Farnam Jahanian began serving as provost of Carnegie Mellon University in February 2015. As the university’s chief academic officer, Jahanian has broad responsibility for leading CMU’s schools, colleges, institutes and campuses and is instrumental in long-range institutional and academic planning and implementation. The office of vice provost for research also reports to Jahanian, where he is responsible for fostering excellence in research, scholarship and creative activities across the entire campus. He brings to CMU extensive leadership and administrative expertise, not only in supporting and nurturing foundational research within and across disciplines, but also in translating research into technologies and practices that benefit society.

Jahanian holds faculty appointments in the School of Computer Science (Computer Science), the College of Engineering (Electrical and Computer Engineering) and Heinz College (Information Systems and Management) at Carnegie Mellon University. To access his faculty page, please visit http://www.cs.cmu.edu/~farnam/.

Prior to CMU, Jahanian led the National Science Foundation Directorate for the Computer and Information Science and Engineering (CISE) from 2011 to 2014. With the budget of over $900 million, he was responsible for directing CISE programs and initiatives that support advances in research and cyber infrastructure, foster broad interdisciplinary collaborations, and contribute to the development of a computing and information technology workforce with skills essential to success in the increasingly competitive global market. During his tenure at NSF, the CISE Directorate led several administration initiatives with the White House Office of Science and Technology Policy, including the National Robotics Initiative, the National Big Data Research and Development Initiative and US Ignite. He also served as co-chair of the Networking and Information Technology Research and Development (NITRD) Subcommittee of the National Science and Technology Council Committee on Technology, providing coordination of R&D activities of 17 government agencies.

Jahanian was on the faculty at the University of Michigan from 1993 to 2014, where he held the Edward S. Davidson Collegiate Professorship in the College of Engineering, and served as Chair for Computer Science and Engineering from 2007 to 2011 and the Director of the Software Systems Laboratory from 1997 to 2000. He co-founded Arbor Networks in 2001 and served as its President and Chief Scientist until 2004. He remained as Chairman of Arbor Networks until its acquisition in 2010. Earlier in his career, he held research and management positions at the IBM T.J. Watson Research Center. Jahanian’s research interests span distributed computing, network security and network protocols and architectures. His research has been sponsored by NSF, DHS, DARPA, NSA, ONR and numerous companies including Cisco, Intel, Google, Boeing, VeriSign, Hitachi, Hewlett-Packard and IBM.

While at the University of Michigan, Jahanian led several large-scale research projects that studied the growth and scalability of the Internet infrastructure, which ultimately transformed how cyber threats are addressed by Internet Service Providers. In the late 1990s, his research team, including former students, Craig Labovitz and G. Robert Malan, demonstrated fundamental limitations in the core routing architecture of the Internet by uncovering the fragility of the underlying routing infrastructure. The group’s seminal work on Internet routing stability and convergence has been highly influential within both the network research community and the Internet operations community. It served as a catalyst for significant changes in commercial Internet routing software implementation and impacted routing policies employed by Internet Service Providers worldwide. The centerpiece of this work was recognized with an ACM SIGCOMM Test of Time Award in 2008. Furthermore, it has inspired significant new endeavors by numerous networking researchers over the last decade.
Anticipating the emergence of increasingly complex, widely distributed cyber attacks on IP-based networks, long before terms such as “distributed denial of service” and “zero-day worms” entered the mainstream, Jahanian led an effort to develop new techniques that combine network topology information and traffic flow statistics to detect, backtrack and filter DDoS attacks. Working from a granular understanding of normal network traffic flows, the anomaly detection technique invented by Jahanian’s research team rapidly uncovers distributed attacks, closing a costly gap between the detection of a widely distributed attack and its resolution. This approach, without requiring any changes to the existing Internet routing infrastructure, has transformed how network security is addressed by today’s Internet Service Providers.

The impact of Jahanian’s contributions to Internet stability and security extends beyond the research community and into industry, as is evident in the successful commercialization of his research through Arbor Networks (www.arbor.net), which Jahanian co-founded with former UM graduate student G. Robert Malan in 2000. Over a 10-year period, Jahanian led the research, co-founded the company, launched its flagship products, and upon his return to the University of Michigan, served as Chief Scientist and Chairman of Arbor Networks setting the strategic direction until its acquisition in 2010. During a three-year leave from the University of Michigan, he led the management team of the company and raised over $33 million in two rounds of funding from venture capital firms and strategic investors.

At Arbor Networks, Jahanian and his team developed highly scalable, service provider-class solutions for protecting networks against distributed denial of service attacks, zero-day network threats and routing exploits. These Internet security solutions have been widely implemented by hundreds of Internet Service Providers, wireless carriers, cloud service providers and numerous mission-critical networks in leading financial, retail, healthcare and government organizations in 107 countries around the globe, including AT&T, Verizon, British Telecom, Comcast, NTT, Telecom Italia, Vodafone, Internet2, Yahoo and Cisco. In 2010, 70 percent of Internet backbone transit traffic was being protected by their technology. Over the last decade, Arbor Networks’s technology has been utilized by the world’s leading companies to measure, monitor and defend networks against attack, including 90% of the world's Tier 1 service providers, 8 of the 10 largest cloud service providers, 9 of the 10 largest managed security service providers, 3 of the 5 largest social media networks, 5 of the 6 largest U.S. cable broadband providers, and 4 of the top 6 U.S. banks based on assets under management. In addition, more than 50 global carriers and cloud service providers offer managed security services to their enterprise customers based on Arbor Networks products. The technology has also been used to successfully protect Web properties for five Olympic Games and two World Cups.

The author of over 100 published research papers, Jahanian has also served on dozens of national advisory boards and panels. He serves as chair of the National Research Council’s Computer Science and Telecommunications Board (CSTB) and is a board member of the Computing Research Association (CRA) and National Center for Women and Information Technology (NCWIT). Jahanian has testified before Congress on a broad range of topics, including cybersecurity, next generation computing and “big data” analytics. He has been an active advocate for how basic research can be uniquely central to an innovation ecosystem that drives global competitiveness and addresses national priorities, working with entrepreneurs and lecturing on the topic.

He has received numerous awards for his research, commitment to education and technology commercialization activities, including a National Science Foundation CAREER Award (1995), University of Michigan College of Engineering Teaching Excellence Award (1998), Amoco Teaching Award (2000), DARPA Innovation Award (2000), EECS Outstanding Faculty Achievement Award (2005), the State of Michigan Governor’s University Award for Commercialization Excellence (2005) and the ACM SIGCOMM Test of Time Award (2008). He was named “Distinguished University Innovator” at the University of Michigan in 2009, and “Entrepreneur of the Year” by New Enterprise Forum in 2010. Most recently, he was presented with the Computing Research Association’s 2015 Distinguished Service Award.

Jahanian holds a master’s degree and a Ph.D. in Computer Science from the University of Texas at Austin. He is a Fellow of the Association for Computing Machinery (ACM), the Institute of Electrical and Electronic Engineers (IEEE) and the American Association for the Advancement of Science (AAAS).
News and Media

Farnam Jahanian Receives Computing Research Association Distinguished Service Award
Source: Computing Research Association | Carnegie Mellon University

CMU Provost, Pittsburgh Mayor to Speak at White House Smart Cities Forum
Source: Carnegie Mellon University | Pittsburgh Business Times

Dr. Farnam Jahanian joins QCRI’s Scientific Advisory Committee
Source: The Peninsula | Gulf Times | Qatar is Booming

Farnam Jahanian Named Carnegie Mellon University Provost
Source: Pittsburgh Business Times | Carnegie Mellon University

CMU Selects Farnam Jahanian, Accomplished Scientist and Successful Entrepreneur, as VP of Research
Source: Carnegie Mellon University

NSF Selects University of Michigan Professor Farnam Jahanian to Head Computer & Information Science & Engineering (CISE) Directorate:
Source: National Science Foundation

University of Michigan spinoff Arbor Networks sold to Tektronix Communications in major IT security deal
Source: The Ann Arbor News

Arbor Networks Acquisition Is a Tale of Two Cities—and a Strategic Move Into Wider World of Wireless
Source: Xconomy.com

Arbor Networks Founder Honored by the University of Michigan
Source: Arbor Networks

Other Links

Faculty Page at University of Michigan: www.eecs.umich.edu/~farnam/

Jahanian’s Research Group Website: nsrg.eecs.umich.edu

Arbor Networks, founded by Jahanian: http://www.arbor.net
FARNAM JAHANIAN  
Provost and Chief Academic Officer  
Carnegie Mellon University  
5000 Forbes Avenue  
Pittsburgh, PA 15213-3890  
Phone: 412-268-3260  
e-mail: farnam@andrew.cmu.edu

EDUCATION

UNIVERSITY OF TEXAS AT AUSTIN  

UNIVERSITY OF TEXAS AT SAN ANTONIO  
Bachelor of Science in Mathematics, Computer Science, and System Design (Summa cum Laude), 1982.

PROFESSIONAL EXPERIENCE

CARNEGIE MELLON UNIVERSITY  
Provost and Chief Academic Officer (May 2015–present)  
Vice President for Research (August 2014–May 2015)  
Professor, School of Computer Science  
Professor, College of Engineering  
Professor, Heinz College

NATIONAL SCIENCE FOUNDATION  
Directorate for Computer and Information Science and Engineering (March 2011–August 2014)

UNIVERSITY OF MICHIGAN  
Edward S. Davidson Collegiate Professor of EECS  
Professor, EECS Department (2001–2014)  
Chair, Computer Science and Engineering (2007–2011)  
Director, Software Systems Research Lab (1997–2000)  
Associate Professor, EECS Department (1995–2001)  
Assistant Professor, EECS Department (1993–1995)

ARBOR NETWORKS  
Chairman of the Board (2004–2010)  
President and Chief Scientist (2000–2004, on leave from UM)

IBM T.J. WATSON RESEARCH CENTER  
Senior Manager, Research Division (1991–1993)  
Research Staff Member (1989–1991)

Research Assistant with the Real-Time Systems Group
HONORS AND AWARDS

• Professional Societies
  • Fellow of the Association for Computing Machinery (ACM).
  • Fellow of the Institute of Electrical and Electronics Engineers (IEEE).
  • Fellow of the American Association for the Advancement of Science (AAAS).

• Computer Research Association (CRA) Distinguished Service Award, 2015.
• New Enterprise Forum Entrepreneur of the Year, 2010.
• Edward S. Davidson Collegiate Professor of EECS, 2009.
• Distinguished University Innovator Award, University of Michigan, 2009.
• Association for Computing Machinery SIGCOMM Test of Time Award, 2008.
• Governor's University Award for Commercialization Excellence (U-ACE), 2005.
• EECS Outstanding Faculty Achievement Award, University of Michigan, 2005.
• Ernst & Young Entrepreneur of the Year Finalist, 2003.
• Amoco Faculty Teaching Award, University of Michigan, 2000.
• IBM Faculty Development Award, 2000.
• DARPA Innovation Award, Fault-Tolerant Networking Program, 2000.
• College of Engineering Teaching Excellence Award, University of Michigan, 1998.
• The Smithsonian-ComputerWorld Innovation Awards: UARC project, 1998.
• IBM University Partnership Program Research Award, 1998.
• ACM SIGCOMM Best Student Paper Award (Craig Labovitz), 1997.
• EECS Department Teaching Excellence Award, University of Michigan, 1996.
• National Science Foundation CAREER Award, 1995.
• Eta Kappa Nu Honor Society EECS Professor of the Year, 1995.
• IEEE Service Award, 1993.
• IBM Research Division Award, 1992.
• IBM Outstanding Technical Innovation Group Award, 1992.
• Elected to Eta Kappa Nu, Phi Kappa Phi and Alpha Chi honor societies.
• More than 25 company and innovation awards granted to Arbor Networks from 2000-2010 by leading industry publications and organizations including Techworld Award for Security Product Of The Year, Information Security Product Award, and Inc 500 Award.
RESEARCH PROJECTS  (nsrg.eecs.umich.edu)

• “In-Cloud Security Services for Mobile Devices,” National Science Foundation, Farnam Jahanian (PI), Michael Bailey, 2009-2014.


• “Virtual Center for Network and Security Data,” Department of Homeland Security, Farnam Jahanian (PI), Michael Bailey, (UM); Paul Barford (U. Wisconsin); Nick Feamster (Georgia Tech); Manish Karir (Merit Network), 2005-2014.

• “Botnet Attribution and Removal: from Axioms to Theories to Practice,” ONR MURI Award, Wenke Lee (PI), Nick Feamster, David Dagon (Georgia Tech); Kang Shin, Farnam Jahanian, Mike Bailey (UM); Christopher Kruegel, Giovanni Vigna (UCSB); John Mitchell (Stanford), 2009-2014.


• “CLEANSE: Cross-Layer Large-Scale Efficient Analysis of Network Activities to SECure the Internet,” National Science Foundation, Wenke Lee (PI), Nick Feamster, David Dagon, Mustaque Ahamad (Georgia Tech); Farnam Jahanian, Mike Bailey (UM); Mike Reiter, Fabian Monrose (UNC), 2008-2012.

• “New Frameworks for Detecting and Minimizing Information Leakage in Anonymized Network Data,” Department of Homeland Security, Fabian Monrose (PI) Johns Hopkins University; Farnam Jahanian and Michael Bailey (UM); Mike Reiter (CMU), 2008-2010.

• “Collaborative Research: Enabling Security and Network Management Research for Future Networks,” National Science Foundation, Morley Mao (PI), Farnam Jahanian (UM); Wenke Lee and Nick Feamster (Georgia Tech); Manish Karir (Merit Network); Southern Crossroads, 2008-2011.

• “Detecting and Dismantling Botnet Command and Control Infrastructure using Behavioral Profilers and Bot Informants,” Department of Homeland Security, Farnam Jahanian (PI), Morley Mao (UM); Greg Travis (Indiana University); Manish Karir (Merit Network), 2006-2008.

• “Internet Motion Sensor,” Gift from Intel Corporation, Farnam Jahanian (PI), 2006.

• “Internet Motion Sensor,” Gift from Cisco Systems, Farnam Jahanian (PI), 2006.


• “Lighthouse Project: Detecting and Surviving Large-Scale Network Infrastructure Attacks,” Sponsored by DARPA, Farnam Jahanian (PI) and Paul Howell (Merit Network), 1999-2003.


• “Experimentation with Multi-Threaded, Distributed Routing Technology in the Internet,” National Science Foundation, Farnam Jahanian (PI) and Craig Labovitz (Merit Network), 1997-2000.


• National Science Foundation CAREER Award, Farnam Jahanian (PI), 1995-1999.

• “End-to-End Performance Studies of Web-Based Groupware and Collaborative Applications over the Internet,” Sponsored by Hewlett-Packard Company, Farnam Jahanian (PI) and Sugih Jamin, 1997-1998.


• “Enabling Multimedia-Based Collaboration over Computer networks,” Sponsored by the AT&T Foundation, Atul Prakash (PI) and Farnam Jahanian.

SELECTED INVITED TALKS AND KEYNOTES (2011-Present)


• “The Imperative for a Cyber Secure Society,” Keynote Address, Information Trust Institute 10-Year Anniversary, University of Illinois, September 2014.


• “The Policy Infrastructure for Big Data: From Data to Knowledge to Action,” Invited talk and panel, Big Data Future Conference, Ohio State University, March 2014.


• “The Imperative for a Cyber Secure Society,” Keynote Lecture, Qatar Foundation Annual Research Conference (ARC’ 13), Qatar National Convention Center, Doha, November 2013.


• “Harnessing the Promise of Data,” Data to Knowledge to Action: Building New Partnerships, White House Office of Science and Technology Policy, Washington, DC, November 2013.

• “Innovating for Society: Realizing the Transformative Impact of Computing and Communication,” CSAIL Colloquium, MIT, September 2013.


• “From Data to Knowledge to Discovery,” Keynote Address, Research Data Alliance Launch, Gothenburg, Sweden, March 2013.


• “NSF CISE Programs, Plans and Budget,” Coalition for Academic Scientific Computation (CASC) Spring Meeting, Arlington, VA, February 2012.

• “Innovating for Society: Realizing the Promise of Computing and Communications,” Columbia University, New York, January 2012.

• “Trends, Advances and Transformative Research Opportunities in Computing and Communication,” Keynote Address, Symposium Beyond the Info-plosion, Tokyo, Japan, January 2012.

• “Innovating for Society: Realizing the Promise of Computing and Communications,” Keynote Address, IEEE Global Communications Conference (GLOBECOM), Houston, TX, December 2011.

• “Innovating for Society: Realizing the Promise and Potential of Computing,” Cray Distinguished Speaker Series, University of Minnesota, November 2011.


• “The Promise of Smart Health,” Keynote Address, Wireless Health Annual Conference, San Diego, CA, October 2011.

• “CPS Past and Future,” Cyber Physical Systems Principal Investigator Meeting, National Harbor, MD, August 2011.


• Congressional Testimony on “Protecting Information in the Digital Age,” Subcommittee on Technology and Innovation and Subcommittee on Research and Science Education Joint Hearing, Washington, DC, May 2011.


• “Securing the Internet Cloud: A Perspective on Seeding Innovation and Technology Transfer,” New Enterprise Forum Entrepreneur of the Year Speech, NEF 25th Anniversary Gala, February 2011.
DOCTORAL COMMITTEES CHAIRED

• Jakub Jerzy Czyz – May 2016
  “Studies on the Deployment and Security of the Emerging IPv6 Internet”

• Jing Zhang – December 2015
  “A Macroscopic Study of Network Security Threats at the Organizational Level”

• Yunjing Xu – December 2013
  “Characterizing and Mitigating Virtual Machine Interference in Public Clouds”

• Jon Oberheide – December 2011
  “Leveraging the Cloud for Software Security Services”

• Sushant Sinha – August 2009
  “Context-Aware Network Security”

• Michael D. Bailey – May 2006
  “A Scalable Hybrid Network Monitoring Architecture for Measuring, Characterizing, and Tracking Internet Threat Dynamics”

• Junghee Han – December 2004
  “Enhancing End-to-end Availability and Performance by Leveraging Internet Redundancy”

• David Watson – May 2004
  “Measurement and Analysis of Routing Protocol Behavior on Production Networks”

• Scott Johnson – December 2001
  “Scalable Group Composition”

• G. Robert Malan – May 2000
  “Transparent Measurement and Manipulation of Internet Protocols”

• Craig Labovitz – August 99
  “Scalability of Internet Backbone Routing Infrastructure”

• Monica Brockmeyer – May 99
  “Monitoring, Testing, and Abstractions of Real-Time Specifications”

• Hengming Zou – December 99
  “Dynamic Active-Passive Replication”

• Scott Dawson – December 97
  “Message Level Fault Injection in Distributed Systems”

• Wu-chi Feng – August 96
  “Video-on-Demand services: Efficient Transportation and Decompression of Variable Bit Rate Video”

• Served on 25+ doctoral dissertation committees (1993-2010)
• Supervised 50+ undergraduates in my research group since joining UM
## TEACHING RECORD

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* Maximum score of 5.
REPRESENTATIVE PROFESSIONAL ACTIVITIES AND SERVICES

Recent Broad Memberships and Advisory Committees

- Computer Science and Telecommunications Board (CSTB), National Research Council, Chair and Board Member, 2015-present.
- Computer Research Association (CRA), Board of Directors, 2015-present.
- University of Texas Computer Science Advisory Council, 2015-present.
- Acrobatiq Inc, Board of Directors, 2015-present.
- National Center for Women & Information Technology, Board of Directors, 2014-present.
- CRA Snowbird Conference, Steering Committee Member, 2015-2016.
- National Governors Association’s Cybersecurity Advisory Council, Member, 2012-2014.
- Co-chair, Networking and Information Technology R&D Subcommittee of the National Science and Technology Council’s (NSTC) Committee on Technology, 2011-2014.
- IEEE Fellow Selection Committee.
- IEEE Dependable Systems and Networks, Steering Committee, 2008-present.
- IFIP Working Group 10.4 on Dependable Computing and Fault-Tolerance, Vice Chair, 2012-present.
- UM Center for Entrepreneurship, Advisory Board, 2008-2014.
- Twilio Inc., Advisory Board Member, 2009-2011.
- Arbor Networks, Chairman of the Board, 2003-2010.
- Internet2 External Relations Advisory Council (ERAC), Member, 2007-2010.
- Early Stage Partners Advisory Board, 2007-2011.
- Michigan Innovation Board Member, 2009-2010.
- Wayne State University, Computer Science Department Advisory Committee, 2005-2010.
- Ann Arbor IT Zone, Board Member, 2004-2008.
- NSF WG on “Future Scenarios for Networking Research and Associated Infrastructure Support.”

Significant Editorship and Technical Committees

- General Chair, IEEE Int. Conf. on Dependable Systems and Networks (DSN), 2010.
- Student Forum Chair, IEEE Int. Conf. on Dependable Systems and Networks, 2007.
- Program Chair, ACM Workshop on Recurring Malcode (WORM), 2006.
- Chair, IFIP Workshop on “Infrastructure Security and Operational Challenges of Service Provider Networks,” June 2006.
- Program Chair, IEEE Int. Conf. on Dependable Systems and Networks (DSN), 2002.
- Program Committee Vice Chair, Fault-Tolerance Track, 21st ICDCS, 2000.
- Associate Editor, Real-Time Systems Journal, 1997-present.
- Program Committee Vice-Chair, Distributed Real-Time Systems, 16th ICDCS, 1996.
- Over 30 program committees of technical conferences and symposia, including:
  - 2007 IEEE Internet Measurement Conference.
National Science Foundation Review Panels, 2000-2010

• CAREER Panel, NSF CISE Directorate.
• Site Visit Member, Research Infrastructure, CISE Directorate.
• Science and Technology Center, Panel, Cross-foundation.
• SBIR Panel, ENG Directorate.
• NSF Infrastructure Panel, CISE Directorate.
• Combined Research-Curriculum Development Panel, Engineering Directorate.
• Operating Systems and Compiler Panel, CISE Directorate.
• Cyber Security ITR, CISE Directorate.
• Engineering Research Center, Panel, ENG Directorate.
• NeTS Networking of Sensor Systems, CISE Directorate.
• CyberTrust Program, CISE Directorate.
• Trustworthy Computing Program, CISE Directorate.
• FIND Panel, NSF CISE Directorate.
• Site Visit Member, TRUST Science and Technology Center, Cross-foundation.

MAJOR UNIVERSITY OF MICHIGAN COMMITTEE ASSIGNMENTS

• Selection Committee, Distinguished University Innovator Award, 2013.
• Center for Entrepreneurship, Advisory Board, 2008-2014.
• Chair, Computer Science and Engineering, 2007-2011.
• Chair, Executive Committee, CSE Division, 2007-2011.
• EECS Awards and Honors Committee, 2007-2011.
• National Advisory Board, Office of Technology Transfer, 2006-present.
• Faculty Search Committee, CSE Division, 2005-2011.
• University IT Governance Council, 2010-2011.
• IOE Chair Search Advisory Committee, Chair, 2008-2009.
• Office of VP Research (OVPR) Committee on Research Cyber Infrastructure, 2007.
• Chair, Committee on “Business Engagement Center,” Fall 2007.
• Chair, EECS Internal Review Committee, Chair, 2004.
• Faculty Advisory Board, CoE Technology Transfer and Commercialization, 2002-2004.
  • Chair, subcommittee on IT Infrastructure.
  • Co-chair with John Laird, subcommittee on Research.
• Cisco Systems Merit Scholarship Selection Committee, 2003.
• Faculty Associate to OVPR, IBM Relationship, 1997-2000.
• Rackham Panel on Life Beyond Graduate School. 1999.
• CoE Capital Campaign Retreat, 1999.
• College of Engineering Information Technology Advisory Committee, 1996-1997.
• Member, EECS Depatmental Review Committee, 1996-1997.
SELECTED REFEREED PUBLICATIONS
(Full list of research group’s publications at nsrg.eecs.umich.edu/publications.html)


- J. Oberheide, E. Cooke, and F. Jahanian, “If It Ain't Broke, Don't Fix It: Challenges and New Directions for Inferring the Impact of Software Patches,” Workshop on Hot Topics in Operating Systems (HotOS XII), May 2009.


• J. Han, D. Watson, and F. Jahanian, “Topology Aware Overlay Networks.” IEEE Infocom, Miami, FL, Mar. 2005.


