manager (PRM) supports the management of computing resources in distributed systems. PRM provides multiple views of the available resources by supporting multiple resource managers, each controlling a subset of the resources in the system, independent of other managers of the same type. The functions of resource management are distributed across three types of managers: system managers, job managers, and node managers. The complexity of these management roles is reduced because each is designed to utilize information at an appropriate level of abstraction.

Awards

- InfoWorld Top Ten Technology Innovators, InfoWorld Magazine, February 2002.
- 2001 Usenix Software Tools User Group Award recipient for contributions to the development of Kerberos.
- DARPA Dynamic Coalitions Program 2003 award for excellence in academic research.
- Usenix Security 2022 Test of Time Award for Kerberos: An Authentication Service for Open Network Systems, Published in 1988 Winter USENIX Technical Conference Proceedings.

Memberships and Professional Activities:

Memberships

- Association for Computing Machinery (ACM) – Life member.
- Institute of Electrical and Electronic Engineers (IEEE) - Senior member
- IEEE Computer Society
- Internet Society (ISOC)
- Internet Engineering Task Force (IETF) - Participant
- Usenix Association

Program and General Chair

- Program Chair, Fourth Annual PKI R&D Workshop: “Multiple Paths to Trust”, Gaithersburg, MD. April 2005.
- General Chair, 2004 Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 2004.

- General Chair, 2003 Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 2003.

- Vice Program Chair, Security Track, International Conference on Distributed Computing Systems (ICDCS), Vienna Austria, 2002.

- Program Chair, 2002 Workshop on Accelerating Trustworthy Internetworking.

- General Chair, 2002 Internet Society Symposium on Network and Distributed System Security. San Diego, CA, February 2002.

- Program Chair, 4th ACM Conference on Computer and Communications Security, Zurich, Switzerland. April 1997.

- Program Chair, 4th Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 1997.

- Program Chair, 3rd Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 1996.

Editorial and Publication Advisory Boards

- Guest Editor, Journal of High Speed Networking, special issue on managing security policies, 2006.

- Contributed/Edited section of Report of the Workshop on Responding to the Unexpected, February 27, 2002, New York City.

- Editorial Board, International Journal of Electronic Commerce, June 1996 - Present.

- Editorial Board, ACM Transaction on Information and Systems Security, 1998 – 2001.

Program Committees

- Program Committee, 2015 Industrial Control Systems Security Workshop at ACSAC, December 2015, Los Angeles.

- Program Committee, 2015 IEEE International Conference on Intelligence and Security Informatics, May 2015. Baltimore MD, USA.

- Steering Group, 2013 Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 2014.

- Program Committee, 2012 IEEE International Conference on Intelligence and Security Informatics, Washington DC, June 2012.

- Program Committee, ACM SIGKDD Workshop on Intelligence and Security Informatics 2012 (ISI-KDD 2012), Beijing China.

- Steering Group, 2013 Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 2013.

- Steering Group, 2012 Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 2012.

- Steering Group, 2011 Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 2011.

- Program Committee, 2010 ACM Symposium on Access Control Models and Technologies (SACMAT2010). Pittsburgh, June 2010.

- Program Committee, 2011 IEEE International Conference on Intelligence and Security Informatics. 011, Beijing China.

- Program Committee, 2010 IEEE International Conference on Intelligence and Security Informatics. May 2010, Vancouver, BC, Canada.

- Program Committee, 9th Symposium on Identity and Trust on the Internet (IDtrust 2010), Gaithersburg, MD, April 2010.

- Steering Group, 2010 Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 2010.

- Program Committee, 2009 ACM Symposium on Access Control Models and Technologies (SACMAT2009). Stresa, Italy, June 2009.

- Program Committee, 2009 IEEE International Conference on Intelligence and Security Informatics. June 2009, Dallas TX, USA.

- Program Committee, 8th Symposium on Identity and Trust on the Internet (IDtrust 2009), Gaithersburg, MD, April 2009..

- Steering Group, 2009 Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 2009

- 2008 IEEE International Conference on Intelligence and Security Informatics. June 2008, Taipei, Taiwan.

- Program Committee, 7th Seventh Symposium on Identity and Trust on the Internet (IDtrust 2008), Gaithersburg, MD, March 2008.

- Program Committee, 2007 IEEE International Conference on Intelligence and Security Informatics. May 2007, New Brunswick NJ. USA.

- Program Committee, 6th Annual PKI R&D Workshop, Gaithersburg, MD. April 2007.

- Steering Group, 2007 Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 2007.

- The First Workshop on Security, Trust and Privacy in Grid Environments STPG2008), at The 8th IEEE International Symposium on Cluster Computing and the Grid (CCGRID2008), 19-22 May 2008, Lyon, France

- 2006 IEEE Workshop on Policies for Distributed Systems and Networks (Policy2006), London Ontario, June 2006.

- 11th ACM Symposium on Access Control Models and Technologies (SACMAT2006). Lake Tahoe, June 2006.

- 2006 IEEE International Conference on Intelligence and Security Informatics. May 2006, San Diego USA.

- Fifth Annual PKI R&D Workshop, Gaithersburg, MD. April 2006.

- Second International Workshop on Security in Distributed Computing Systems. (in conjunction with 25th International Conference on Distributed Computing Systems ICDCS-2005), Columbus, OH, USA. June 2005.

- 2005 IEEE International Conference on Intelligence and Security Informatics. May 2005, Atlanta USA.

- 2004 IEEE International Conference on Intelligence and Security Informatics. June 2004, Tucson USA.

- 2003 IEEE International Conference on Intelligence and Security Informatics. June 2003, Tucson USA.

- IEEE Sixth International Workshop on Policies for Distributed Systems and Networks (Policy2005). June 2005, Stockholm Sweden..

- IEEE Fifth International Workshop on Policies for Distributed Systems and Networks (Policy2004). June 2004, New York.

- Steering Group, Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 2001 to 2006.

- 21st International Conference on Distributed Computer Systems (ICDCS-21), Phoenix, AZ, April 2001,

- Ninth International World Wide Web Conference, Amsterdam, May 2000.

- 2001 Symposium on Applications and the Internet (SAINT), San Diego, CA, January 2001. (IEEE Computer Society).

- Eighth Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 2000.

- Sixth ACM Conference on Computer and Communications Security, Singapore, November 1999.

- First ACM Conference on Electronic Commerce (EC-99), Denver, CO, November 1999.

- Eighth International World Wide Web Conference, Toronto, May 1999.

- Third International Conference on Financial Cryptography, Anguilla, British West Indies, February 1999.

- Seventh IEEE International Symposium on High Performance Distributed Computing, Chicago, IL, July 1998.

- First International Conference on Financial Cryptography, Anguilla, British West Indies, February 1997.

- Second Usenix Workshop on Electronic Commerce, Oakland, CA, November 1996.

- 1996 Conference on The Convergence of Telecommunications and Distributed Computing Technologies (TINA), Heidelberg, Germany, September 1996.

- Sixth Usenix Security Symposium, San Jose, CA July 1996.

- Third ACM Conference on Computer and Communications Security, New Delhi, India, March 1996.

- First Usenix Workshop on Electronic Commerce, New York City, July 1995.

- Second Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 1995.

- Second ACM Conference on Computer and Communications Security, Fairfax VA, November 1994.

- First Internet Society Symposium on Network and Distributed System Security, San Diego, CA, February 1994.

- First ACM Conference on Computer and Communications Security, Fairfax VA, November 1993.

- PSRG Workshop on Network and Distributed System Security, San Diego, CA, February 1993.

Other positions

- Panel member, National Research Council, CSTB Committee on Computing and Communications Research to Enable Better Use of Information Technology in Government, October 2001.

- Publications Chair, 3rd ACM Conference on Computer and Communications Security, March 1996.

Publications (Journals):

- Wadhawan, Yatin, Clifford Neuman, and Anas AlMajali. "IGNORE: A Policy Server to Prevent Cyber-Attacks from Propagating to the Physical Domain." Applied Sciences 10, no. 18 (2020): 6236.

- AlMajali, Anas, Yatin Wadhawan, Mahmood S. Saadeh, Laith Shalalfeh, and Clifford Neuman. "Risk assessment of smart grids under cyber-physical attacks using Bayesian networks." International Journal of Electronic Security and Digital Forensics 12, no. 4 (2020): 357-385.

- Anas Al Majali, W. Yatin., Neuman, C, Saadeh. Mahmood, Shalalfeh. Laith. “Risk Assessment of Smart Grids under Cyber-physical Attacks using Bayesian Networks”. Accepted in 2019 for International Journal of Electronic Security and Digital Forensics

- Yatin Wadhawan , Anas Al Majali, Clifford Neuman. "A Comprehensive Analysis of Smart Grid Systems against Cyber-Physical Attacks", MDPI: A special issue of Electronics: Cyber-Physical Systems. 2018.

- Anas AlMajali, Arun Viswanathan, Clifford Neuman, Resilience Evaluation of Demand Response as Spinning Reserve under Cyber-Physical Threats. Electronics 6(1), 2016.

- B. Clifford Neuman. Prospero: A Tool for Organizing Internet Resources. (A retrospective) Electronic Networking: Research, Applications and Policy, 20(4): 408-419, Winter 2012. (refereed journal)

- B. Clifford Neuman. Prospero: A Tool for Organizing Internet Resources. A Tatyana Ryutov, Clifford Neuman, Li Zhou and Noria Foukia, *Initial Trust Formation in Virtual Organizations*, International Journal of Internet Technology and Security Transactions, 2007.

- Tatyana Ryutov, Clifford Neuman, Dongho Kim and Li Zhou. Integrated Access control and Intrusion Detection for Web Servers. IEEE Transaction on Parallel and Distributed Systems, Vol 14, No. 9, September 2003.

- R. Bajcsy, et. al. Cyber Defense Technology Networking and Evaluation, Communications of the ACM, March 2004.

- Tatyana Ryutov, Grig Gheorghiu, and Clifford Neuman, An Authorization Framework for Metacomputing Applications, Cluster Computing 2(1999), 165-175.

- B. Clifford Neuman and Theodore Ts'o. Kerberos: An Authentication Service for Computer Networks, IEEE Communications, 32(9):33-38. September 1994.

- B. Clifford Neuman and Santosh Rao. The Prospero Resource Manager: A scalable framework for processor allocation in distributed systems, Concurrency: Practice and Experience, 6(4):339-355, June 1994.

- B. Clifford Neuman. Enabling Commerce on the Internet, IEEE Computer29(4):91-92. April 1996.

- B. Clifford Neuman. Security, Payment, and Privacy for Network Commerce, IEEE Journal on Selected Areas in Communications, 13(8):1523-1531. October 1995.

- B. Clifford Neuman. The Prospero File System: A global file system based on the Virtual System Model. Computing Systems, 5(4):407-432, Fall 1992.

- Michael F. Schwartz, Alan Emtage, Brewster Kahle, and B. Clifford Neuman A Comparison of Internet Resource Discovery Techniques. Computing Systems, 5(4):461-493, Fall 1992.

- B. Clifford Neuman. Prospero: A Tool for Organizing Internet Resources. Electronic Networking: Research, Applications and Policy, 2(1): 30-37, Spring 1992. (refereed journal)

Publications (Other):

- C. Pandit, H. Kothari and C. Neuman, "Privacy in time of a pandemic," 2020 13th CMI Conference on Cybersecurity and Privacy (CMI) - Digital Transformation - Potentials and Challenges(51275), 2020, pp. 1-6, doi: 10.1109/CMI51275.2020.9322737.

- Yatin Wadhawan , Anas Al Majali, Clifford Neuman. "PSP: A Framework to Allocate Resources to Power Storage Systems under Cyber-Physical Attacks", 5th International Symposium for ICS-SCADA Cyber Security. 2018.

- Yatin Wadhawan , Anas Al Majali, Clifford Neuman. "A Systematic Approach to Analyze Multiple Cyber-Physical Attacks on Smart Grid", International Conference on Cyber Security of Cyber Physical Systems. 2018.

- Yatin Wadhawan , Dr. Clifford Neuman. "RL-BAGS: A Tool for Smart Grid Risk Assessment", International Conference on Smart Grid and Clean Energy Technologies (ICSGCE). 2018.

- Wadhawan, Yatin and Neuman, Clifford,"BAGS: A Tool to Quanify Smar-Grid Resilience", September 2017, In Proceedigs of the 4th International Workshop on Cyber-Physical Systems at the Federated Conference on Computer Science and Information Systems, Prague, Czech Repulic.

- Wadhawan, Yatin and Neuman, Clifford, and AlMajali, Anas "Analyzing Cyber-Physical Attacks on Smart Grid Systems", 2017 Workshop on Modeling and Simulation of Cyber-Physical Energy Systems (MSCPES), April 2017, Pittsburgh.

- Wadhawan, Yatin and Neuman, Clifford, "Evaluating Resilience of Gas Pipeline Systems Under Cyber-Physical Attacks: A Function-Based Methodology", ACM Workshop on Cyber-Physical Systems Security and Privacy (CPS-SPC) 2016.

- Yatin Wadhawan and Clifford Neuman. Defending Cyber-Physical Attacks on Oil Pipeline Systems: A Game-Theoretic Approach Yatin Wadhawan and

Clifford Neuman. International Workshop on AI for Privacy and Security (PRAISE) from 29 August to 2 Septembe 2016, at the Haugue, Netherlands.

- Yatin Wadhawan and Clifford Neuman, A Roadmap to Evaluate Resilience of Oil and Gas Cyber-Physical Systems. 2015 ACSAC Workshop on Industrial and Control System Security, Los Angeles, December 2015.

- Tatyana Ryutov, Anas AlMajali, Clifford Neuman, Modeling Security Policies for Mitigating the Risk of Load Altering Attacks on Smart Grid Systems, in Proceedings of the 2015 Workshop on Modeling and Simulation of Cyber-Physical Energy Systems (MSCPES) (IEEE), Seattle, April 2015.

- Anas AlMajali, Eric Rice, Arun Viswanathan, Kymire Tan, Clifford Neuman, *A Systems Approach to Analysing Cyber-Physical Threats in the Smart-Grid*, in Proceedings of the 4th International Conference on Smart Grid Communications (IEEE SmartGridComm), Vancouver, October 2013.

- Arun Viswanathan, Kymie Tan, Clifford Neuman, *Deconstructing the Assessment of Anomaly-Based Intrusing Detectors for Critical Applications*, in Proceedings of the16th International Symposium on Research in Attacks , Intrusions, and Defenses (RAID2013) St. Lucia, October 2013.

- Hashem Alayed, Fotos Frangoudes, and Clifford Neuman, *Behavioral-Based Cheating Detection in Online First Person Shooters using Machine Learning Techniques*, in Proceedings of IEEE 2013 Conference on Computational Intelligence in Games, Niagara Falls, Canada, August 2013.

- Anas AlMajali, Arun Viswanathan, and Clifford Neuman, *Analyzing Resiliency of the Smart Grid Communication Architectures under Cyber Attack*, in Proceedings of the 5th Workshop on Cyber Security Experimentation and Test (CSET'12) Bellevue, Washington, August 2012.

- Clifford Neuman and Kymie Tan, *Mediating Cyber and Physical Threat Propagation in Security Smart Grid Architecture*, in Proceedings of the 2nd International Conference on Smart Grid Communications (IEEE SmartGridComm), Brussels, October 2011.

Clifford Neuman, *Challenges in Security for Cyber-Physical Systems*, DHS Workshop on Future Directions in Cyber-Physical Systems Security, Newark, NJ, July 22-24, 2009.

- Arun Viswanathan, Clifford Neuman, Secure System Views: A new Paradigm for Secure Usable Sysems. USC-ISI Tehnical Report Number ISI-TR-654, January 2009.

- Terry Benzel, Robert Braden, Dongho Kim, Clifford Neuman, Anthony Joseph, Keith Sklower, Ron Ostrenga, Stephen Schwab, Design Deployment

and use of the DETER testbed.. In Proceedings of the DETER Community Workshop on Cyber-Security and Test, August 2007, Boston.

- Tatyana Ryutov, Clifford Neuman, A Trust Based Approach for Improving Data Reliability in Industrial Sensor Networks, in proceedings of the joint ITRUST and PST Conference on Privacy, Trust Management, and Security, New Brunswick Canada, August 2007. Also, ISI-TR-631, January 2007.

- Tatyana Ryutov, Clifford Neuman, Situational Identity: A Person-centered Identity Management Approach, USC ISI Technical report ISI-TR-630, January 2007.

- Tatyana Ryutov, Clifford Neuman, Ronak Shah, Automated Management of Vulnerability Mitigation Prescriptions. USC ISI Technical report ISI-TR-630, January 2007.

- Clifford Neuman, Managing Multiple Perspectives on Trust, *in proceedings of the 2007 Cyber Security and Information Infrastrcture Research Workshop*, Oak Ridge Tennessee, May 2007.

- Clifford Neuman. *Understanding Trust in SCADA Systems.* Proceedings of Beyond SCADA: Network Embedded Control for Cyber-Physical Systems. Pittsburgh, November 9, 2006. (Refereed Workshop Position Statement)

- Sukumal Kitisin and Clifford Neuman. *Reputation-Based Trust-Aware Recommender System*. Proceedings of the 2nd IEEE Workshop on the Value of Security Through Collaboration (SECOVAL), September 2006, Baltimore. (refereed workshop)

- Ho Chung and Clifford Neuman. *Modeling the Relative Strength of Security Protocols*. Proceedings of the 2nd ACM CCS Workshop on Quality of Protection, October 2006, Alexandria VA. (refereed workshop)

- Clifford Neuman, Chinmay Shah, Kevin Lahey. *Running Live Self-Propagating malware on the DETER Testbed.* Proceedings of the DETER Community Workshop, Arlington VA, June 2006.

- Noria Foukia, Liz Zhou and Clifford Neuman. *Multilateral Decision for Collaborative Defense Against Unsolicited Bulk e-mail*. Proceedings of the 4th International Conference on Trust Management. Pisa, Italy, May 2006. (refereed conference)

- Terry Benzel, Bob Braden, Dongho Kim, Clifford Neuman Anthony Joseph and Keith Sklower Ron Ostrenga and Stephen Schwab, *Experience with DETER: A Testbed for Security Research.* Second IEEE Conference on testbeds and Research Infrastructures for the Development of Networks and Communities (TridentCom2006), March 2006, Barcelona. (refereed conference)

- L. Li, I. Hamadeh, S. Jiwasurat, G. Kesidis, P. Liu, C. Neuman, *Emulating Sequential Scanning Worms on the DETER Testbed*, In Proceedings of 2nd International IEEE/CreateNet Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities (TridentCom2006), March 2006. (refereed conference)

- Tatyana Ryutov, Clifford Neuman, Li Zhou and Noria Foukia, *Establishing Agreements in Dynamic Virtual Organizations*, in Proceedings of the Workshop on the Value of Security through Collaboration, part of IEEE SecureComm, September 2005, Athens. (refereed workshop)

- Tatyana Ryutov, Clifford Neuman, Noria Foukia, Travis Leithead, Kent Seamons, Li Zhou, *Adaptive Trust Negotiation and Access Control for Grids*. 6th IEEE/ACM International Workshop on Grid Computing, Seattle, November 2005. (refereed workshop)

- Sultan Almuhammadi and Clifford Neuman, "Security and Privacy using One-Round Zero Knowledge Proofs", 7th IEEE Conference on E-Commerce Technology, Munich, July 2005. (refereed conference)

- Tatyana Ryutov, Li Zhou, Clifford Neuman, Travis Leithead, and Kent E. Seamons, "**Adaptive Trust Negotiation and Access Control**," *in Proceedings of the ACM Symposium on Access Control Models and Technologies* (SACMAT'05), Stockholm, June 1-3, 2005. (refereed conference)

- Tatyana Ryutov, Clifford Neuman, Dongho Kim and Li Zhou. Integrated Access control and Intrusion Detection for Web Servers. In proceedings of the 23rd International Conference on Distributed Computing Systems, Providence, Rhode Island, May 2003. (refereed conference)

- Tatyana Ryutov, Clifford Neuman and Dongho Kim. Dynamic Authorization and Intrusion Response in Distributed Systems. Proceedings of the 3rd DARPA Information Survivability Conference and Exposition (DISCEX III), April 2003. (refereed conference)

- Tatyana Ryutov and Clifford Neuman. The Specification and Enforcement of Advanced Security Policies. To be published In Proceedings of the Third International Conference on Policies for Distributed Systems and Networks (POLICY 2002), June 2002, in Monterey, California. (refereed conference)

- Tatyana Ryutov and Clifford Neuman, The Set and Function Approach to Modeling Authorization in Distributed Systems, in Proceedings of the Information Assurance in Computer Networks Methods, Models, and

Architectures for Network Security, May 2001, St. Petersburg, Russia, 189-206. (refereed conference)

- Tatyana Ryutov and Clifford Neuman, Representation and Evaluation of Security Policies for Distributed System Services, in Proceedings of the DARPA Information Survivability Conference and Exposition, January 2000. Hilton Head, SC. (refereed conference)

- Sukumal Imudom and B. Clifford Neuman, A Framework Supporting Collaborative Filtering for Internet Information, AAAI-98 Workshop on Recommender Systems, Madison, WI, July 1998. (refereed conference)

- G. Gheorghiu, T. Ryutov, and B. Clifford Neuman, Authorization for Metacomputing Applications, in Proceedings of the 7th IEEE Symposium on High Performance Distributed Computing, Chicago, IL, July 1998. (refereed conference)

- Sung-Wook Ryu and B. Clifford Neuman, Garbage Collection for Distributed Persistent Objects, in Proceedings of the Workshop on Compositional Software Architectures, Monterey, CA January 1998. (referred conference)

- B. Clifford Neuman and Gennady Medvinsky. Requirements for Network Payment: The NetCheque Perspective In Proceedings of IEEE COMPCON'95. March 1995. (referred conference)

- Clifford Neuman and Genaddy Medvinsky, *NetCheque, NetCash, and the Characteristics of Internet Payment Services*, MIT Workshop on Internet Economics, March, 1995

- Charlie Lai, Gennady Medvinsky, and B. Clifford Neuman. Endorsements, Licensing, and Insurance for Distributed System Services, In Proceedings of 2nd the ACM Conference on Computer and Communication Security. November 1994. (refereed conference)

- B. Clifford Neuman. How to Trust a Distributed System. In Proceedings of the National Computer Security Conference. Baltimore MD, October 1994. (invited conference)

- Gennady Medvinsky and B. Clifford Neuman. Electronic Currency for the Internet, Electronic Markets 3(9/10):23-24, October 1993. Also appeared in Connexions 8(6):19-23, June 1994. (unrefereed journal)

- Gennady Medvinsky and B. Clifford Neuman. NetCash: A design for practical electronic currency on the Internet. In Proceedings of the 1st ACM Conference

on Computer and Communication Security. November 1993. (refereed conference)

- B. Clifford Neuman, Steven Seger Augart, and Shantaprasad Upasani. Using Prospero to support integrated location independent computing. In Proceedings of the Symposium on Mobile and Location Independent Computing, August 1993. (refereed conference)

- B. Clifford Neuman. Prospero: A base for building information infrastructure. In Proceedings of INET'93, August 1993. (referred conference)

- B. Clifford Neuman and Santosh Rao. Resource Management for Distributed Parallel Systems. In Proceedings of the 2nd International Symposium on High Performance Distributed Computing, July 1993. (refereed conference)

- B. Clifford Neuman. Proxy-Based Authorization and Accounting for Distributed Systems. In Proceedings of the 13th International Conference on Distributed Computing Systems, pages 283-291, May 1993. (refereed conference)

- B. Clifford Neuman and Stuart G. Stubblebine. A Note on the Use of Timestamps as Nonces. Operating Systems Review, 27(2):10-14, April 1993. (unrefereed)

- B. Clifford Neuman. Prospero: A virtual directory service for the Internet, Connexions 6(7):2-9, July 1992. (unrefereed)

- B. Clifford Neuman. The Prospero File System: A global file system based on the Virtual System Model. In Proceedings of the 1st Usenix Workshop on Filesystems May 1992. (refereed conference)

- B. Clifford Neuman. Protection and Security Issues for Future Systems. In Proceedings of the Workshop on Operating Systems of the 90s and Beyond . Dagstuhl Castle, Germany. July 1991.(invited workshop)

- B. Clifford Neuman. The Need for Closure in Large Distributed Systems. Operating Systems Review, 23(4): 28-30, October 1989. (unrefereed)

- B. Clifford Neuman. Workstations and the Virtual System Model. In Proceedings of the 2nd IEEE Workshop on Workstation Operating Systems, pages 91-95, September 1989. (refereed conference)

- B. Clifford Neuman and Jennifer G. Steiner. Authentication of Unknown Entities on an Insecure Network of Untrusted Workstations. In Proceedings of the Usenix

Workshop on Workstation Security, Portland, OR. August 1988. (refereed conference)

- J. G. Steiner, B. Clifford Neuman, and J.I. Schiller. Kerberos: An Authentication Service for Open Network Systems. In Proceedings of the Winter 1988 Usenix Conference. February, 1988. (Version 4) (refereed conference)

- B. Clifford Neuman and Wayne Yamamoto. Adding Packet Radio to the Ultrix Kernel. In Proceedings of the Winter 1988 Usenix Conference February, 1988. (refereed conference)

- B. Clifford Neuman. Packet Radio and IP for the Unix Operating System. In Proceedings of the Sixth ARRL Computer Networking Conference, Redondo Beach, CA. August, 1987. (refereed conference)

Book Chapters:

- Sanjay Goel, Stephen F. Bush, Clifford Neuman, Smart Grid Security (Chapter 10) in IEEE Vision for Smart Grid Communications: 2030 and Beyond, IEEE Standards Association, 2013.

- Frank Siebenlist, Nataraj Nagaratnam, Von Welch, Clifford Neuman, Security for Virtual Organizations: Federating Trust and Policy Domains. in The GRID 2: Blueprint for a New Computing Infrastructure (edited by Kesselman and Foster), Morgan, Kauffman Publishers, 2004. (invited)

- Clifford Neuman, Security and Privacy, in Cancer Informatics: Essential Technologies for Clinical Trials, Springer-Verlag Inc, 2002. (invited)

- B. Clifford Neuman, Security, Accounting, and Assurance, in The GRID: Blueprint for a New Computing Infrastructure (edited by Kesselman and Foster), Morgan, Kauffman Publishers, 1999. (invited)

- B. Clifford Neuman and Gennady Medvinsky, Internet Payment Services, in Internet Economics, MIT Press. 1997. (refereed conference -> book)

- Charlie Lai, Gennady Medvinsky, and B. Clifford Neuman, Endorsements, Licensing, and Insurance for Distributed Services, in Internet Economics, MIT Press. 1997. (refereed conference -> book)

- B. Clifford Neuman, A Flexible Framework for Network Payment, in Readings in Electronic Commerce, Addison-Wesley. 1996. (invited)

- B. Clifford Neuman, Scale in Distributed Systems, Readings in Distributed Computing Systems, IEEE Computer Society Press, 1994. (refereed book chapter)

- John T. Kohl, B. Clifford Neuman, and Theodore Y. T'so, The Evolution of the Kerberos Authentication System. In Distributed Open Systems, pages 78-94. IEEE Computer Society Press, 1994. (refereed conference -> book)

Theses, Technical Reports, and Working Documents:

- Clifford Neuman, Tom Yu, Sam Hartman, Ken Raeburn, The Kerberos Network Authentication System, RFC 4120. July 2005 (standards specification).

- Dongho Kim and B. Clifford Neuman. Reconstructing Interconnections on Disconnected Mobile Hosts, ISI Technical Report ISI-TR-528, University of Southern California / Information Sciences Institute, April 2000

- John Kohl and B. Clifford Neuman. The Kerberos Network Authentication Service (Version 5). Internet Request for Comments RFC-1510. September 1993.

- B. Clifford Neuman, The Virtual System Model: A Scalable Approach to Organizing Large Systems, Ph.D. Thesis, University of Washington, Department of Computer Science and Engineering Technical Report 92-06-04, June 1992.

- B. Clifford Neuman. Proxy-Based Authorization and Accounting for Distributed Systems. Technical Report 91-02-01, Department of Computer Science and Engineering, University of Washington, March 1991.

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Students who completed Ph.D. under Dr. Neuman

- Ho Chung, - Ph.D. USC 2009. Modeling the Relative Strength of Security. Now a researcher at Samsung.

- Li Zhou, - Ph.D. USC 2006. Negotiation of Multilateral Security Decisions. Now a researcher at Microsoft, Redmond WA.

- Sultan Almuhammadi – Ph.D. USC 2005, Security and Privacy Using One-Round Zero-Knowledge Proofs, now faculty at King Fahd University, Saudi Arabia.

- Noria Foukia (postdoc at USC 2004/05), currently Lecturer at University of Otago, Dunedin NZ.

- Xuhua Ding, Ph.D. USC 2003 (co-advisor with Gene Tsudik). Fine-grained control of security services. Now assistant professor at Singapore Management University.

- Yongdae Kim, Ph.D. USC 2002 (co-advisor with Gene Tsudik). Group Key Agreement: Theory and Practice, now faculty at University of Minnesota.

- Tatyana Ryutov - Ph.D. USC 2002, The Condition-driven Authorization Model for Distributed System Services, Now at USC Information Sciences Institute

- Dongho Kim – Ph.D. USC 2001, Reconstructing Interconnections on Disconnected Mobile Hosts, Now at USC Information Sciences Institute

- Sukumal Imudom – Ph.D. USC 2001, Distributed Annotation Framework Supporting Collaborative Filtering of Information, now faculty at Kasetsart University, Thailand.

- Eul Gyu Im - Ph.D. USC 2001, A Flexible Framework for Replication in Distributed Systems, now at National Security Research Institute, South Korea.

- Gennady "Ari" Medvinsky - Ph.D. USC 1996, Electronic Payment Services To CyberSafe Corporation, to Excite - @ Home, to Keen.com, to Microsoft.

- Santosh Rao - Ph.D. USC 1996, Resource Management, Parallel Debugging, and PRM, Now at Veritas Software

- Brenda Timmerman - Ph.D. USC - Traffic Flow Confidentiality, Faculty at Cal State Northridge

- Sung-Wook Ryu - Ph.D. USC - Garbage Collection for Prospero, Now at Veritas Software

- Konstadinos Kutsikos – Ph.D. USC - Electronic Commerce and Economics, now faculty at University of the Aegean, Greece.

- Anas Almajali – Ph.D. USC – Analysis of Threats in Cyber-Physical Systems. Now faculty at Hashemite University, Jordan.

- Hashem Alayed – Ph.D. USC – Security in Online games, now faculty at King Saud University, Saudi Arabia.

- Arun Viswanathan – Ph.D. USC – Situational Awareness and Intrusion Detection in Cyber-physical systems. Now working for NASA Jet Propulsion Lab.

- Yatin Wadhawan – Ph.D. USC - Analyzing Cyber-Physical Attacks on Industrial Control Systems. Now working at Microsoft.

- Abdulla Alwabel – Ph.D. USC Overcoming Challenges Facing Malware Behavioral Analysis.