TYLER W. MOORE
Department of Computer Science
Wellesley College
Wellesley, MA 02481, USA
tmoore@cs.wellesley.edu
http://cs.wellesley.edu/~tmoore/
tel: +1 781 283 3176

Experience

Norma Wilentz Hess Visiting Assistant Professor of Computer Science, Wellesley College, *2011 – present*

Visiting Scholar, Wellesley College, *2010 – 2011*

Postdoctoral Fellow, Center for Research on Computation and Society, Harvard University, *2008 – 2011*

Education

Ph.D. (Computer Science), University of Cambridge, St. John's College, UK, *2008*
Thesis: 'Cooperative attack and defense in distributed networks'
Supervisor: Prof. Ross Anderson

B.S. (Computer Science), University of Tulsa, OK, USA, *2004 Summa Cum Laude*

B.S. (Mathematics), University of Tulsa, OK, USA, *2004 Summa Cum Laude*

Research Specialties

Economics of Information Security, Critical Infrastructure Protection, Electronic Crime, Wireless Network Security, Information Security Policy, Digital Forensics

Teaching Interests

All core undergraduate and graduate computer science courses, and advanced courses in my research specialties. Courses of special interest include Computer Security, Network Security, Data Mining, Security Economics, and Computer Law and Policy

Fellowships and Awards

Gordon Prize in Managing Cybersecurity Resources, 2009
Publication of the Year, University of Cambridge Computer Laboratory, 2008
Best Paper Award, 2nd Anti-Phishing Working Group eCrime Researchers Summit, 2007
Best Paper Award, 4th European Workshop on Security and Privacy in Ad-hoc and Sensor Networks, 2007

Marshall Scholarship, 2004–2007
US National Science Foundation Graduate Research Fellowship, 2004–2008
Goldwater Scholarship, 2003

Refereed Journal Articles/Book Chapters

Economics of Information Security

[1] T. Moore and R. Clayton. 'The Impact of Public Information on Phishing Attack and Defense'. *Communications and Strategies*, **81**(1), pp. 45–68, 2011.

[2] T. Moore. 'The Economics of Cybersecurity: Principles and Policy Options'. *International Journal of Critical Infrastructure Protection*, **3**(3–4), pp. 103–117, 2010.

[3] T. Moran, T. Moore. 'The Phish Market Protocol: Secure Sharing Between Competitors'. *IEEE Security & Privacy*, **8**(4), pp. 40–45, 2010.

[4] T. Moore, R. Clayton and R. Anderson. 'The Economics of Online Crime'. *Journal of Economic Perspectives*, **23**(3), pp. 3–20, 2009.

[5] R. Anderson and T. Moore. 'Information Security – Where Computer Science, Economics and Psychology Meet'. *Philosophical Transactions of the Royal Society A* **367**, pp. 2717–2727, 2009.

[6] T. Moore and R. Clayton. 'The Impact of Incentives on Notice and Take-down'. In M. E. Johnson, editor: *Managing Information Risk and the Economics of Security*, pp. 199–223. Springer, New York, 2008.

[7] R. Anderson, R. Böhme, R. Clayton, T. Moore. 'Security Economics and European Policy'. In M. E. Johnson, editor: *Managing Information Risk and the Economics of Security*, pp. 55–80. Springer, New York, 2008.

[8] R. Anderson, T. Moore, S. Nagaraja, and A. Ozment. 'Incentives and Information Security'. In N. Nisan, T. Roughgarden, E. Tardos, and V. Vazirani, editors: *Algorithmic Game Theory*, pp. 633–649. Cambridge University Press, New York, 2007.

[9] R. Anderson and T. Moore. 'The Economics of Information Security'. *Science* **314**(5799), pp. 610–613, 2006.

Wireless Network Security

[10] J. Clulow and T. Moore. 'Suicide for the Common Good: a New Strategy for Credential Revocation in Self-Organizing Systems'. *ACM SIGOPS Operating Systems Review* **40**(3), pp. 18–21, 2006.

Critical Infrastructure Protection

[11] T. Moore, A. Meehan, G. Manes and S. Shenoi. 'Using Signaling Information in Telecom Network Forensics'. In M. Pollit and S. Shenoi, editors: *Advances in Digital Forensics*, IFIP 194, Springer, pp. 177–188, 2005.

Refereed Proceedings Papers

Economics of Information Security

[12] T. Moore, N. Leontiadis and N. Christin. 'Fashion Crimes: Trending-Term Exploitation on the Web'. In: *18th ACM Conference on Computer and Communications Security (CCS)*, October 18-20, 2011, Chicago, IL. ACM Press.

[13] N. Leontiadis, T. Moore and N. Christin. 'Measuring and Analyzing Search-Redirection Attacks in the Illicit Online Prescription Drug Trade'. In: *20th USENIX Security Symposium*, August 10-12, 2011, San Francisco, CA. USENIX Association.

[14] S. Landau and T. Moore. 'Economic Tussles in Federated Identity Management'. In: *10th Workshop on the Economics of Information Security*, June 14–15, 2011, Fairfax, VA.

[15] S. Hofmeyr, T. Moore, S. Forrest, B. Edwards and G. Stelle. 'Modeling Internet-Scale Policies for Cleaning up Malware'. In: *10th Workshop on the Economics of Information Security*, June 14–15, 2011, Fairfax, VA.

[16] T. Moore and R. Clayton. 'Ethical Dilemmas in Take-down Research'. In: *2nd Workshop on the Ethics of Computer Security Research*, March 4, 2011, St. Lucia.

[17] T. Moore, A. Friedman and A. Procaccia. 'Would a 'Cyber Warrior' Protect Us? Exploring Trade-offs Between Attack and Defense of Information Systems'. In: *13th New Security Paradigms Workshop (NSPW)*, pp. 85–94, September 21-23, 2010, Concord, MA. ACM Press.

[18] T. Moore and B. Edelman. 'Measuring the Perpetrators and Funders of Typosquatting'. In: *14th International Conference on Financial Cryptography and Data Security (FC 2010)*, January 25–28, 2010, Tenerife, Spain. Lecture Notes in Computer Science (LNCS) 6054, pp. 175–191, Springer.

[19] T. Moran and T. Moore. 'The Phish Market Protocol: Securely Sharing Attack Data Between Competitors'. In: *14th International Conference on Financial Cryptography and Data Security (FC 2010)*, January 25–28, 2010, Tenerife, Spain. LNCS 6054, pp. 222–237, Springer.

[20] R. Böhme and T. Moore. 'The Iterated Weakest Link: a Model of Adaptive Security Investment'. In: *8th Workshop on the Economics of Information Security*, June 24-25, 2009, London, UK.

[21] T. Moore, R. Clayton and H. Stern. 'Temporal Correlations between Spam and Phishing Websites'. In: *2nd USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET '09)*, April 21, 2009, Boston, MA. USENIX Association.

[22] T. Moore and R. Clayton. 'Evil Searching: Compromise and Recompromise of Internet Hosts for Phishing'. In: *13th International Conference on Financial Cryptography and Data Security (FC 2009)*, February 23–26, 2009, Barbados. LNCS 5628, pp. 256–272, Springer.

[23] T. Moore and R. Clayton. 'The Consequence of Non-Cooperation in the Fight Against Phishing'. In: *3rd Anti-Phishing Working Group eCrime Researchers Summit*, pp. 1–14, October 15–16, 2008, Atlanta GA. IEEE.

[24] T. Moore and R. Clayton. 'Evaluating the Wisdom of Crowds in Assessing Phishing Websites'. In: *12th International Conference on Financial Cryptography and Data Security (FC 2008)*, January 28–31, 2008, Cozumel, Mexico. LNCS 5143, pp. 16–30, Springer.

[25] T. Moore and R. Clayton. 'Examining the Impact of Website Take-down on Phishing'. In: *2nd Anti-Phishing Working Group eCrime Researchers Summit*, pp. 1–13, October 4–5, 2007, Pittsburgh, PA. ACM Press.

[26] T. Moore and R. Clayton. 'An Empirical Analysis of the Current State of Phishing Attack and Defense'. In: *6th Workshop on the Economics of Information Security*, June 7–8, 2007, Pittsburgh, PA.

[27] T. Moore. 'The Economics of Digital Forensics'. In: *5th Workshop on the Economics of Information Security*, June 26–28, 2006, Cambridge, UK.

[28] T. Moore. 'Countering Hidden-Action Attacks on Networked Systems'. In: *4th Workshop on the Economics of Information Security*, June 2–3, 2005, Cambridge, MA.

Wireless Network Security

[29] T. Moore, M. Raya, J. Clulow, P. Papadimitratos, R. Anderson and J.-P. Hubaux. 'Fast Exclusion of Errant Devices from Vehicular Networks'. In: *5th Annual IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)*, pp. 135–143, June 16–20, 2008, San Francisco, CA. IEEE Communications Society.

[30] T. Moore, J. Clulow, S. Nagaraja and R. Anderson. 'New Strategies for Revocation in Ad-hoc Networks'. In: *4th European Workshop on Security and Privacy in Ad-hoc and Sensor Networks (ESAS)*, July 2–3, 2007, Cambridge, UK. LNCS 4572, pp. 232–246, Springer.

[31] T. Moore and J. Clulow. 'Secure Path-Key Revocation for Symmetric Key Pre-distribution Schemes in Sensor Networks'. In H. Venter, M. Eloff, L. Labuschagne, J. Eloff, and R. von Solms, editors: *New Approaches for Security, Privacy and Trust in Complex Environments, Proceedings of the IFIP TC 11 22nd International Information Security Conference (SEC 2007)*, May 14–16, 2007, Sandton, South Africa. IFIP Vol. 232, pp. 157-168, Springer.

[32] J. Clulow, G. Hancke, M. Kuhn and T. Moore. 'So Near and yet So Far: Distance-Bounding Attacks in Wireless Networks'. In: *3rd European Workshop on Security and Privacy in Ad-hoc and Sensor Networks (ESAS)*, September 20–21, 2006, Hamburg, Germany. LNCS 4357, pp. 83–97, Springer.

[33] T. Moore. 'A Collusion Attack on Pairwise Key Pre-distribution Schemes for Distributed Sensor Networks'. In: *3rd IEEE International Workshop on Pervasive Computing and Communication Security*, March 13, 2006, Pisa, Italy. Proceedings of IEEE PerCom Workshops, pp. 251–255, IEEE Computer Society.

Critical Infrastructure Protection

[34] T. Kosloff, T. Moore, J. Keller, G. Manes and S. Shenoi. 'Attacks on Public Telephone Networks: Technologies and Challenges'. In: *SPIE Conference on Technologies for Homeland Defense and Law Enforcement*, April 2004, Orlando, FL.

[35] T. Kosloff, T. Moore, J. Keller, G. Manes and S. Shenoi. 'SS7 Messaging Attacks on Public Telephone Networks: Attack Scenarios and Detection'. In: *ACM Workshop on the Scientific Aspects of Cyber Terrorism*, November 2002, Washington, DC. ACM Press.

[36] G. Lorenz, T. Moore, G. Manes, J. Hale and S. Shenoi. 'Securing SS7 Telecommunications Networks'. In: *2nd IEEE Systems, Man and Cybernetics Information Assurance Workshop*, June 5–6, 2001, West Point, NY.

Books

[37] T. Moore, D. Pym, C. Ioannidis, editors. *Economics of Information Security and Privacy*. Springer, New York, 2010.

[38] T. Moore, S. Shenoi, editors. *Critical Infrastructure Protection IV – Fourth Annual IFIP WG 11.10 International Conference on Critical Infrastructure Protection, Revised Selected Papers*. Springer, New York, 2010.

[39] F. Stajano, C. Meadows, S. Capkun and T. Moore, editors. *Security and Privacy in Ad-hoc and Sensor Networks, 4th European Workshop, ESAS 2007, Proceedings*. LNCS 4572, Springer, Berlin, 2007.

Invited Papers

[40] R. Boehme, T. Moore. 'The Iterated Weakest Link'. *IEEE Security & Privacy* **8**(1), pp. 53–55, 2010.

[41] T. Moore. 'Phishing and the Economics of E-crime'. *Elsevier Infosecurity Magazine* **4**(6) pp. 34–37, 2007.

[42] R. Anderson and T. Moore. 'Information Security Economics – and Beyond'. In: *27th Annual International Cryptology Conference (CRYPTO)*, August 19–23, 2007, Santa Barbara, CA. LNCS 4622, pp. 68–91, Springer.

[43] T. Moore. 'Workshop Report: DIMACS Workshop on Information Security Economics', Rutgers University, Piscataway, NJ, USA, January 18–19, 2007.

[44] T. Moore and R. Anderson. 'Trends in Security Economics'. *European Network and Information Security Agency Quarterly* **1**(3), pp. 6–7, 2005.

Commissioned Reports

[45] T. Moore. 'Introducing the Economics of Cybersecurity: Principles and Policy Options'. *Proceedings of a Workshop on Deterring Cyberattacks*, pp. 3–23, U.S. National Academy of Sciences.

[46] R. Anderson, R. Böhme, R. Clayton, T. Moore. 'Security Economics and the Internal Market'. Duration: October 2007 – January 2008.
Written for the European Network and Information Security Agency (ENISA) to identify economic barriers to information security and recommend actionable policy responses.

Selected Presentations

[1] 'Gathering Evidence of Large-Scale Internet Frauds'. Keynote address to the 7th IFIP 11.9 International Conference on Digital Forensics, Orlando, FL, February 1, 2011.

[2] 'Cyber War'. Invited talk to the Boston Committee on Foreign Relations, January 19, 2011.

[3] 'The Law and Economics of Cybersecurity'. Guest lecture, Law and Economics Seminar, Harvard Law School, Cambridge, MA, November 16, 2010.

[4] 'The Economics of Online Crime'. Guest lecture, Cybercrime Seminar, Harvard Law School, Cambridge, MA, March 11, 2010.

[5] 'The Economics of Identity Management'. Invited talk to the State Department Conference on Identity Management in an Open Society, Washington, DC, USA, November 20, 2009.

[6] 'The Economics of Information Security'. Invited talk to the Cyber International Relations Seminar, MIT, Cambridge, MA, USA, October 15, 2009.

[7] 'The Economics of Information Security'. Invited talk to the Federal Reserve Bank, Kansas City, MO, USA, July 7, 2009.

[8] 'The Economics of Information Security – with Lessons for Critical Infrastructure Protection'. Invited talk to 3rd IFIP WG11.10 International Conference on Critical Infrastructure Protection, Hanover, NH, USA, March 23, 2009.

[9] 'An Empirical Analysis of Phishing Attack and Defense'. Invited talk to Harvard University, Center for Research on Computation and Society Seminar, Cambridge, MA, USA, October 1, 2008.

[10] 'An Empirical Analysis of Phishing Attack and Defense'. Invited talk to University College London, Human Centred Systems Group, London, United Kingdom, July 10, 2008.

[11] 'An Empirical Analysis of Phishing Attack and Defense'. Invited talk to the University of Bath, Computer Science Departmental Seminar, Bath, United Kingdom, May 23, 2008.

[12] 'The Economics of Information Security'. Invited talk to the DeepSec In-Depth Security Conference, Vienna, Austria, November 22, 2007.

[13] 'Network Economics and Security Engineering'. Presented at the DIMACS Workshop on Information Security Economics, Rutgers University, Piscataway, NJ, USA, January 18–19, 2007.

[14] 'The Economics of Information Security'. Invited talk to the Institute for Security Technology Studies, Dartmouth College, Hanover, NH, USA, January 16, 2007.

[15] 'The Economics of Information Security'. Invited talk to the Laboratory for Computer Communications and Applications, EPFL, Lausanne, Switzerland, November 30, 2006.

[16] 'Economic Challenges to Improving Information Security'. Invited talk to the International Workshop on Cyber-security, Danish Board of Technology, Copenhagen, Denmark, September 14, 2006.

[17] 'A Survey of Recent Results in the Economics of Information Security'. Invited talk to the Conference on Network and Information Security in Cyprus—Policy and Implementation of Standards, Nicosia, Cyprus, April 28, 2006.

[18] 'On Economics and Information Security'. Keynote address to the Network of Networks (NVN) Workshop, Amsterdam, The Netherlands, January 26, 2006.

[19] 'A Research Agenda for Telecommunications Security'. Presented at the Infosec Research Council Meeting, DARPA, Arlington, VA, USA, September 11, 2003.

[20] 'Countering the Threats to America's Public Telephone Networks'. Presented at the National Defense University, Fort Leslie McNair, Washington, DC, USA, September 11, 2003.

[21] 'Signaling System 7 (SS7) Network Security'. Presented at the National Security Information Exchange Meeting, Atlanta, GA, USA, September 18, 2002.

Teaching Experience

Head Teaching Fellow
Harvard College, Spring 2009
Assisted teaching of introductory computer science and policy course for non-technical majors; managed 7 teaching fellows, co-wrote and graded problem sets, projects and exams.

Teaching Fellow
Harvard University Extension School, Autumn 2008 & Spring 2010
Assisted teaching of introductory computer science and policy course for non-technical majors

Supervisor, Computer Laboratory
University of Cambridge, Autumn 2004–Spring 2006
Courses taught: Security and Advanced Systems Topics

Mentor, Tulsa Undergraduate Research Challenge
University of Tulsa, Summer 2001–Summer 2004
Taught informal Java programming course and advised students on research projects and community service initiatives

Professional Activities

Vice President and Director
International Financial Cryptography Association, (2011–present)

Vice Chair
IFIP Working Group 11.10 on Critical Infrastructure Protection, (2008–present)

Program Chair
9th Workshop on the Economics of Information Security, Harvard University, Cambridge, MA, USA (2010)

Program Co-Chair
4th IFIP WG 11.10 International Conference on Critical Infrastructure Protection, National Defense University, Washington, DC, USA (2010)
8th Workshop on the Economics of Information Security, University College London, UK (2009)

General Chair
13th International Conference on Financial Cryptography and Data Security, Barbados (2009)
5th Workshop on the Economics of Information Security, University of Cambridge, UK (2006)

Local Arrangements Chair
4th European Workshop on Security and Privacy in Ad-hoc and Sensor Networks, University of Cambridge, UK (2007)

Program Committee Member
NSPW: New Security Paradigms Workshop (2011)
Financial Crypto: International Conference on Financial Cryptography and Data Security (2011)
WEIS: Workshop on the Economics of Information Security (2007–2011)
eCrime: Anti-Phishing Working Group eCrime Researchers Summit, (2009–2011)
Trust: International Conference on Trust and Trustworthy Computing (2009–2011)
DIMVA: International Conference on Detection of Intrusions and Malware & Vulnerability Assessment (2010)
WiSec: ACM Conference on Wireless Network Security (2010)
PerSec: IEEE Workshop on Pervasive Computing and Communications Security (2007)
IFIP WG 11.10 International Conference on Critical Infrastructure Protection (2007–2011)
IFIP WG 11.9 International Conference on Digital Forensics (2006–2010)

Journal Reviews
Science
IEEE Transactions on Dependable and Secure Computing
IEEE Security and Privacy Magazine
ACM Mobile Computing and Communications Review
ACM Computing Surveys
Information Systems Research
The Computer Journal (British Computer Society)
Elsevier International Journal of Critical Infrastructure Protection
Management Science
Journal of Policy Analysis and Management

Community Service

Webmaster and Member, Executive Board
Millat Schools Development Fund, 2005–2008
Volunteer and Webmaster (`http://www.millatschoolsfund.org/`) for organization aiming to help improve a school for the economically disadvantaged in Nagpur, India.

Volunteer
Oklahoma Methodist Manor, 2000–2004
Co-founded a program to teach retirement home residents how to use computers and navigate the Internet, offering weekly classes to nearly 40 people.

References