University of Pittsburgh

Institute for Cyber Law, Policy, and Security Annual Report 2018

PITT
CYBER

Dear friends:

We are pleased to share with you our year in review. It's been an important year here at the University of Pittsburgh Institute for Cyber Law, Policy, and Security, and that is in no small part thanks to many of you.

Pitt Cyber was launched to support and amplify all of the existing good work at Pitt in the cyber space but also to drive new work. We look to push innovation, collaboration, and workforce development—across disciplines here at Pitt, among policymakers, and in industry.

Our remit is intentionally broad: networks, data, algorithms, and systems. We aim to tackle the ever-increasing gap between technology on the one hand and law and policy on the other. In a year when social media platforms were increasingly called to account for their role in spreading election misinformation and hate speech, when even big breaches of consumer data became the norm, and when we started to see the impact of algorithmic bias on our everyday lives, this gap feels even more important to confront.

Few problems can be addressed with purely technical solutions. Pitt Cyber therefore has an explicitly transdisciplinary view of the field. We work in the vital space at the intersection of technology, law, and policy, and we do so with all of those who have expertise to contribute.

Pitt Cyber will continue to take on these big issues wherever we can be most impactful. We hope you will take some time to read about all we have accomplished in our second year and a get a glimpse at what is to come. We look forward to your continued ideas, insight, and partnership.

Sincerely,

David Hickton
Founding Director

Mission

Pitt Cyber provides a unique transdisciplinary environment for tackling cyber challenges. We bring the breadth of one of the world's leading public research universities to bear on the critical questions of networks, data, and algorithms, with a focus on the ever-changing gaps among law, policy, and technology. Our collective of legal, policy, and technical researchers engages with policymakers and industry to create both actionable proposals to address current demands and fundamental insights to understand the future as it arrives.

2018 in Review

Pitt Cyber launched in January 2017 as an experiment: Can existing approaches to cyber at Pitt and beyond be transformed to drive better global outcomes?

Our research, education, and public engagement integrate cutting-edge research and teaching across the full breadth of the University of Pittsburgh to promote the development and use of technology globally, productively, safely, securely, and equitably.

PROGRAMS

The Blue Ribbon Commission on Pennsylvania's Election Security

Pitt Cyber launched The Blue RIbbon Commission on Pennsylvania's Election Security in May 2018 to study vulnerabilities in the cybersecurity of Pennsylvania's election architecture. We are grateful for the exceptional support from The Heinz Endowments and the Charles H. Spang Fund of the Pittsburgh Foundation.

We were pleased to partner with Verified Voting and Carnegie Mellon University's Software Engineering Institute on this project.

Following extensive study and review of public comments, the Commission released its Interim Recommendations on Voting Systems in September 2018. The Commission recommended that

(1) counties replace vulnerable voting systems with those using voter-marked paper ballots,

(2) the Pennsylvania General Assembly and the federal government help counties to purchase secure voting systems, and

(3) election officials follow vendor selection and management best practices to minimize supply chain vulnerabilities.

The Commission will produce a final report in early 2019 to share the results of its study and provide practical recommendations to state and local Pennsylvania officials to better secure the state's elections. The final report will include recommendations on voting systems, audits, back-end election management systems, registration systems, and recovery and resilience.

Blue Ribbon Commission Co-chairs

David Hickton, founding director, Pitt Cyber, and former U.S. Attorney for the Western District of Pennsylvania

Paul McNulty, president, Grove City College; former Deputy Attorney General of the United States; and former U.S. Attorney for the Eastern District of Virginia

THE BLUE RIBBON COMMISSION
on Pennsylvania's Election Security
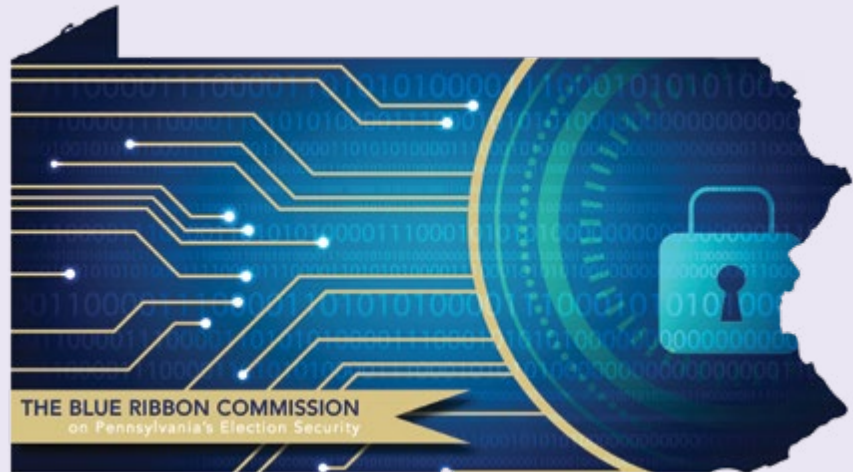
Commission Members

Jim Brown, former chief of staff to U.S. Senator Robert P. Casey Jr.; former chief of staff to Pennsylvania Governor Robert P. Casey

Esther L. Bush, president and CEO, Urban League of Greater Pittsburgh

Mary Ellen Callahan, former chief privacy officer, U.S. Department of Homeland Security

Susan Carty, president, League of Women Voters of Pennsylvania

Nelson A. Diaz, retired judge, Philadelphia Court of Common Pleas

Jane Earll, attorney; former Pennsylvania senator

Douglas E. Hill, executive director, County Commissioners Association of Pennsylvania

Mark A. Holman, partner, Ridge Policy Group; former deputy assistant to the president for Homeland Security; former chief of staff to Pennsylvania Governor Tom Ridge

Ken Lawrence, vice chair, Montgomery County Board of Commissioners

Mark A. Nordenberg, chair of the Institute of Politics, University of Pittsburgh; Chancellor Emeritus of the University; Distinguished Service Professor of Law

Grant Oliphant, president, The Heinz Endowments

Pedro A. Ramos, president and CEO, The Philadelphia Foundation

James C. Roddey, former chief executive, Allegheny County

Marian K. Schneider, president, Verified Voting; former Pennsylvania Deputy Department of State for Elections and Administration

Bobbie Stempfley, director, CERT Division, Software Engineering Institute, Carnegie Mellon University

David Thornburgh, president and CEO, Committee of Seventy

Sharon Werner, former chief of staff to U.S. Attorneys General Eric H. Holder Jr. and Loretta E. Lynch

Dennis Yablonsky, former CEO, Allegheny Conference on Community Development; former Pennsylvania Secretary of Community and Economic Development

Senior Advisors

Charlie Dent, former U.S. congressman, 15th District of Pennsylvania

Paul H. O'Neill, 72nd Secretary of the U.S. Treasury

Dick Thornburgh, former governor, Pennsylvania; former Attorney General of the United States; former Under-Secretary-General of the United Nations

*Affiliations are provided for identification purposes. Commissioners are serving in their personal capacities.

Staff to the Commission

Christopher Deluzio, legal and policy scholar, Pitt Cyber

Beth Schwanke, executive director, Pitt Cyber

The Blue Ribbon Commission on Pennsylvania's election security

Selected Media

Media coverage of Pennsylvania's Election Security report includes the following:

- **"Here's How Russia May Have Already Hacked the 2018 Midterm Elections"**
  —*Newsweek*
- **"House Oversite tackles AI, China, federal IT"**
  —*Politico*
- **"Panel urges funding for new voting machines in Pennsylvania"**
  —AP

Selected Op-eds

- **"Ahead of the 2020 election, let's address Pennsylvania's election security so your vote can count"** —David Hickton and Paul McNulty
  —*The Inquirer*
- **"No time for complacency in Pa. on election security"**—David Hickton and Paul McNulty
  —*Pittsburgh Post-Gazette*
- **"Foreign Election Influence Is Still a Huge Problem in America. Here's How We Can Stop It."**—David Hickton
  —*TIME*

Future of X

Pitt Cyber and Carnegie Mellon University's Software Engineering Institute launched the Future of X salon series in April 2018. Each salon convenes experts from both universities as well as researchers, policymakers, and industry leaders from across the country and beyond to discuss critical technology-related challenges.

Our first salon addressed the security and privacy of precision medicine. Future salons will look at the cybersecurity of the defense supply chain, automation and the future of the university classroom, and corporate boards and cybersecurity responsibilities.

Air Force Association CyberPatriot Camp

Pitt Cyber hosted its second annual Air Force Association CyberCamp this past summer for 250 high school students. The curriculum focused on cyber ethics and network and systems security, culminating in a cyber defense competition.

We were pleased to expand this year's program to include an advanced camp session as well as a location at Robert Morris University.

We are grateful to our sponsor, Microsoft, for its generous support.

"I could not believe the feedback I received from the students who attended from my district, Woodland Hills. It was an outstanding opportunity and one I hope continues. From speakers to staff and content, I truly believe it was one of the best teaching environments I have been in. A lot of what was accomplished and learned in those classrooms about teamwork and personal effort are things that will stay with those students for a lifetime. We don't get many opportunities like this for our students, so I wanted to let you know they truly appreciate it. Thank you again for providing them [with] this opportunity and letting me be a part of it."

Susan Tanski, teacher at
Woodland Hills High School

"I definitely learned [a lot] and am a lot more confident in my own cyber hygiene and technical knowledge. During the competition, we had to look for problems with our code [and] check for network intrusions and suspicious files. If this is the kind of thing you get to do in cybersecurity every day, it's definitely exciting and definitely something I would want to do in the future."

Benjamin Bermann, student at
Winchester Thurston School

"My school just started its Introduction to Cybersecurity course. Because I attended this camp the last two years, what I've learned is more advanced than an introductory course, so I can skip it and go right to the certification. It's a really great career opportunity."

Arielle Moulinié, student at
West Allegheny High School

Research and Publications

We launched the Pitt Cyber Accelerator Grants program in 2018 to provide initial funding for novel and innovative projects that advance Pitt Cyber's mission: to bring the breadth of one of the world's leading public research universities to bear on the critical questions of networks, data, and algorithms, with a focus on the ever-changing gaps among law, policy, and technology.

Grant funding is used specifically to advance projects that establish and extend key intellectual infrastructures, such as research and teaching in methods with broad application and utility across disciplines, and projects that bring together researchers, teachers, and/or students across fields of interest.

Spring 2018 Grant Recipients

Technical Support for a Course on Applied Legal Data Analytics and AI

Kevin Ashley, professor of law and intelligent systems, School of Law, University of Pittsburgh, and **Matthias Grabmair**, systems scientist, Language Technologies Institute, Carnegie Mellon University

The U.S. Intelligence Community and Cybersecurity

Julia Santucci, senior lecturer in intelligence studies, Graduate School of Public and International Affairs

A Workshop for Securing the Industrial Internet

Daniel Cole, associate professor, Department of Mechanical Engineering and Materials Science, Swanson School of Engineering, and **Alex K. Jones**, professor of electrical and computer engineering and associate director, National Science Foundation Center for Space, High-Performance, and Resilient Computing, Swanson School of Engineering

A Study on False Data Injection Cyber Attacks in Smart Grid Systems

Bo Zeng, assistant professor, Departments of Industrial Engineering and Electrical and Computer Engineering, Swanson School of Engineering, and **Zhi-Hong Mao**, professor, Departments of Electrical and Computer Engineering and Bioengineering, Swanson School of Engineering

Securing Cybermanufacturing Systems Applied to Cloud-based Additive Manufacturing

Mostafa Bedewy, assistant professor, Department of Industrial Engineering, Swanson School of Engineering, and **Mai Abdelhakim**, visiting assistant professor, School of Computing and Information

Distinguished Cybersecurity Seminar Series

James Joshi, professor, School of Computing and Information, and **Balaji Palanisamy**, assistant professor, School of Computing and Information
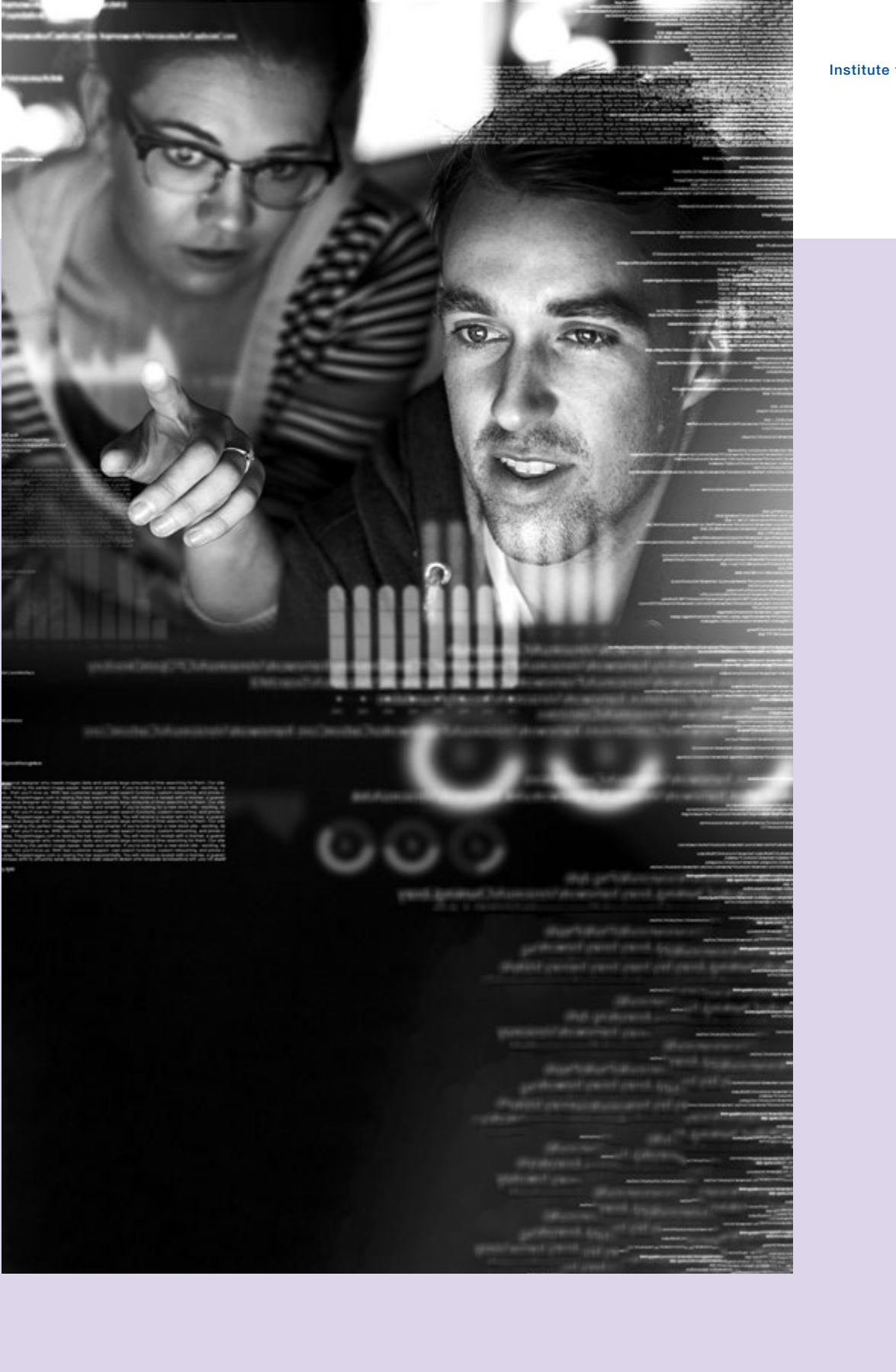
Annotating Machine Learning Data for Interpreting Cyber Crime Statutes

Kevin Ashley, professor of law and intelligent systems, School of Law, and **Jaromir Savelka**, PhD candidate, School of Computing and Information

Cyber Leadership Series in Washington, D.C.

Elena Baylis, professor of law, School of Law, and **Julia Santucci**, senior lecturer in intelligence studies and director, Hesselbein Forum Leadership Program in International Affairs, Graduate School of Public and International Affairs

Mathematical Concepts Visualization through Virtual Reality

Lieutenant Colonel Diana Bishop, chair, Department of Aerospace Studies, and commander, Detachment 730, U.S. Air Force ROTC

A Program to Innovate Solutions to Digital Disinformation across Democracies

Michael Colaresi, William S. Dietrich II Professor, Department of Political Science, and **Jon Woon**, professor and chair, Department of Political Science

Developing a Digital Platform to Enhance Civic Learning across the Disciplines

Ronald Idoko, adjunct faculty, public service program, College of General Studies

Expansion of the Journal Ledger: The World's First Scholarly Blockchain _Journal_

Christopher Wilmer, assistant professor, Department of Chemical and Petroleum Engineering, Swanson School of Engineering

Affiliate Scholar Research and Publications

Pitt Cyber's affiliate scholars continue to publish widely. Selected publications from the past year include the following:

The Islamic State in Britain: Radicalization and Resilience in an Activist Network
October 2018 | Michael Kenney
Cambridge University Press

"Rethinking Secrecy in Cyberspace: The Politics of Voluntary Attribution"
October 2018 | Michael Poznansky and Evan Perkoski
Journal of Global Security Studies

Social Media and Morality: Losing Our Self Control
June 2018 | Lisa S. Nelson
Cambridge University Press

"Cybermanufacturing— Recent Technologies, Promising Paradigms, and Future Challenges"
October 2018 | Mostafa Bedewy, Mai Abdelhakim and Alex K. Jones
In *Advances in Manufacturing and Processing of Materials and Structures*, edited by Yoseph Bar-Cohen
Taylor & Francis Group

"Transforming the Future of Health Together: The Learning Health Systems Consensus Action Plan"
April 2018 | Joshua C. Rubin, Jonathan C. Silverstein, Charles P. Friedman, Rebecca D. Kush, W. Holt Anderson, Allen S. Lichter, Darin J. Humphreys, Jeffrey Brown, Laura Crawford, James M. Walker, Richard L. Tannen, Kate Berry, Marianne Hamilton Lopez, Robert M. Kolodner, Janet M. Marchibroda and Frank W. Rockhold
Learning Health Systems

"Art and Architectural History and the Performative, Mindful Practice of the Digital Humanities"
February 2018 | Alison Langmead
*The Journal of Interactive Technology and Pedagogy*

Education

Cyber-related course offerings throughout the University of Pittsburgh continued to expand in 2018. Here are just a few examples of the courses offered this past fall:

- Founding Director **David Hickton**'s new course, **Cyber Law and Policy**, was offered at the law school but with open enrollment. The course gave students an introduction to the world of the practitioner, with guest speakers from the FBI, U.S. attorney's office in Western Pennsylvania, and beyond, providing students with an understanding of the legal and policy frameworks governing— and not governing—some of the most challenging cyber issues of today.

- Affiliate Scholar **Adam Lee** taught **Applied Cryptography and Network Security** at the School of Computing and Information, which provided students with the conceptual background and hands-on experience needed to understand common cryptographic algorithms and protocols and use them to secure distributed applications and computer networks.

- Affiliate Scholars **Buddy Clark** and **Dan Cole** continued their successful **Hacking for Defense** course at the Swanson School of Engineering, offering students hands-on experience in tackling real problems for the defense and intelligence communities using lean innovation methods.

- Affiliate Scholar Alan **George** offered **Dependable Computer Architecture** at the Swanson School of Engineering to teach design and analysis of dependable machines, from small embedded systems to space-based platforms to high-end supercomputers.

- Affiliate Scholar **Lisa Nelson** offered **Ethics and Policy in Cyberspace** at the Graduate School of Public and International Affairs, exploring policy solutions and the impact of emerging technologies on existing statutory, constitutional, and international guidelines.

- Affiliate Scholar **Julia Santucci** taught **Introduction to American Intelligence** at the Graduate School of Public and International Affairs as a practical introduction to how the U.S. intelligence community works, including a deep dive into how it approaches cyber-related topics.

- Affiliate Scholar **Michael Colaresi** taught an undergraduate course, **Introduction to Coding and Computational Social Science**, designed to introduce students to the emerging field of computational social science, studying opportunities, and challenges with collecting and exploring digitally available political and social information.
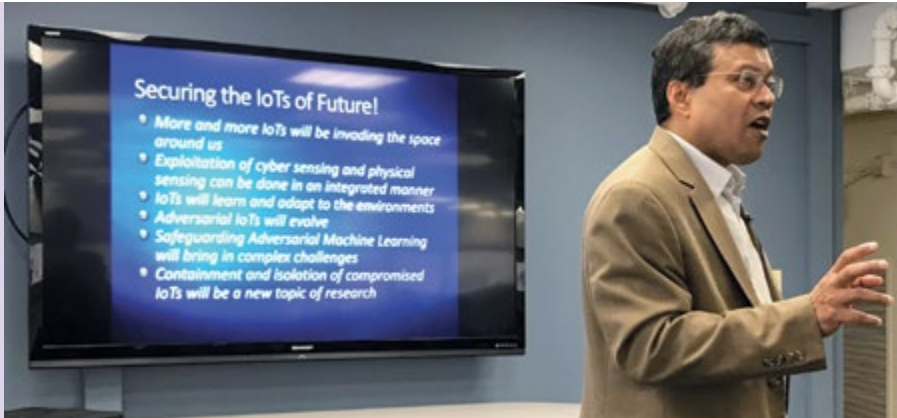
Prasant Mohapatra

Events

The Cyber Threat: The New Way Nations Struggle for Power and Influence

New York Times reporter David Sanger in conversation with Pitt Cyber Founding Director David Hickton

Celebration of Affiliate Scholar Scholarship

An evening to honor the 2017 book releases of Pitt Cyber's affiliate scholars: Annette Vee on *Coding Literacy: How Computer Programming Is Changing Writing*, Kevin Ashley on *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age*, and Michael Madison on *Governing Medical Knowledge Commons*

A Decade of Drones in America

Ryan Calo, the Lane Powell and D. Wayne Gittinger Endowed Professor at the University of Washington School of Law, hosted by the Dick Thornburgh Forum for Law and Public Policy with Pitt Cyber, the University Honors College, and Pitt School of Law

Towards Security-assured Cyberinfrastructure in Pennsylvania Workshop

Hosted by the Laboratory for Education and Research on Security Assured Information Systems (LERSAIS), as part of a National Science Foundation-funded project with Pitt Cyber

The View from the Center: Integrating Cyber Threat Intelligence to Inform Policymakers

Tonya Ugoretz, former director, Cyber Threat Intelligence Integration Center, Office of the Director of National Intelligence, hosted by the Graduate School of Public and International Affairs, the School of Computing and Information, and Pitt Cyber and led by affiliate scholar Julia Santucci

Patching the Liberal World Order: How Can International Cooperation Pwn Emerging Cyber Challenges?

Workshop led by Affiliate Scholar Michael Colaresi: with support from Pitt Cyber, the Kenneth P. Dietrich School of Arts and Sciences, the Office of the Provost, the University Center for International Studies, and the European Union through Pitt's Jean Monnet Centre of Excellence grant

Security in Internet of Things

Prasant Mohapatra, vice chancellor for research and professor of computer science, University of California, Davis, hosted by the School of Computing and Information, LERSAIS, and Pitt Cyber

David Sanger and David Hickton

Selected Speaking Engagements

Pitt Cyber continued its active presence at the University of Pittsburgh and well beyond campus. Here are some selected engagements from 2018:

- The Foreign Intelligence Surveillance Court: Myth vs. Reality, hosted by Carnegie Mellon's CyLab Security and Privacy Institute
- Artificial Intelligence and Legal Practice, hosted by the Allegheny County Bar Association
- Risk Management Summit on Economic Espionage, hosted by RANE Energy Law and Policy Institute Conference, hosted by Pitt Law's Energy Law and Policy Institute
- Social Media and the Crisis in Social Discourse, hosted by the University Honors College
- National Summit on Homeland Security Law, hosted by the Judge Alfred P. Center for Homeland Security Law & Policy at the Oklahoma City University School of Law
- CyberCrime and the Law, hosted by Pitt Law Center for International Legal Education
- Annual Conference of the Pennsylvania State Mayors' Association 10th Annual Malware Technical Exchange Meeting
- An Evening with Joshua Johnson, hosted by 90.5 WESA

Selected Media

National coverage of Pitt Cyber and its affiliates' work has included the following:

- "Here's How Russia May Have Already Hacked the 2018 Midterm Elections" | *Newsweek*
- "U.S. Accuses North Korea of Plot to Hurt Economy as Spy Is Charged in Sony Hack" | *The New York Times*
- Shift to Cyber War Mindset Slows Reactions to Election Hacks | *The Rachel Maddow Show*, MSNBC
- Senator McCaskill Claims Russian Hackers Tried to Hack Her Computer | *MSNBC Live with Katy Tur*
- Russian Hackers Elusive but Not Untouchable | *The Rachel Maddow Show*, MSNBC
- Prosecuting Foreign Hackers Carries Benefits Beyond a Trial | *The Rachel Maddow Show*, MSNBC
- Mueller Indicts 12 Russians for 2016 Election Interference | *MSNBC Live with Katy Tur*
- "Bolton Pushing to Eliminate White House Cyber Job" | *POLITICO*
- "Hack-resistant Voting Machines Missing as States Prepare for 2018 Vote" | Bloomberg
- "Pennsylvania to Require Voting Machines with Paper Backup" | Associated Press
- "Panel Urges Funding for New Voting Machines in Pennsylvania" | Associated Press

Ryan Calo

David Hickton with fellow panelist Reggie Walton, U.S. district judge for the District of Columbia, at the Foreign Intelligence Surveillance Court: Myth vs. Reality event

Additional Media Outlets that Covered Pitt Cyber

Computer Weekly
FedScoop
KDKA-TV
New Pittsburgh Courier
PhillyVoice
Pittsburgh Business Times
Pittsburgh Post-Gazette
TribLIVE
StateScoop
90.5 WESA
WFMJ-TV
WHYY-FM
WPXI
WTAE-TV

Selected Op-eds

- "Foreign Influence Is Still a Huge Problem in America. Here's How We Can Stop It." | *Time* | David Hickton
- "No Time for Complacency in Pa. on Election Security" | *Pittsburgh Post-Gazette* | David Hickton and Paul McNulty
- "Ahead of the 2020 Election, Let's Address Pennsylvania's Election Security So Your Vote Can Count" | *The Philadelphia Inquirer* | David Hickton and Paul McNulty
- "Did the U.S. 'Hack Back' at Russia? Here's Why This Matters in Cyberwarfare." | *The Washington Post*'s Monkey Cage | Michael Poznansky and Evan Perkoski
- "Immersed in Our Online Lives, We Risk the Fate of Ralph, Piggy, Jack and Simon" | *The Hill* | Lisa Nelson
- "Pennsylvania voting machines are eminently hackable" | *Pittsburgh Post-Gazette*

Selected Awards, Honors, and News

- Affiliate Scholar **Mostafa Bedewy**, assistant professor of industrial engineering at the Swanson School of Engineering, was named a 2018 recipient of the Outstanding Young Manufacturing Engineer Award from SME.
- Affiliate Scholars **Rosta Farzan** and **Adam Lee**, both associate professors at the School of Computing and Information, received a National Science Foundation grant to explore privacy-enhanced sensor designs.
- In November 2018, Pitt Cyber was pleased to join the **Paris Call for Trust and Security in Cyberspace**, a declaration in which governments, industry, and civil society commit to work together to increase prevention of and resilience to malign online activity, protect the accessibility and integrity of the Internet, cooperate in order to prevent interference in electoral processes, work together to combat intellectual property violations via the Internet, prevent the proliferation of malicious online programs and techniques, improve the security of digital products and services as well as everybody's cyber hygiene, clamp down on mercenary online activities and offensive action by non-state actors, and work together to strengthen the relevant international standards.

Institute Staff

David Hickton, founding director

Beth Schwanke, executive director

Michael Madison, senior scholar and academic director

Christopher Deluzio, legal and policy scholar

Kiersten Todt, resident scholar

Ray Winstead, technology director (thanks to the generosity of Computing Services and Systems Development)

Kate Ulreich, IT consultant (thanks to the generosity of Computing Services and Systems Development)

Sarah Barca, administrative director

With Gratitude

Pitt Cyber is truly a University-wide effort. We are grateful for collaborations across the University. Pitt Cyber owes a particular debt of gratitude to the Office of the Chancellor, Office of the Provost, Office of University Counsel, Computing Services and Systems Development, and the School of Law. We also are grateful for the constant support of the Office of University Communications and Office of Institutional Advancement.

Affiliate Scholars

Pitt Cyber's Affiliate Scholars are faculty from across the University.

Kevin C. Abbott, adjunct professor of law and director of the Energy Law and Policy Institute, School of Law

Kevin D. Ashley, professor of law and intelligent systems, School of Law

Elena A. Baylis, professor of law, School of Law

Mostafa Bedewy, assistant professor of industrial engineering, Swanson School of Engineering

Ronald A. Brand, Chancellor Mark A. Nordenberg University Professor; John E. Murray Faculty Fellow; and academic director, Center for International Legal Education, School of Law

Bruce R. Childers, associate dean for strategic initiatives and professor of computer science, School of Computing and Information

William "Buddy" Clark, professor of mechanical engineering and materials science, Swanson School of Engineering

Paul Cohen, founding dean and professor, School of Computing and Information

Michael Colaresi, William S. Dietrich II Professor of Political Science, Department of Political Science, Kenneth P. Dietrich School of Arts and Sciences

Daniel Cole, associate professor of mechanical engineering and materials science, Swanson School of Engineering

Mary Crossley, professor of law, School of Law

Rosta Farzan, associate professor, School of Computing and Information

Wei Gao, associate professor of electrical and computer engineering, Swanson School of Engineering

Alan D. George, R&H Mickle Endowed Chair, professor of electrical and computer engineering; and director, National Science Foundation (NSF) Center for Space, High-performance, and Resilient Computing (SHREC), Swanson School of Engineering

Joel M. Haight, associate professor of industrial engineering, Swanson School of Engineering

David A. Harris, Sally Ann Semenko Endowed Chair and professor of law, School of Law

Jingtong Hu, assistant professor of electrical and computer engineering, Swanson School of Engineering

Alex K. Jones, professor of electrical and computer engineering and associate director, NSF SHREC Center, Swanson School of Engineering

James Joshi, professor, School of Computing and Information

Katrina M. Kelly-Pitou, manager of strategy and business development, Center for Energy and Energy GRID Institute, Swanson School of Engineering

Michael Kenney, associate professor, Graduate School of Public and International Affairs

Maria Kovacs, Distinguished Professor of Psychiatry and Psychology, School of Medicine

Prashant Krishnamurthy, professor, School of Computing and Information

Howard A. Kuhn, professor of industrial engineering, Swanson School of Engineering

John R. Lange, assistant professor, School of Computing and Information

Alison Langmead, clinical associate professor of history of art and architecture, Kenneth P. Dietrich School of Arts and Sciences; director, Visual Media Workshop; and associate professor, School of Computing and Information

Adam J. Lee, associate dean for academic programs and associate professor, School of Computing and Information

Sera Linardi, assistant professor, Graduate School of Public and International Affairs

Michael J. Madison, faculty director, Innovation Practice Institute, and professor of law, School of Law

Daniel Mossé, professor, School of Computing and Information

Lisa S. Nelson, associate professor, Graduate School of Public and International Affairs

Balaji Palanisamy, assistant professor, School of Computing and Information

Michael Poznansky, assistant professor, Graduate School of Public and International Affairs

Ana Radovic, assistant professor of pediatrics, School of Medicine

Gregory Reed, director, Center for Energy and Energy GRID Institute, Swanson School of Engineering

Julia M. Santucci, senior lecturer and director, Hesselbein Forum Leadership Program in International Affairs, Graduate School of Public and International Affairs

Jonathan Silverstein, chief research informatics officer, University of Pittsburgh Health Sciences and Institute for Precision Medicine, and visiting professor of biomedical informatics, School of Medicine

David Thaw, assistant professor of law and information sciences, School of Law

David Tipper, professor, School of Computing and Information

Albert C. To, associate professor of mechanical engineering and materials science, Swanson School of Engineering

Annette Vee, associate professor of English, Kenneth P. Dietrich School of Arts and Sciences

Goetz Veser, Nickolas DeCecco professor of chemical and petroleum engineering, Swanson School of Engineering

Brian Vidic, director of partnerships, Office of Economic Partnerships

Martin B.H. Weiss, chair, Department of Informatics and Networked Systems, and professor, School of Computing and Information

Phil Williams, professor and director, Matthew B. Ridgway Center for International Security Studies, Graduate School of Public and International Affair

Christopher E. Wilmer, assistant professor of chemical and petroleum engineering, Swanson School of Engineering

Judith Chun-Hsu Yang, professor of chemical and petroleum engineering, Swanson School of Engineering

Bo Zeng, assistant professor of industrial and electrical and computer engineering, Swanson School of Engineering

Taieb Znati, chair, Department of Computer Science, and professor, School of Computing and Information

Affiliate Practice Scholars

Pitt Cyber's Affiliate Practice Scholars are drawn from across the industry and policy worlds. Joining us in 2018 were the following:

Diana Bishop, lieutenant colonel, chair, Department of Aerospace Studies, and commander, Detachment 730, U.S. Air Force ROTC

Michael A. Comber, partner, Farrell & Reisinger, LLC

James T. Kitchen, of counsel, Jones Day

Martin Lindner, managing principal consultant, SecureWorks, Inc.

Leona Mitchell, professor of practice, School of Computing and Information

Keith Mularski, executive director, advisory, Cybersecurity, EY