

Charles C. Palmer

Dept. of Computer Science, Dartmouth College, Hanover, NH 03755

107 Blueberry Hill Dr. Hanover, NH 03755

Phone: 914-954-2466 Fax: 603-727-9302

E-Mail: charles.c.palmer@dartmouth.edu

Web: <http://cs.dartmouth.edu/~ccpalmer>

Interests

My interests span all aspects of computer science, but in particular security and privacy, including network security, high assurance systems, secure software development, programming languages, cryptography, security auditing and testing, security effectiveness assessment, trust, human aspects of security, privacy-enhancing technology, and harmonizing security and privacy. I've had success teaching a variety of subjects at the undergraduate, graduate, and industrial levels, from security and privacy to programming languages, large-scale software design, database systems, and special topics courses such as evolutionary algorithms. In business, I've built world class R&D teams and have a proven record of effectively explaining research topics and technical issues to executives and government policymakers, helping them understand how various technologies and policies may (or may not) help to solve their problems.

Education

Polytechnic University. Ph.D., 1994. Computer Science

Tulane University. M.S., 1984. Computer Science

Oklahoma State University. B.S., 1978. Computer Science

Complete Work Experience

Dartmouth College, Hanover, NH

Adjunct Professor of Computer Science

2009 to 2023

Senior Lecturer of Computer Science

2023 to present

Teaching a variety of courses within the CS curriculum:

- Security & Privacy
2009 - 2011, 2013 - 2015, 2018 - 2020, 2023, 2024
- Software Design & Implementation
2012, 2013, 2015, 2016, 2018, 2021, 2022 - 2024
- Database Systems
2013, 2015, 2017, 2019, 2022, 2025
- Building Reliable And Secure Software with Rust
(new course) Spring 2024
- Cognitive Computing
2016-2022 (no longer offered)

Primary Advisor for ten senior thesis research sequences (each two terms)

Other Teaching

Polytechnic University

1992-1998

Adjunct Professor for graduate level courses: “Java Programming”, “Object-Oriented Analysis and Design with C++”, “Large-Scale Software Design with C++”, and “Evolutionary Computation”.

IBM Thomas J. Watson Research Center

1992-1998

C Programming and Advanced C Programming at three IBM Research sites across the US and in Switzerland. Also offered the course live over IBM’s Education Network, reaching 400 students at a time at 20 sites across the US.

Tulsa Junior College

1979

Undergraduate introduction to programming (FORTRAN) course.

Advising

PH.D. Thesis Committees

2022, Ph.D.: Andrew H. P. Bloomgarden, Hanover, NH

2012, Ph.D.: Sara Sinclair, Dartmouth College, Hanover, NH

2005, Ph.D.: Marco Pistoia, Polytechnic University, Brooklyn, NY 2001, Ph.D.:

2005, Ph.D.: Leendert van Doorn, Vrije Universiteit, Amsterdam, The Netherlands

Undergraduate Senior Theses

2024, Carly Reterer “Open source supply chain security”, (High Honors)

2023, Julia Martin “Bias in AI”, (High Honors)

2020, Juliette Pouchol, “Ethics of Autonomous Weapons” (High Honors)

2018, Margaret Lawson, “A metadata management system for accelerated scientific discovery at exascale” (High Honors)

2017, Marissa LeCoz (High Honors)

2016, Peter Saisi (High Honors)

2016 Brian Chalif (High Honors)

2016 Dan Whitcomb (High Honors)

2012, Alexandra Grant (High Honors)

2012, Igor Terzic (Honors)

IBM Thomas J. Watson Research Center, Hawthorne, NY

Strategy & Solutions Consultant, IBM CHQ
and IBM Research

2019 to 2022

2022 to 2024 (retired)

Focal point for IBM security and privacy research and technology, providing strategic guidance and representing customer technical interests in the security and privacy areas across IBM, and in government programs in particular. Continuing as IBM’s focal point for and participant on various government & industry panels.

IBM Academy of Technology Leadership Team, Security Lead

The IBM Academy of Technology (AoT) consists of roughly the top 1000 IBM technical leaders worldwide organized to advance the understanding of key technical areas, to improve communications in and development of IBM's global technical community, and to engage clients in technical pursuits of common value.

CTO, Security & Privacy, Assoc. Director of Computer Science

June 2006 to 2019

Focal point for IBM security and privacy research and technology, providing strategic guidance and representing customer technical interests in the security and privacy areas across IBM Research, and in government programs in particular. Provides the external interface to security research and technology for IBM Research through the media, guest lectures, and conference keynotes. IBM’s focal point for and participant on various government & industry panels.

**Research Director & Senior Technical Advisor, Institute for Information Infrastructure Protection (I3P)
June 2006 through July 2011**

Provides technical leadership for the Institute, its programs and activities; provides guidance to and collaborates with the institute's staff, researchers and consortium members; develops strategy and vision for the institute; represents the institute nationally and interacts with key stakeholders in government, industry and in the non-profit sector. Develops new avenues of research, coordinates the activities of the I3P with other national efforts, and raises awareness of cyber security issues among decision makers and industry leaders.

Founding Director, IBM's Institute for Advanced Security September 2009 to July 2011

Founded the institute with the charge of providing cybersecurity expertise and connections primarily to government clients and partners. Lead collaboration amongst those groups to explore and clarify their current and future challenges, and drive innovation and research investments to address them. See instituteforadvancedsecurity.com for details of the institute's activities. Transitioned the institute to the IBM Security Business unit to address security issues across the broader IBM client base.

Director Security, Privacy, & Cryptography Department 1998-2006

Directing nine teams of researchers investigating various aspects of security and privacy, including Cryptographic Foundations, Internet Security Technologies, Java Security, Policy, Web Services Security, Secure Embedded Systems & Smart Cards, Biometrics, Video Surveillance, and the Global Security Analysis Lab. Managing 50+ researchers and a \$15M budget, including securing more than \$5M in funding annually from IBM Divisions, joint efforts with industrial partners, and from various US government agencies. Built up department from 20 researchers. IBM's primary media contact for security technologies.

Founder, Global Security Analysis Lab 1995-1998

Founded IBM's "ethical hacking" effort. Assembled and led the research team that formed IBM's new security consulting practice and emergency response service. Within two years, the consulting practice had grown from 2 to over 400 consultants worldwide.

Staff Programmer, Research Staff Member 1984-1995

Lead programmer for various secure networking projects: Secure DNS/Dynamic DNS, Graphical LAN design tool, 802.2 networking.

Amoco Production Company 1978-1984

Research and development in operating systems and networking; systems management of in-house seismic processing systems as well as field automation systems.

Selected Talks

2022-present: Mind The Gap: Dialogs on AI podcast; <https://www.mindthegapdialogs.com/>

2020: invited speaker, "Emergence of AI as Collaborator, As Creator: An Exploration of the Intersection of AI, IP & Security", New York City Bar Association; <https://www.youtube.com/watch?v=zi6oHzhArxU>

2015:
Invited keynote, "Security in the Cognitive Era", 2015 Annual Conference Consumer Analytics & Industry Applications, University of Delaware.

2014:
"Data Implications of Wearables", IBM Big Data & Analytics University Webinar, with over 1,100 IBM employees attending worldwide.

2014:
General Co-Chair and Program Chair IBM Academy Digital Learning Workshop on the Future of Education (open to public), Bangalore, India

2011: IBM Technical Leadership Exchange, “Rethinking Cybersecurity: The Ultimate Critical Infrastructure”, Washington, DC

Panel developer and moderator, “Mission Security & Privacy: Striking the balance to enable collaboration”, RSA Security Conference, San Francisco.

2010:

- Invited lecturer on cybersecurity workforce challenges, MITRE, October, Bedford, Mass,
- Invited Tutorial, Cyber Security, Int’l Conference on Cyber Security, August, New York, NY
- Keynote DoE Cybersecurity Conference, May, Atlanta, GA
- Panelist on Cybersecurity, Business Software Alliance Cybersecurity Conference, May, Washington, DC
- Keynote Smarter and Secure Planet, May, Washington, DC
- Panel moderator, SANS SCADA Summit, April, Orlando, FL

2009:

- Co-Chair of the Economics of Security subcommittee, NITRD Summit
- Chair of “Trust and Confidence” panel and speaker on Human Behavior and the Insider Threat.

2008:

- Member of “Assessing and Prioritizing the Business Decisions that Drive Resilience” panel at the "What Businesses Need to Know about Harmonizing Resilience and Cyber Security" workshop.
- Invited industry speaker, Air Force Cyber Command Symposium
- CISSE invited keynote speaker Invited keynote, 7th Annual Conference & Exposition Privacy & Security Conference

2007

- Invited industry speaker, Air Force Cyber Command Symposium
- Invited keynote, IFIP Critical Infrastructure conference
- Invited speaker, American Petroleum Institute Security conference
- Invited speaker, University of Illinois Urbana-Champaign Information Trust Institute
- Invited speaker, University of Virginia Darden School of Business
- Invited speaker, Dartmouth “Freedom and Technology” panel discussion on RFID

Publications

Books and Book Chapters

Palmer, C. and Trope, Roland, “AI-Controlled Vehicles: How Will We Frame Thy Fearful Symmetry?”, chapter in The Law of Artificial Intelligence and Smart Machines, American Bar Assoc., 2019

Palmer, C., foreword to new textbook from Charles Pfleeger and Shari Pfleeger, in “Analyzing Computer Security”, August 2012.

Palmer, C. and Shenoj, S. Eds., "Critical Infrastructure III", selected papers from the Third Annual IFIP WG 11.10 International Conference on Critical Infrastructure Protection, Springer, 2009.

Palmer, C., "Representing Trees in Genetic Algorithms", Handbook of Evolutionary Computation, Oxford University Press, 1997.

Refereed Journal Articles

D. Kesdogan, C. Palmer, "Technical Challenges of Network Anonymity", Computer Communications, Vol. 29, Issue 3, February 2006, pp. 306-324.

D. M. Chess, C.C. Palmer, S. R. White, "[Security in an Autonomic Computing Environment](#)", IBM Systems Journal, Vol. 42, No. 1, 2003.

Palmer, C., "[Ethical Hacking](#)", IBM Systems Journal, vol. 40, no.3 (2001).

Palmer, C. and Kershenbaum, A., "An Approach to a Problem in Network Design Using Genetic Algorithms", Networks, vol. 26, 1995.

Guest Editor, Journals and Magazines

Palmer, C., Ed., IBM Systems Journal special issue on Cybersecurity, Jan 2014.

Palmer, C., and Sasse, A., eds., IEEE Security & Privacy magazine special issue on "Protecting You", Jan. 2014.

Sasse, A., Palmer, C., and Jakobsson, M., "Helping you protect you", IEEE Security & Privacy, Jan. 2014.

Palmer, C., and Palmer, E., eds., IEEE Security & Privacy magazine special issue on "Hardware/Software Security", 2012.

Palmer, C., Mulligan, D., eds., "Harmonizing Security and Privacy", special issue of the IBM Systems Journal, Vol. 48, No. 1, 2009.

Trellue, R., Palmer, C., eds., "Process Control Security: Bootstrapping a Legacy", IEEE Security & Privacy magazine special issue on "Process Control Security", Vol. 6, No. 6, November/December, 2008.

Trellue, R., Palmer, C., eds., IEEE Security & Privacy magazine special issue on "Process Control Security", Vol. 6, No. 6, November/December, 2008.

Pfleeger, S., Trope, R., Palmer, C., eds., IEEE Security & Privacy magazine special issue "Managing Organizational Security", Vol. 5, No. 3, 2007.

Palmer, C., Medina, D., eds., "Compliance Management", special issue of the IBM Systems Journal, Vol. 46, No. 2, 2007.

Refereed Conference Papers

Grant, A., Palmer, C., "The search for trust", NIST Workshop on Improving Trust in the Online Marketplace, 2013.

Palmer, C., Kershenbaum, A., and Cahn, R. C., "Lower Bounds on the Costs of Optimal Networks", Telecommunications Systems Conference: Modeling and Analysis, Gavish, B. (Editor), Vanderbilt University, 1993.

Palmer, C., Naghshineh, M., and Chen, J.S.C., "The GILDA LAN Design Tool", Int'l Workshop on Modeling, Analysis, and Simulation of Computer and Telecommunications Systems, Schwetman, H., Walrand, J., Bagchi, K., and DeGroot, D. (Editors), Society for Computer Simulation, 1993.

Palmer, C., Naghshineh, M., Chen, J.S.C., Kermani, P., and Ahmadi, H., "GILDA: Graphically Interfaced LAN Design Advisor", Local Communications Systems: LAN and PBX II, Pujolle, G. and Puigjaner, R. (Editors), Elsevier Science Publishers B.V. (North-Holland), 1991.

Other Journal and Magazine articles

Irvine, C. and Palmer, C., "Call in the Cyber National Guard", IEEE Security & Privacy, January 2010.

Palmer, C., "Can we win the security game?", IEEE Security & Privacy magazine, Vol 2, No 1., 2004.

Dissertation

C. C. Palmer. (Ph.D. Thesis, Polytechnic University; A. Kershenbaum, advisor). May 1994. 39 citations.

IBM Publications

Hailpern, J. and Palmer, C., "An Analysis of the Prevalence of Cookies on the World Wide Web", IBM Research Report RC22201, 2001.

Palmer, C. and Kershenbaum, A., "Two Algorithms for Finding Optimal Communications Spanning Trees", IBM Research Report RC19394, 1994.

Palmer, C., "IBM Token-Ring Technical Reference Sample Programs", documentation and source code, 1989.

Palmer, C. and Gunter, E., "The AIX NETBIOS Project", IBM Interdivisional Technical Liaison Conference, 1989.

Palmer, C., "Introduction to the C Programming Language", IBM Research report RC13972.

Selected Lecture Notes (published for student use at Dartmouth College and Polytechnic University)

Security & Privacy, (online, building on prior work by Smith), 2009-present

Software Design & Implementation, (online, building on prior work by Campbell and Balkcom), 2012 to present

Database Systems, (online), 2013 to present

Cognitive Computing with Watson (online), 2016 to present

Java Programming, 320 pages, 1997.

Evolutionary Computation, 300 pages, 1996.

Advanced C++ Programming, 250 pages, 1995.

C++ Programming, 280 pages, 1992.

Patents

2021 US Patent 10,956,468: COGNITIVE TEMPLATE QUESTION SYSTEM

2011 US Patent 7,962,962: Using an object model to improve handling of personally identifiable information

2006 US Patent 7,069,427: Using a rules model to improve handling of personally identifiable information

2003 US Patent 6,505,773: Authenticated electronic coupon issuing and redemption

Also European Patent EP1068581B1, Germany Patent DE69902454.4, Great Britain and France Patent 1068581, Spain Patent 2178390, Great Britain Patent 106858

2002 US Patent 6,430,488: Vehicle customization, restriction, and data logging

2001 US 6,275,937: "Collaborative server processing of content and meta-information with application to virus checking in a server network" (also EU and Germany)

2001 US Patent App. 20,030/014,418: Using a privacy agreement framework to improve handling of personally identifiable information

1990 US Patent 4930159: Netbios name authentication (also EU and Germany)

Professional Activities

Member University of Delaware Cybersecurity Initiative Advisory Council, 2014-2015

Member various US Government's panels regarding cybersecurity (2010-present)

Member National Level Exercise scenario development team for DHS.

Member NSA Advisory Board, December 2010 to September 2011.

Member Armed Forces Communications & Electronics Association (AFCEA) Cybersecurity Committee (elected 2011 to present).

Member IBM Academy of Technology, 2009-present, and IBM Academy Leadership Team, 2015-present

Member of various program committees, such as IEEE Homeland Security Technology 2010 and 2011.

Program Chair, DDesigning a Secure Engineering Competition (DESSEC) Workshop, April 2010, Durham, NC (NSF-funded workshop), 2010.

General Chair for 10th IFIP WG11.10 Critical Infrastructure Protection Conference, Dartmouth College, Feb. 2009

Member Cross-Sector Cyber Security Working Group, NCSD, DHS, 2007 to present.

Member of the US Department of Homeland Security's Data Privacy and Integrity Advisory Committee, 2004 to present.

Past member of the advisory boards for Purdue University's CERIAS center, 2006, and for Polytechnic University's Cyber Security Center, 2006.

Member of the editorial board for the IEEE Computer Society's Security & Privacy magazine, and founder and lead editor for its *Crypto Corner* 2008-2018.

Member of the editorial board of the International Journal of Information and Computer Security.

Member of the ACM (since 1975), IEEE, and IEEE Computer Society.

Selected Honors and Awards

Distinguished Research Staff Member, IBM Research, 2014

IEEE Senior Member, 2012

ACM Distinguished Engineer, 2006

IBM award for extraordinary patent value (2006, 2008)

Charles C Palmer – 11/8/24

Two IBM Corporate Awards for the founding IBM's Global Security Analysis Lab and for leading the technical agenda for founding IBM's Global Services Security Consulting Practice, 2002 and 2004

Time Magazine, one of the five technologists selected for their "*Inside Business*" Board of Technologists special issue on Cyber Defense, 2004.

IBM Outstanding Technical Achievement Award for founding the Global Security Analysis Lab, 2002.

US Joint Chiefs of Staff medal of appreciation, Department of Defense, US Government, 2000

IBM Research Division Award for work to ensure the security of the 1996 Olympic Games; 1996.

IBM Research Division Award for work on the Secure Web Product; 1995.

IBM Outstanding Technical Achievement Award for Dynamic IP for OS/2 Warp and AIX; 1995.

IBM Research Computer Science Department Innovation Project Award for "A Genetic Algorithm for Network Flow Problems", to fund research during 1994-1995.

IBM Invention Achievement Awards (1989,1994).

IBM Outstanding Technical Achievement Award for "NETBIOS Local Area Network Interface for AIX on the RTPC"; 1989.

IBM Outstanding Innovation Award, VM-Based Disk Emulation, 1988.

Boy Scouts of America Eagle Scout, 1970