DREXEL UNIVERSITY

Cybersecurity Institute

2014 Annual Report

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Drexel University launched the Drexel Cybersecurity Institute (DCI) in early 2014. Although the Institute is new, Drexel's commitment to cybersecurity research and teaching is not new at all; the Institute builds upon a long history of excellence in both cybersecurity research and education.

The Institute is active both within the Drexel community as well as the outside world. Internally, the DCI sits directly under the Office of Research, and does not reside within any particular college. This allows the Institute to serve the entire Drexel community, and to unify cybersecurity research and teaching activities across the campus. The Deans Council and Internal Advisory Council have been established to ensure all relevant academic units are engaged with the Institute's activities.

Externally, the Institute has actively engaged with a variety of individuals, companies, and government agencies over the past year. The role of the DCI is to serve as a single point of contact for the outside world to engage with Drexel University on cybersecurity research and education. This engagement has taken a variety of forms, including a cybesecurity seminar series, various business development interactions, and government proposals and grants.

It is clichéd but nonetheless true that our strongest asset is our people. The Drexel faculty, staff, and students engaged in cybersecurity education and research form the heart of the Institute. The purpose of this report is to highlight all of the exciting work being done by these talented individuals.

This document summarizes Drexel University cybersecurity-related activities in 2014. Activities are broken down into the following categories:

1. Research activities
2. Busines development activities
3. Educational activities
4. Community engagement
5. "In the news"

An appendix includes additional information:

1. Newsletters
2. Videos
3. Scrapbook

Steven P. Weber

Steven Weber
Director, Drexel Cybersecurity Institute

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1 Acknowledgment

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Spiros Mancoridis
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We also gratefully acknowledge assistance from the following list of individuals, which is certainly not intended to be in any way exhaustive, also listed alphabetically:

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2 Research activities

Cybersecurity research today is a far cry from its original focus on network protocols and cryptography. Today's cybersecurity challenges require an incredibly diverse collection of interdisciplinary approaches, including machine learning, big data, signal processing, algorithm design, computer hardware and software, biometrics, and many others. The scope of research topics pursued by Drexel's cybersecurity faculty illustrates this diversity. A brief list of topics includes:

1. Cyber crime and online identity theft (Anandarajan and D'Ovidio)
2. Adversarial stylometry (Greenstadt)
3. Sentiment analysis and security informatics (Yang)
4. Network and host anomaly detection (Sethu, Kandasamy, Mancoridis, Weber)
5. Biometric user authentication (Greenstadt and Weber)
6. Media forensics and anti-forensics (Stamm)
7. Wireless jamming and key generation (Dandekar)
8. Hardware security and trust (Savidis, Taskin, Stamm),
9. Malware detection, classification, and mitigation (Mancoridis and Balduccini)

Research activity in these and other areas is broken down into the following categories:

1. Research grants (§2.1)
2. Research articles (§2.2)
3. Graduate student thesis proposals and defenses (§2.3)
4. Research community engagement (§2.4)
5. Technology commercialization (§2.5)

2.1 Research grants

The following is a list of **ongoing** cybersecurity research grants (initiated prior to 2014):

[1] Marcello Balduccini and Spiros Mancoridis. Roots of trust in electric energy generation and distribution. *Cyber Security Research Alliance (CSRA)*, 2013–2014. $60,000.

[2] Marcello Balduccini. FUSION: Federated understanding of security information over networks. *Defense Advanced Research Projects Agency (DARPA) Integrated Cyber Analysis System (ICAS)*, 2013–2014. $230,000 (subcontract).

[3] Rachel Greenstadt (PI) and Andrea Forte. EAGER: Cybercrime science. *National Science Foundation Division Of Computer and Network Systems (CNS)*, CNS-1347151, September, 2013 – August, 2016. $188,676.

[4] Rachel Greenstadt (PI). CAREER: Privacy analytics for end-users in a big data world. *NSF Faculty Early Career Development Program (CAREER)*, CNS-1253418, February, 2013 – January, 2018. $418,056.

[5] Kapil R. Dandekar (PI), Rachel Greenstadt, Constantine Katsinis, Steven Weber, and Christopher C. Yang. Capacity building: Development and dissemination of the Drexel University cybersecurity program. *National Science Foundation CyberCorps Scholarship for Service Program (NSF-SFS)*, DUE-1241631, November, 2012 – October, 2015. $888,491.

[6] Steven Weber (PI), Kapil R. Dandekar, Spiros Mancoridis, and Harish Sethu. TTP: Medium: Securing the Wireless Philadelphia Network. *National Science Foundation Secure and Trustworthy Computing Program (NSF-SaTC)*, CNS-1228847, September, 2012 – August, 2016. $1,080,800.

[7] Rachel Greenstadt. Secure computing research for user's benefit (SCRUB). *Intel Science and Technology Center for Secure Computing*, MONTH, 2011 – MONTH, 2014. $540,000.

[8] Rachel Greenstadt. Behavior-based access control. *Air Force Research Laboratory (AFRL) and Raytheon BBN Technologies*, MONTH, 2011 – MONTH, 2014. $292,588.

The following is a list of **new** cybersecurity research grants (initiated or recommended for funding in 2014):

[1] Matthew C. Stamm (PI) and Nagarajan Kandasamy. High performance techniques to identify the source of digital images using multimedia forensics. *Defense Forensics and Biometrics Agency (DFBA) and the Army Research Office (ARO)*, W911NF-15-2-0013, February, 2015 – July, 2016. $374,971.

[2] Spiros Mancoridis (PI), Harish Sethu, Naga Kandasamy, and Steven Weber. Machine learning and big data analytics. *Comcast and University of Connecticut Center of Excellence for Security Innovation (CSI)*, January, 2015 – December, 2016. $200,000.

[3] Hsinchun Chen (PI), Catherine Larson, Mark Patton, and Chris Yang. CIF21 DIBBs: DIBBs for intelligence and security informatics research community. *National Science Foundation (NSF) Division Of Advanced Cyber Infrastructure (ACI)*, ACI-1443019, October, 2014 – September, 2017. $1,499,531 total, $150,000 to Drexel.

2.2 Research articles

The following is a list of cybersecurity research articles published in 2014, listed in reverse chronological order:

[1] Aylin Caliskan-Islam, Jonathan Walsh, and Rachel Greenstadt. Privacy detective: Detecting private information and collective privacy behavior in a large social network. *Workshop on Privacy in the Electronic Society (WPES)*, Scottsdale, AZ, November 2014.

[2] Marc Juarez, Sadia Afroz, Gunes Acar, Claudia Diaz, and Rachel Greenstadt. A critical evaluation of website fingerprinting attacks. *Proceedings of the 21st ACM Conference on Computer and Communications Security (CCS)*, Scottsdale, AZ, November 2014.

[3] D. Nguyen, C. Sahin, B. Shishkin, N. Kandasamy, and K. R. Dandekar. A real-time and protocol-aware reactive jamming framework built on software-defined radios. *Proceedings of the ACM SIGCOMM Software Radio Implementation Forum (SRIF)*, Chicago, IL, August 2014.

[4] Rebekah Overdorf, Travis Dutko, and Rachel Greenstadt. Blogs and twitter feeds: A stylometric environmental impact study. *Proceedings of the 7th Workshop on Hot Topics in Privacy Enhancing Technologies (HotPets)*, Amsterdam, Netherlands, July 2014.

[5] Sadia Afroz, Aylin Caliskan-Islam, Ariel Stolerman, Rachel Greenstadt, and Damon McCoy. Doppelganger finder: Taking stylometry to the underground. *Proceedings of the 35th IEEE Symposium on Security & Privacy (Oakland)*, San Jose, CA, May 2014.

[6] Xiaoyu Chu, Yan Chen, Matthew C. Stamm Liu, and K.J.R. Liu. Information theoretical limit of compression forensics. *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Florence, Italy, May 2014.

[7] Ni An and Steven Weber. Selective overview of network anomaly detection in cybersecurity (poster). *Women in Cybersecurity (WiCY)*, Nashville, TN, April 2014.

[8] Justin Hummel, Andrew McDonald, Vatsal Shah, Riju Singh, Bradford D. Boyle, Tingshan Huang, Nagarajan Kandasamy, Harish Sethu, and Steven Weber. A modular multi-location anonymized traffic monitoring tool for a WiFi network (outstanding poster award). *ACM Conference on Data and Application Security and Privacy (CODASPY)*, San Antonio, TX, March 2014.

[9] Zhen Hai, Kuiyu Chang, Jung-Jae Kim, and Christopher C. Yang. Identifying opinion features in sentiment analysis via domain-specific and generic topical relevance. *IEEE Transactions on Knowledge and Data Engineering*, 26(3):623–634, March 2014.

[10] M. Atighetchi, M. Mayhew, R. Greenstadt, and A. Adler. Problems and mitigation strategies for developing and validating statistical cyber defenses. *CrossTalk – The Journal of Defense Software Engineering*, 27(2), March–April 2014.

[11] A. Stolerman, R. Overdorf, S. Afroz, and R. Greenstadt. Classify, but verify: Breaking the closed-world assumption in stylometric authorship attribution. *Proceedings of the 10th Annual IFIP WG 11.9 International Conference on Digital Forensics*, Vienna, Austria, January 2014.

[12] A. Stolerman, A. Fridman, R. Greenstadt, P. Brennan, and P. Juola. Active linguistic authentication revisited: Real-time stylometric evaluation towards multi-modal decision fusion. *Proceedings of the 10th Annual IFIP WG 11.9 International Conference on Digital Forensics*, Vienna, Austria, January 2014.

2.3 Graduate student thesis proposals and defenses

The following is a list of cybersecurity-related M.S. and Ph.D. student candidacy exams, thesis proposals, and thesis defenses, occurring in 2014:

[1] Lex Fridman. Learning of identity from behavioral biometrics for active authentication on desktop computers and mobile devices (Ph.D. thesis defense). *Advised by Moshe Kam and Steven Weber*, December 2014.

[2] Ni An. Network anomaly detection using PCA subspace method (Ph.D. candidacy exam). *Advised by Steven Weber*, September 2014.

[3] Lex Fridman. Learning of identity from behavioral biometrics foractive authentication ondesktop computers and mobile devices (Ph.D. thesis proposal). *Advised by Moshe Kam and Steven Weber*, September 2014.

[4] Sadia Afroz. Deception in authorship attribution (Ph.D. thesis defense). *Advised by Rachel Greenstadt*, June 2014.

[5] Ray Canzanese. Host-based online behavior malware detection and classification (Ph.D. thesis proposal). *Advised by Moshe Kam and Spiros Mancoridis*, April 2014.

2.4 Research community engagement

The following is a list of engagements with the cybersecurity research community by Drexel faculty in 2014, listed in reverse chronological order:

[1] Rachel Greenstadt. Technical Program Committee Member. *IEEE Conference on Social Computing (SocialCom)*, Sydney Australia, December 2014.

[2] Rachel Greenstadt. Technical Program Committee Member. *Workshop on Privacy and the Electronic Society (WPES)*, Scottsdale, AZ, November 2014.

[3] Rachel Greenstadt. Technical program committee member. *ACM Workshop on Artificial Intelligence and Security (AISec)*, Scottsdale, AZ, November 2014.

[4] Rachel Greenstadt. Technical Program Committee Member. *Usenix Security Symposium*, San Diego, CA, August 2014.

[5] Rachel Greenstadt. Co-chair. *Privacy Enhancing Technologies Award Committee*, Amsterdam, Netherlands, July 2014.

[6] Rachel Greenstadt. Member. *Privacy Enhancing Technologies Advisory Board*, Amsterdam, Netherlands, July 2014.

[7] Rachel Greenstadt. Technical Program Committee Member. *Privacy Enhancing Technologies Symposium*, Amsterdam, Netherlands, July 2014.

[8] Marcello Balduccini. Member. *NIST Cyber-Physical Systems Public Working Group*, 2014–present.

[9] Chris Yang. Associate Editor-In-Chief. *Springer Security Informatics*, 2010–present.

2.5 Technology commercialization

The following is a list of cybersecurity patents developed by the Drexel research community and marketed by the Drexel Office of Technology Commercialization in 2014:

[1] Ioannis Savidis. Low overhead gate level logic encryption. U.S. Patent Application No. 62/245,155, 2015.

[2] Raymond Canzanese Jr., Spiros Mancoridis, and Moshe Kam. Behavioral change-point malware detection system. Provisional US Patent Application 61/979,259 Pending, 2011. Drexel Technology ID 14-1651D.

[3] Prathaban Mookiah, Kapil R. Dandekar, John MacLaren Walsh, and Rachel Greenstadt. A reconfigurable antenna based solution for device authentication in wireless networks. International Application Pending: PCT/US2012/054205, 2011. Drexel Technology ID 11-1327D.

[4] Spiros Mancoridis, Chris Rorres, Maxim Shevertalov, Edward Stehle, and Kevin Lynch. Zero-day malware and software fault detection and mitigation for enterprise, cloud, and ecommerce servers. US and Intentional patents pending - PCT/US2011/022846, US-2013-0198565-A1, 2009. Drexel Technology ID 09-1111D.

3 Business development

Drexel University had cybersecurity-oriented business development interactions with the following industry and government entities:

1. Office of the Mayor of Seoul City, Korea (December, 2014)
2. Unisys Stealth Platform Team (December, 2014 – May, 2015)
3. URS/AECOM (December, 2014 – May, 2015)
4. Federal Bureau of Investigation (FBI) (December, 2014 – present)
5. Vanguard (October, 2014 – present)
6. Merck Pharmaceutical (October, 2014 – January, 2015)
7. Momentum Aviation Group (MAG-DS) (October, 2014)
8. Probaris (October, 2014 – present)
9. F-Secure (Helsinki, Finland) (September – October, 2014)
10. Digile (Helsinki, Finland) (September, 2014 – May, 2015)
11. Boscov's Department Store and the Merchant Advisory Group (MAG) (August – November, 2014)
12. U.S. Bank (August, 2014)
13. Melamedia (August, 2014)
14. Electric Power Research Institute (EPRI) (July, 2014)
15. Computer Sciences Corporation (CSC) (July, 2014)
16. Armed Forces Communications and Electronics Association (AFCEA) Educational Foundation (June, 2014)

4 Educational activities

Drexel has established its presence in cybersecurity education through a suite of cybersecurity degrees and certificates. This section breaks down our cybersecurity educational activities into the following categories:

1. courses, degrees, certificates (§4.1)
2. NSA/DHS CAE-IAE recertification (§4.2)
3. National Military Intelligence Association (NMIA) student chapter (§4.3)

4.1 Courses, degrees, certificates

Academic degree programs and certificates. Drexel cybersecurity-related academic degree programs and certificates include:

1. Masters of Science in Cybersecurity (CYBR)
2. Masters of Science in National Security Management (MSNSM)
3. Bachelor of Science in Computing and Security Technology (CST)
4. Bachelor of Science in Computer Science – Computer Security Concentration.
5. Certificate in Computing and Security Technology
6. Professional Development Certificates in National Security Management, including:
   (a) Cybersecurity, Law & Policy (online)
   (b) Continuity Management (online)
   (c) Homeland Security (online)
7. Undergraduate Minor in Computer Crime

We briefly comment on the CYBR and MSNSM degrees.

Master of Science in Cybersecurity (CYBR):

- The motivation behind this degree program stem from conversations between Drexel University and the National Security Agency about the need for more *deeply technical* graduate programs in cybersecurity.
- The key novelty of the Drexel cybersecurity degree is its interdisciplinary structure, achieved by integrating coursework from both the Department of Electrical and Computer Engineering (ECE) in the College of Engineering (CoE) and the College of Computing and Informatics (CCI).
- From the degree description, "The program is designed for students with backgrounds in computer engineering, computer science, electrical engineering, telecommunications engineering or other related technical fields and aims to provide deeply technical and specialized training to develop professionals that are able to understand, adapt, and develop new techniques to confront emerging threats in cybersecurity."
- Launched as an on-campus program in Fall 2013, and was approved as an online program in Spring 2014.

- Development of the CYBR program was funded by a three-year "capacity building" grant awarded to Drexel in 2012 from the National Science Foundation (NSF) Cybercorps Scholarships for Service (SFS) program (PI: Kapil Dandekar (CoE), Co-I: Steven Weber (CoE), Constantine Katsinis (CCI), and Rachel Greenstadt (CCI)).
- A five-minute video about the degree, featuring remarks by Steven Weber, Constantine Katsinis, and Kapil Dandekar, was produced in June, 2014, and posted to YouTube (see §B for details).

Masters of Science in National Security Management (MSNSM):

- Offered through the College of Computing and Informatics (CCI).
- From the program page, "The CCI MSNSM involves an understanding of national and homeland security, policy, law, social, and technological environments. As such, modern national security management is an interdisciplinary field built upon the expertise of a wide variety of disciplines. The online MSNSM uses a multidisciplinary approach to targeting advanced topics in security management, emergency management, information technology, risk management, law and policy".
- Launched as an online program in Fall 2014.

Cybersecurity-related courses offered. Drexel offers a solid array of both undergraduate and graduate level cybersecurity courses. We briefly highlight three of these:

- Web Security I & II (H. Sethu). A list of topics covered in this two-quarter sequence is given on the left, with the list of subtopics covered in the "symmetric and public key encryption" topic on the right:

A security-conscious intro. to web protocols	Symmetric key cryptography; Data Encryption Standard (DES) and the Advanced Encryption Standard (AES); triple DES; cipher block chaining; attacks on cryptographic protocols.
Symmetric and public key encryption	Secret key exchange protocols; the Diffie-Hellman Exchange (DHE); attacks on DHE and countermeasures.
Digital certificates and authentication	Fundamentals of number theory; modular arithmetic; Fermat's and Euler's theorems; primality testing; the Chinese Remainder Theorem.
A security-conscious intro. to HTML & CSS	Principles of public key cryptography; the RSA algorithm and practical implementation details; the choice of public and private keys; strategies for attacking RSA; how secure is RSA?
A security-conscious intro. to JavaScript	Cryptography in practice on the web; limitations of cryptography.
Origin-based isolation of content	
Encrypted web communications (HTTPS)	
Attacks on Domain Name System (DNS)	
DNS Security Extensions (DNSSEC)	
Security and AJAX	
Web privacy	
Anonymous web browsing	
Illegal hosting and anonymous publishing	
Internet censorship and surveillance	
Elliptic curve cryptography (ECC)	
Web-based malware	

- Media Forensics & Security (M. Stamm). Learning outcomes are on the left, and the list of topics are on the right:

Image representation, processing, storage.	Introduction to image processing
Information hiding in digital signals.	Coding & compression
Information for watermarking or authentication.	Information hiding & digital watermarking
	Decision theory & machine learning
Forensic detection of image compression	Steganography & steganalysis
Forensic detection of contrast enhancement.	Multimedia forensics - Manipulation detection
Reliable source determination of digital images.	Multimedia forensics - Device identification

- Privacy (R. Greenstadt). Learning outcomes are on the left, and the list of topics are on the right:

Motivation for privacy protection.	Measuring privacy using information theory
Anonymity, unlinkability, unobservability.	Data privacy threats and protection measures
Formalization, modeling, & measurement.	Privacy and web mining
State-of-the-art in privacy technologies.	Privacy at the communications layer
	Privacy and usability
	Social media & implications for elec. privacy

The following is a select list of cybersecurity-related course offerings over the past two academic years:

AY 2014-2015

Term	Course	Title	Instructor	#
Fall 2014	ECEC 690	ST: Web Security I	H. Sethu	39
	CST 609	National Security Intelligence	S. White	4
	HSM 544	Introduction to Homeland Security	S. White	6
	INFO 333	Introduction to Information Security	C. Carroll	25
	INFO 375	Introduction to Information System Assurance	C. Mascaro	10
	INFO 517	Principles of Cybersecurity	S. White	25
	INFO 710	Information Forensics	S. Brown	19

AY 2013-2014

Term	Course	Title	Instructor	#
Spr 2014	ECET 890	ST: SDR Security Laboratory	K. Dandekar	9
	CS 303	Algebraic Number Theory and Cryptography	B. Char	16
	CS 675	Reverse Software Engineering	G. Naik	20
	INFO 333	Introduction to Information Security	C. Carroll	24
	INFO 336	Distributed Systems Security	C. Geib	12
	INFO 517	Principles of Cybersecurity	S. White	20
	INFO 710	Information Forensics	C. McClain	14
	INFO 718	Cybersecurity Policy	H. Rishikof	7
Win 2014	ECEC 690	ST: Web Security II	H. Sethu	19
	CS 475	Computer and Network Security	R. Greenstadt	20
	INFO 712	Information Assurance	P. Grillo	26
	INFO 717	Cyber Crime Law	H. Rishikof	11
Fall 2013	ECEC 690	ST: Web Security I	H. Sethu	36
	CS 680	ST: Privacy in Electronic Society	R. Greenstadt	17
	INFO 333	Introduction to Information Security	C. Carroll	49
	CJ 276	Introduction to Computer Crime	I Schlanger	23

4.2 NSA/DHS CAE-IAE recertification

- Drexel has held the designation as a National Security Agency (NSA) / Department of Homeland Security (DHS) Center of Academic Excellence (CAE) in Information Assurance Education (IAE) for over ten years
- The CAE designation is a credential conferred by the NSA and DHS upon those 2-year and 4-year academic institutions with cybersecurity-related education programs in line with recommended best practices and having the required depth and breadth for its graduates to contribute to the national cybersecurity workforce.
- The DCI has been coordinating the recertification effort for the since May, 2014. Participants include Steven Weber, Kapil Dandekar, Sherry Levin, Chad Morris, Doug Pfeil, Alex Olivares, Constantine Katsinis, and Rich Primerano.
- Recertification requires establishing coverage of each of twenty-two (22) knowledge units (KUs):

Basic data analysis	Networking concepts
Basic scripting	Operating systems concepts
Cyber defense	Policy, legal, ethics, compliance
Cyber threats	Probability and statistics
Databases	Programming
Fundamental security design principles	Systems administration
IA Fundamentals	Advanced network technology and protocols
Intro to cryptography	Database management systems
IT system components	Low level programming
Network defense	Operating systems theory
Network technology and protocols	Security risk analysis

Each of these KUs has an associated set of topics associated; the topics taught in the various courses must be matched to and cover the various KU topics.

4.3 National Military Intelligence Association (NMIA) Student Chapter

Besides the above initiatives, DCI launched the Drexel student chapter of the National Military Intelligence Association (NMIA), with the inaugural meeting on November 13, 2014 attended by nearly forty students.

5 Community engagement

Invited talks given in 2014 by Drexel faculty are listed in §5.1. Events, symposia, invited speakers, and panels organized or co-organized by the Drexel Cybersecurity Institute are listed in §5.2.

5.1 Invited talks by Drexel faculty

Drexel faculty have given the following invited presentations:

[1] Aaron Mansheim. Five-year IT Roadmap: A Practitioner's View. *U.S. Army 7th Signal Command, Fort Gordon*, Fort Gordon, GA, November 18, 2014.

[2] Spiros Mancoridis. Panelist. *Comcast CyberSEED Conference*, Storrs, CT, October 29, 2014.

[3] Rachel Greenstadt. Doppelganger finder: Taking stylometry to the underground. *Intel Labs*, June, 2014.

[4] Scott White. Guest speaker. *Israeli Technology: Meeting Todayś Cyber & Homeland Security Challenges*, Fox Rothschild LLP, Philadelphia, PA, June 24, 2014.

[5] Rachel Greenstadt. Doppelganger finder: Taking stylometry to the underground. *University of Michigan*, Ann Arbor, MI, May, 2014.

[6] Spiros Mancoridis. Host-based online behavioral malware detection and classification. *Harvard University Institute for Applied Computational Science IACS Seminar*, Cambridge, MA, April 25, 2014.

[7] Rachel Greenstadt. Doppelganger finder: Taking stylometry to the underground. *Lockheed Martin*, April 23, 2014.

[8] Rachel Greenstadt. Doppelganger finder: Taking stylometry to the underground. *University of California, Berkeley*, Berkeley, CA, April 3, 2014.

[9] Rachel Greenstadt. Analyzing cybercrime forums using stylometry. *Army Research Labs*, Adelphi, MD, February 28, 2014.

5.2 Events organized by the Drexel Cybersecurity Institute

The Drexel Cybersecurity Institute has organized or co-organized the following events in 2014:

[1] Norm Balchunas (coordinator) and Ben Goodman (President of 4A Security) (moderator). Panelists: Lisa Clark (Partner, Duane Morris LLP), Elgan Jones (Director of Forensics, Kivu Consulting), Joshua Ladeau (Practice Lead – Privacy and Network Security, Allied World Insurance Company), Charles Mann (Regional Manager, Healthcare, Trend Micro), Jay Orler (Vice President, Security and Infrastructure, Lightbeam Health Solutions), and Paul Rosovsky (Vice President, Healthcare Compliance, 4A Security). *Drexel Cybersecurity Institute Symposium: The Anatomy of a Healthcare Data Breach: Protecting Patient Data Before and After a Breach*, Drexel University Paul Peck Alumni Center, Philadelphia, PA, October 16, 2014.

[2] Norm Balchunas, Debbie Buchwald, and Steven Weber (Drexel coordinators). Opening remarks (Balchunas), panel moderator (Balchunas), panel moderator (Weber). *Delaware Valley Chapter Meeting of the National Defense Industrial Association (NDIA)*, Drexel University College of Business, Philadelphia, PA, September 9, 2014.

[3] Norm Balchunas (coordinator) and Rachel Greenstadt (moderator). Panelists Roger Dingledine (Director, Tor Project) and Nadia Heninger (Magerman Term Assistant Professor, Computer and Information Science, University of Pennsylvania). *Drexel Cybersecurity Institute Symposium: Electronic Privacy*, Drexel University Cybersecurity Institute, Philadelphia, PA, August 6, 2014.

[4] Norm Balchunas (coordinator) and Austin Morris (Managing Partner at SunGard Consulting) (moderator). Panelists Holly Meyers (Senior Vice President, Quality and Risk Management for St. Joseph Health System) and Nick Economidis (Cyber insurance underwriter and expert, Beazley Group). *Drexel Cybersecurity Institute Symposium: Professional Development on Cyber Insurance*, Drexel University Cybersecurity Institute, Philadelphia, PA, June 25, 2014.

[5] Norm Balchunas (coordinator) and Mark Greisiger (President of NetDiligence) (moderator). In partnership with Point.io and LiquidHub; Panelists: Vinny Sakor (ICSA Labs and Verizon), Brian Schaeffer, and Jorge Nieves (Senior Director, Comcast Security Response Center). *Drexel Cybersecurity Institute Symposium: Locking Down Your Company's Data: What Keeps You Awake as CIO?*, Drexel University Cybersecurity Institute, Philadelphia, PA, May 8, 2014.

[6] Norm Balchunas (coordinator). Panelists Scott White and Harvey Rishikof. *Drexel Cybersecurity Institute Symposium: Evidence and Perspectives: Viewing a Cyber Event from the C-Suite*, Drexel University Cybersecurity Institute, Philadelphia, PA, March 25, 2014.

[7] Norm Balchunas (coordinator). Panelists Spiros Mancoridis, Angel Rivera (Senior Developer, Point.io), and Frank Domizio (Computer Forensic Examiner at Federal Bureau of Investigation's Philadelphia Regional Computer Forensics Lab). *Drexel Cybersecurity Institute Symposium: Cybersecurity Training / Educating the next cybersecurity leaders*, Drexel University Cybersecurity Institute, Philadelphia, PA, March 24, 2014.

[8] Norm Balchunas (coordinator). In partnership with Point.io and LiquidHub. *Drexel Cybersecurity Institute Symposium: CIO Roundtable*, Wells Fargo Center, Philadelphia, PA, March 24, 2014.

6 Drexel cybersecurity in the news

Drexel cybersecurity-related activities mentioned in the news in 2014 include:

[1] Britt Faulstick. Online Shopping Safety Tips From The Drexel Cybersecurity Institute. *Drexel News Blog*, November 25, 2014.

[2] Lauren Hertzler. A cyber breach: more likely than a fire. *Philadelphia Business Journal*, June 13, 2014. Quotes Norm Balchunas and Rob D'Ovidio.

[3] Dustin Slaughter. Military and Intelligence Interests Grow at Drexel University. *The Philly Declaration*, June 6, 2014. Discusses launch of DCI, quotes Norm Balchunas.

[4] Staff writer. Drexel opens Auerbach and Berger Families Cybersecurity Laboratory. *Drexel CCI Press Release*, June 2, 2014. Mentions John Fry, David Fenske, Carol Auerbach, Albert Berger, Walter Straub, and Harvey Rishikof.

[5] Lauren Hertzler. Scams expected to hit customers hard after eBay data breach. *Philadelphia Business Journal*, May 25, 2014. Quotes Norm Balchunas.

[6] Tim Jimenez. Drexel U. Cybersecurity Expert Says Chinese Hackers Used Some Simple Tricks. *CBS Philly*, May 19, 2014. Quotes Rob DÓvidio.

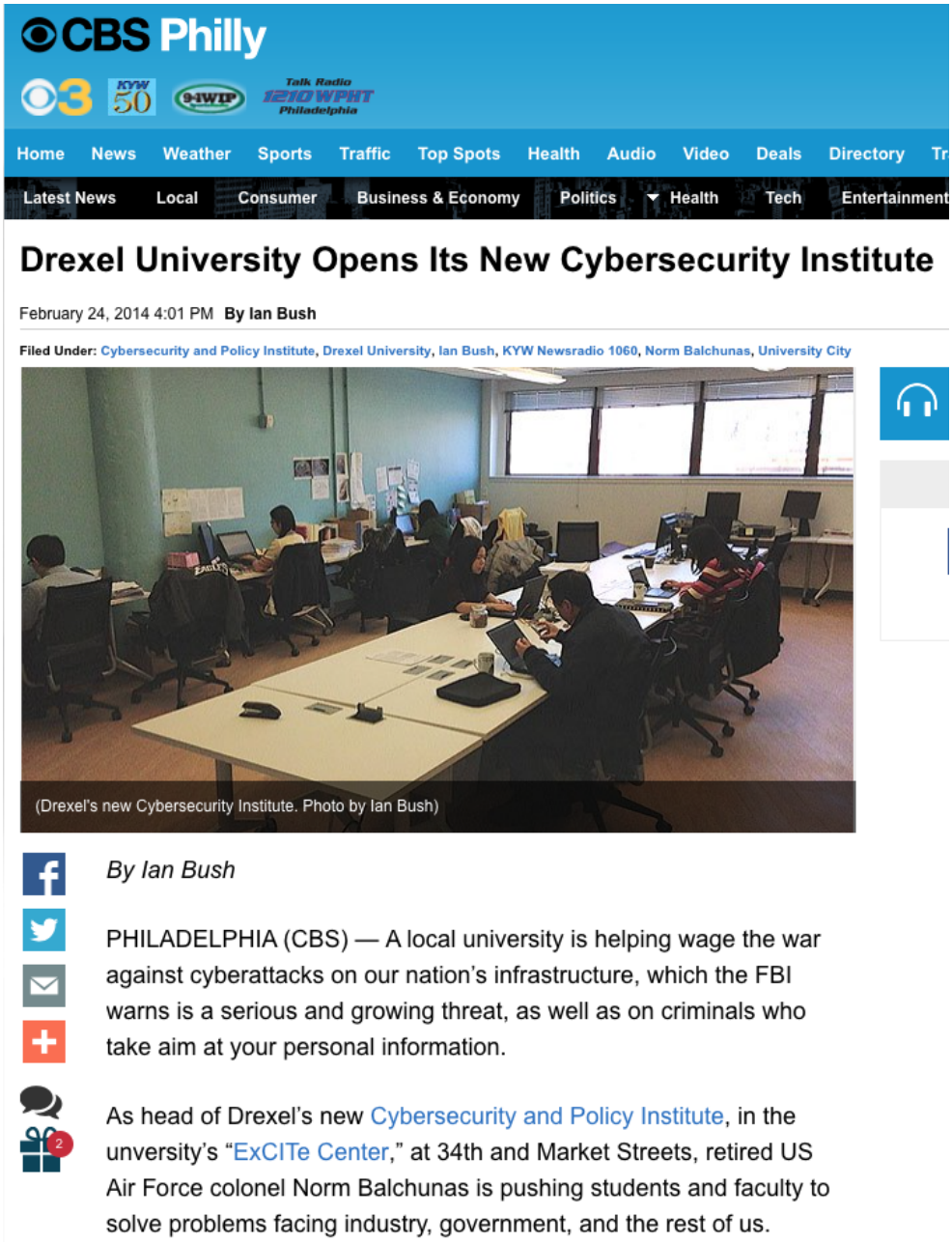
[7] Evan Halper. Security holes in power grid have federal officials scrambling. *Los Angeles Times*, April 7, 2014. Quotes Scott White.

[8] Ryan Zimmerman. Cyber Security Research Alliance Initiates First Research and Development Projects with Drexel University and George Mason University. *Cyber Security Research Alliance (CSRA) Press Release*, March 24, 2014. Interviews Spiros Mancoridis about CSRA grant.

[9] Ian Bush. Drexel University Opens Its New Cybersecurity Institute. *CBS Philly*, February 24, 2014. Quotes Norm Balchunas and John Fry.

[10] Staff writer. Drexel Opens Cybersecurity Institute. *Drexel NOW*, February 24, 2014. Quotes David Fenske, Norm Balchunas, John Fry.

Snapshots of some of these articles are shown on the following pages.



CBS Philly

Home News Weather Sports Traffic Top Spots Health Audio Video Deals Directory

Latest News Local Consumer Business & Economy Politics Health Tech Entertainment

Drexel University Opens Its New Cybersecurity Institute

February 24, 2014 4:01 PM **By Ian Bush**

Filed Under: Cybersecurity and Policy Institute, Drexel University, Ian Bush, KYW Newsradio 1060, Norm Balchunas, University City

(Drexel's new Cybersecurity Institute. Photo by Ian Bush)

By Ian Bush

PHILADELPHIA (CBS) — A local university is helping wage the war against cyberattacks on our nation's infrastructure, which the FBI warns is a serious and growing threat, as well as on criminals who take aim at your personal information.

As head of Drexel's new Cybersecurity and Policy Institute, in the unversity's "ExCITe Center," at 34th and Market Streets, retired US Air Force colonel Norm Balchunas is pushing students and faculty to solve problems facing industry, government, and the rest of us.

Figure 1: CBS Philly – February 24, 2014.

NEW REPUBLIC

Ben Pruchnie/Getty Images E

This Computer Program Turns Famous Writers Into Anonymous Hacks

BY **LAURA BENNETT** | July 31, 2013

Much attention has lately been given to stylometry, or the scientific study of literary style, which helped unmask J.K. Rowling as the author of *The Cuckoo's Calling*. *The Chronicle of Higher Education* profiled Patrick Juola, who has studied stylometry for decades and who used statistical analysis of Rowling's prose to confirm that she was the woman behind Robert Galbraith. Briefly mentioned in the piece was a tool called Anonymouth, currently in development at Drexel University, that strips text of stylistic markers. The software works by flagging certain linguistic tics for removal—recurring words, repeated punctuation, the particular rhythm of sentences.

The tool is still a work in progress, but I contacted the team behind it (created by Assistant Professor of Computer Science Rachel Greenstadt, Ph.D. student Andrew W.E. McDonald, and undergrad software engineering major Marc Barrowclift) and asked if they'd anonymize a few passages from famous works of literature. Among the tics they identified: Fitzgerald's complicated metaphors make it tough to anonymize him. There are so many similarities between the language of *Dreams From My Father* and the Book of Genesis that the Bible reads in parts like it was written by Obama. Future whistleblowers take note: Anonymouth might be the key to keeping your identity securely under wraps.

Figure 2: The New Republic – March 31, 2013.

The New York Times SUBSCRIBE NOW LOG IN

Alibaba Buying South China Morning Post, Aiming to Influence Media

A Learning Advance in Artificial Intelligence Rivals Human Abilities

Importing Photos to 10.11

Bits

Software Helps Identify Anonymous Writers or Helps Them Stay That Way

By NICOLE PERLROTH JANUARY 3, 2012 5:20 PM 5 Comments

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More

Your writing style is a little like your fingerprint. Your word choice, spelling, punctuation, sentence structure and syntax are all dead giveaways.

Stylometry, the study of linguistic style, has been used to out the authors behind some of history's most disputed documents, from Shakespearean sonnets to the Federalist Papers. In the latter, James Madison's penchant for the word "whilst" was a big distinguisher; Alexander Hamilton preferred plain old "while."

Now graduate students at Drexel University have released two potentially provocative stylometry tools, which could have larger repercussions for whistle-blowers, human rights advocates, hackers and, well, anyone who doesn't want their writing traced back to them down the road. One tool helps identify the author of a disputed document, and another helps authors avoid detection. The students released early, "alpha" versions of their tools on Thursday at a convention of the Chaos Computer Club, a hackers' group, in Berlin.

Figure 3: New York Times Bits Blog – January 3, 2012.

A Newsletters

The Drexel Cybersecurity Institute publishes a "near-monthly" newsletter:

December, 2014
November, 2014
October, 2014
August, 2014
July, 2014
June, 2014
May, 2014
March, 2014
February, 2014

The newsletters have been developed by Norm Balchunas, Dionne Queen, Brenda Sheridan, and Kerry Boland. The newsletters are shown on the following pages.

DREXEL UNIVERSITY
Cybersecurity Institute

Happy Holidays

December 23, 2014

The Drexel Cybersecurity Institute wishes you a Happy Holiday and looks forward to working with you in 2015.

Cyber Crime 2024 - A Glimpse of Things to Come

Advances in computer and networking technologies continue to disrupt established modes of commerce, communication, and entertainment. This disruption creates new opportunities for crime, including new vulnerabilities, criminal methodologies, and offender types. Panelists will discuss what the future has in store for the law enforcement and security communities when it comes to preventing, mitigating, and investigating computer-related crime. The panelists will also discuss how technological advancements on the horizon are likely to impact consumers and businesses when it comes to cyber crime victimization.

Location: Cyber Institute 3401 Market Street, STE 300
Date: January 21, 2015
Time: 12:00 PM

Breach Insurance: Not Just for the Big Guys

Cyber breach insurance, which covers losses and costs due to hacker attacks on a company's computer system, is a relatively new type of policy. While not yet widespread, it's quickly gaining ground.

http://www.usatoday.com/story/tech/2014/12/09/security-data-breach-insurance-target/20011477/

Watch IP Attacks - Live!

North Korea is being attacked and its networks have gone dark. Meaning severely disabled. The US is being attacked. China is being attacked. Russia is being attacked. Europe is being attacked.

You can watch it, live, at http://map.ipviking.com/

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Operations Director,
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http://cci.drexel.edu/cybersecurity

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DREXEL UNIVERSITY
Cybersecurity Institute

Newsletter

November 2014

Upcoming Institute Events

On November 25th at 6pm, the Cybersecurity Institute will host a presentation by the FBI addressing the evolution of Cyber Crimes.

3401 Market St, Suite 300, Cybersecurity Institute - no RSVP required

Faculty Spotlight
Dr. Rob D'Ovidio

Dr. Rob D'Ovidio is an Assistant Professor at Drexel University, where he teaches for the Criminal Justice Program and directs Drexel's research program in computer crime and digital forensics. His research and teaching interests lie in the intersection of computer technology, crime, and the criminal justice system. Dr. D'Ovidio sits on the National Governors Association's Strategic Policy Council on Cyber and Electronic Crime.

http://www.pages.drexel.edu/~rd64/Home.html

Drexel kicks off the National Military Intelligence Association, 13 Nov

This student organization provides students access to scholarships, publishing and networking in intelligence related career fields. Over 32 students attended the kick off with a special focus on Cybersecurity opportunities.

Cybersecurity Spinnet

Websites Seized in FBI operation include Underground Markets Trafficking in Illegal Drugs, Firearms, Stolen Credit Cards, Fake Passports and IDs, Computer-Hacking Services, and Counterfeit Currency

http://www.fbi.gov/newyork/press-releases/2014/dozens-of-online-dark-markets-seized-pursuant-to-forfeiture-complaint-filed-in-manhattan-federal-court-in-conjunction-with-the-arrest-of-the-operator-of-silk-road-2.0

January 2015 Event

The Cybersecurity Institute will start the New Year taking a hard look at the evolution of the "cyber-criminal". This skilled-criminal was never the "bored teenager" popularized in the 1980's. Today our adversaries have access to the best resources, education, capabilities and reconnaissance. Our expert panel from law enforcement, business leaders and "ethical hackers" , will discuss what the threat is evolving into and how we can prepare now.

STAY CONNECTED

Follow us on twitter | View our profile on LinkedIn

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DREXEL UNIVERSITY
Cybersecurity Institute

NEWSLETTER

OCTOBER 2014

Upcoming Institute Events

Drexel University Cybersecurity Institute Symposium: The Anatomy of a Healthcare Data Breach

Listen in and join the discussion as a panel of industry leaders reveal what a continuous security and compliance model looks like. The panelists-including a forensics specialist, a breach attorney and a cyber-insurance specialist who have experience in recovering from a PHI breach -are experts in information security, HIPAA-HITECH compliance and healthcare big data analytics systems design. The panel will primarily discuss the steps they take to prevent breaches and protect healthcare information, even in the event of a breach.

Date & Time:
Thursday, October 16, 2014
12:00 PM - 2:00PM

Location:
Paul Peck Alumni Center
32nd & Market Street
Philadelphia, PA 19104

***Note:* Lunch will be sponsored by 4A Security.**

FREE REGISTRATION at:
http://4asecurity.com/drexelhealthcarepanel

4A Security
Enterprise Information Assurance

Law School Event

The Law and National Security Society (LANSS) and the Federalist Society are hosting an event of interest to Drexel community Cybersecurity advocates. Orin Kerr, a computer security expert with national recognition, will be here to talk about the Fourth Amendment in the digital age.

Date & Time:
Tuesday, October 14, 2014
2:00PM

Location:
Drexel University Kline School of Law
3320 Market Street
Room 140
Philadelphia, PA 19104

***Note:* Food will be provided.**

Upcoming November Event

In November, the Cyber Institute will have a special session highlighting the evolving the criminal element engaged in Cybersecurity. This program will include subject matter experts from Drexel, regional law enforcement and others. Details to follow.

Connecting with the Institute on Social Media

LinkedIn twitter

Come join our LinkedIn group to share and discuss current cybersecurity events and trends.

http://www.linkedin.com/groups/Drexel-University-Cybersecurity-Community-7468762/about

Follow us on Twitter to learn more about upcoming events and other cyber security news.

https://twitter.com/DrexelCyberInst

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DREXEL UNIVERSITY
Cybersecurity Institute

NEWSLETTER

AUGUST 2014

Upcoming Institute Events

Best Business Practices for Navigating Cybersecurity

Presented by the National Defense Industrial Association Delaware Valley Chapter & Drexel University

Date & Time:
September 9, 2014
Registration: 7:30 AM
Program: 08:00-11:30 AM

Location:
Drexel University
Gerri C. LeBow Hall
3220 Market Street
Rm. 409
Philadelphia, PA 19104

Registration Cost:
General Admission: $60
Continuing Legal Education Admission: $75

KEYNOTE by Keith Morales, Federal Reserve Bank of Philadelphia, Information Security Office and Assistant Vice President

Register at http://www.lebow.drexel.edu/event/2014/09/09/best-business-practices-navigating-cybersecurity

Tours of Drexel's new Cyber Security and Innovation Center available following the program

Continuing Legal Education Credits available (3.0 credits pending)

Delaware Valley Chapter NDIA National Defense Industrial Association

The Anatomy of a Healthcare Data Breach Protecting Patient Data Before and After a Breach

Listen in and join the discussion as these expert panel members reveal what a continuous security and compliance model looks like. The panel experts in information security, HIPAA-HITECH compliance and healthcare big data analytics systems design, will discuss the steps they take to prevent breaches and protect healthcare information, even in the event of a breach, with a forensics expert, a breach attorney and a cyber-insurance specialist who have had to pick up the pieces after a PHI breach has occurred.

Date: Wednesday, October 16, 2014
Time: 12:00 - 2:00 p.m.
Location: Drexel Cyber Security Institute
3401 Market Street, Suite 300, Philadelphia, PA

4A Security
Enterprise Information Assurance

Drexel University Cybersecurity Institute Panel on Electronic Privacy

The video of the Drexel University Cybersecurity Institute Panel on Electronic Privacy which took place on August 6th is now available to view on the CCI YouTube channel through the link below: Cybersecurity Institute Panel on Electronic Privacy
https://www.youtube.com/watch?v=AUocXGA0WBg&list=UU6lYOOSGXpXYUsBfseYPM5Q

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DREXEL UNIVERSITY
Cybersecurity Institute

NEWSLETTER

JULY 2014

Invitation To Collaborate

Drexel faculty, researchers, professional staff, and students as well as researchers from other universities are invited to collaborate on research, education, and critical issues surrounding cybersecurity. The Institute is also seeking collaboration partners within government and industry. If you are interested in collaborating email us atDUCyberPI@drexel.edu

Upcoming Institute Events

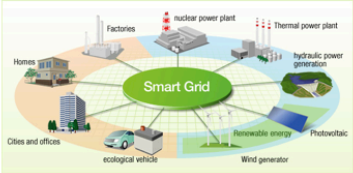
Roundtable on Advances in Privacy Analytics

Led by **Dr. Rachel Greenstadt**, Assistant Professor of Computer Science, Drexel University

Date: Wednesday, August 6, 2014

Time: 12-1:30 PM

Location: The Auerbach and Berger Families Cyber Security Laboratory; 3401 Market Street, Suite 300, Philadelphia, PA



Cybersecurity Snippet: Utilities and Cyber Attacks

Background

Challenges to the critical infrastructure, such as the smart grid, of the U.S. include outdated systems and reliance on these systems. Additionally, there lacks downtime to upgrade or replace these outdated systems. Stopping the operation of a critical infrastructure is not feasible. Additionally, adding more security layers to critical infrastructures slows down the operations of components and systems.

Cybersecurity Threat

Attacks on critical infrastructure are more likely to come from entities with political motivations rather than lone hackers. Those with political motivations produce attacks that can cause harm on a large scale. In 2013, the energy sector was one of the most targeted sectors worldwide and was the top sector targeted in the U.S.

Additional Information

Hacking Gets Physical: Utilities At Risk For Cyber Attacks

http://www.forbes.com/sites/katevinton/2014/07/10/hacking-gets-physical-utilities-at-risk-for-cyber-attacks/

Hackers Find Open Back Door to Power Grid With Renewables

http://www.businessweek.com/news/2014-07-01/renewable-energy-s-expansion-exposing-grids-to-hacking

Grant Opportunity: Scholarship for Service

The CyberCorps: Scholarship for Service program seeks proposals that address cybersecurity education and workforce development. The Scholarship Track provides funding to award scholarships to students in cybersecurity. In return, students will work after graduation for a Federal, State, Local, or Tribal Government organization in a position related to cybersecurity for about the same length of the scholarship. The Capacity Track seeks cutting-edge proposals leading to an increase in the ability of the United States higher education enterprise to produce cybersecurity professionals.

http://www.grants.gov/web/grants/view-opportunity.html?oppId=259931

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DREXEL UNIVERSITY
Cybersecurity Institute

June 2014

INVITATION TO PROFESSIONAL DEVELOPMENT SYMPOSIUM ON CYBER INSURANCE

Cyber insurance is no longer debatable for small to medium-size business owners and CFOs. The steady increase in data breaches and cybercrime, extortion attempts, and emerging threats make cyber insurance important. Standard general liability policies are not intended to cover these types of losses. Your company's financial health and reputation could be on the line-and you can't transfer responsibility.

Join us for an informative symposium moderated by risk management expert Austin Morris Jr. that will address questions such as:

- What is new in the cyber liability marketplace
- Facts you should know
- How to protect your company's financial health and reputation
- How to save money with favorable underwriting

The event features panelists **Holly L. Meyers**, RN, FACHE, Senior Vice President, Quality and Risk Management for St. Joseph Health System (SJHS) in Bryan, TX (which recently experienced a major data breach) and Beazley Group cyber insurance underwriter and expert, **Nick Economidis**.

Date: Wednesday, June 25, 2014
Time: 12:00 - 1:30 p.m.
Location:
The Auerbach and Berger Families Cyber Security Laboratory
3401 Market Street, Suite 300, Philadelphia, PA
Note: This is a brown bag event-attendees are encouraged to bring their own lunch.

RSVP online at: http://cci.drexel.edu/events/RSVP.aspx?id=432626

For any questions, please contact Norm Balchunas at DUCyberPI@drexel.edu

About the Moderator:
Austin Morris Jr. is the founder of Morris Risk Management LLC. MRM provides sophisticated products from leading insurers and advanced risk management solutions to businesses and nonprofits dependent on information and technology and/or producing information and technology. Security and privacy (cyber liability) insurance and technology errors & omissions insurance are our specialties. Morris Risk Management combines diverse professional experience in software, the Internet, media, technology, e-commerce, mobile, cybersecurity, and insurance. For more information, please visit www.morrisrisk.com.

UPCOMING INSTITUTE EVENTS

Affiliates Meeting of the Drexel Cybersecurity Institute

The Affiliates Meeting of the Drexel Cybersecurity Institute scheduled for June 18 has been postponed for a later date. As a result, there is more time for you to share how your expertise and interests align with the mission of the Cybersecurity Institute.

The names and interests of affiliated faculty will be featured on the Drexel Cybersecurity Institute website and these faculty will be invited to participate in the first affiliates meeting of the Institute The meeting will focus on the creation of a strategic plan for the Institute complete with education, research and service goals and metrics.

Date: TBD
Location:
The Auerbach and Berger Families Cyber Security Laboratory
3401 Market Street, Suite 300, Philadelphia, PA

For more information and to express your interest in affiliating with the Institute contact Norm Balchunas at DUCyberPI@drexel.edu

CYBERSECURITY SNIPPET: A Multi-National Effort to Disrupt the Gameover Zeus Botnet

Background

The Gameover Zeus Botnet is a world-wide network of infected computers used by cyber criminals to steal personal and financial information. This Botnet operation has resulted in the loss of over $100 million. The estimated number of compromised computers ranges from 500,000 to 1 million computers. Consumers are not even aware that their computers are compromised and that their computers are being used as part of the Botnet operation.
Additionally, part of this Botnet operation includes the use of ransomware which consists of cyber criminals encrypting consumers' files and then demanding payment from consumers to decrypt the files.

Collaborative Effort to Disrupt the Botnet Operation

The effort to disrupt the Gameover Zeus Botnet consists of a multi-organization and multi-national effort. The collaborative efforts involved legal, technical, and law enforcement experts from government agencies and industry partners spanning more than 10 countries. The U.S. Department of Justice lead the collaborative efforts and has been helping consumers regain control of their compromised computers.

Additional Information
U.S. Leads Action Against Gameover Zeus Botnet
U.S. CERT Information on Gameover Zeus Malware

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DREXEL UNIVERSITY
Cybersecurity Institute

May 2014

INVITATION TO AFFILIATE WITH THE INSTITUTE

The mission of the Cybersecurity Institute is to promote research and workforce development activities that establish the science of cybersecurity; transition cybersecurity understanding, technologies and approaches into widespread use; and prepare current and future generations to participate effectively in society.

To meet its mission the Institute draws upon faculty expertise in human, statistical, mathematical, computational, engineering, legal and computer services, amongst others.

If your expertise and interests align with the mission of the Cybersecurity Institute and if you'd like to affiliate with the Institute, please let us know by sending a message to DUCyberPI@drexel.edu describing your research interests. The names and interests of affiliated faculty will be featured on the Drexel Cybersecurity Institute website and these faculty will be invited to participate in the first retreat of the Institute tentatively scheduled for June 18, 2014. The retreat will focus on the creation of a strategic plan for the Institute complete with education, research and service goals and metrics.

Thanks for considering our invitation!

Yours sincerely,

The Drexel Cybersecurity Institute Steering Committee

Murugan Anandarajan
Norm Balchunas
Deb Crawford
Kapil Dandekar
Rob D'Ovidio
Spiros Mancoridis
Harvey Rishikof
Steve Weber

UPCOMING INSTITUTE EVENTS

Ribbon Cutting and Dedication of the Auerbach and Berger Families Cyber Security Laboratory

Please join John A. Fry, President, Drexel University and David E. Fenske, Dean, CCI, Drexel University for the ribbon cutting and dedication ceremony.

Thursday, May 29
3:00 PM Ribbon Cutting
3:30-5:00 PM Reception
The Auerbach and Berger Families Cyber Security Laboratory
3401 Market Street, 3rd Floor Suite
Philadelphia, PA 19104

RSVP by May 23 to Jennifer Lally at JL352@drexel.edu or 215.895.1077

Cyber Security Insurance and Policy Seminar

In Mid-June, we will host our monthly seminar that will focus on cyber security insurance and policy. Invited expert panelists will discuss what cyber security insurance is, why companies are resistant to purchasing cyber security insurance, and how this type of insurance may help decrease the amount of cyber attacks.

Panelists will include experts from the cyber security insurance industry.

Mid-June
The Auerbach and Berger Families Cyber Security Laboratory
3401 Market Street, 3rd Floor Suite
Philadelphia, PA 19104

Check our website in the next few weeks for updated event information:

http://cci.drexel.edu/cybersecurity

CYBERSECURITY SNIPPET: First Time Criminal Charges Are Filed Against Known State Actors for Hacking

Background

Since 2002, hundreds of U.S. entities have been penetrated by Chinese military hackers. These penetrations have been used to steal trade secrets, conduct cyber-espionage, and steal jobs as well as innovation. However, in previous years, the Department of Justice (DOJ) did not file charges against state actors. Now, that has changed. The DOJ filed charges against Chinese military officers who conspired to steal trade secrets and other information from companies specializing in solar panels, metals, and next-generation nuclear power plants.

Change in the Cybersecurity Landscape

For years, the U.S. has claimed that the Chinese government has blatantly supported cyber espionage. The charges against the state actors demonstrate that the U.S.will seek to hold the state actors accountable. Filing charges represent a use of one legal route to counter cyber espionage. The alleged actions and charges may now strain U.S-China relations. The U.S. and China agreed to form a U.S.-China cybersecurity working group last year. However, the repercussions of the alleged actions and charges may stop this partnership.

Additional Information
U.S. Charges Five Chinese Military Officers With Spying
U.S. DOJ Summary of the Indictment

FEATURED CYBERSECURITY EDUCATION PROGRAM

Drexel's Master of Science in Cybersecurity

The Master of Science (MS) in Cybersecurity is an interdisciplinary program that prepares students with both the academic and practical training to be competitive in the ever-changing technical landscape of cybersecurity. The program is designed for students with backgrounds in computer engineering, computer science, electrical engineering, telecommunications engineering or other related technical fields. Degree features include:

- Core courses to build theoretical foundations in computer networking, mathematics, policy ethics, privacy and legal issues
- Electives in specialized technical areas
- Classes available on campus

For more information check here.

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DREXEL UNIVERSITY
Cybersecurity Institute

March 2014

OUR MISSION

The Drexel University Cybersecurity Institute will address national cyber-based threats, and help prepare the next generation of cybersecurity leaders to meet industry, government, and military challenges. The Institute will foster collaborative partnerships among industry and academia to facilitate the advancement of critical infrastructure protection and incident response affecting the nation today.
Learn More

Newsletter Notice - to receive our monthly newsletter in upcoming months please sign up **here**

UPCOMING INSTITUTE EVENTS

Cybersecurity Training Panel

Join Drexel's Cybersecurity Institute for a special brown bag seminar and panel discussion that will address how a modern university should train the next cadre of cyber professionals (given the ever-changing landscape of cyber threats); and will identify the roles of theory, applications, certifications, and mentoring in this type of training.

Panelists include:

- **Dr. Spiros Mancoridis** Ph.D, Professor & Senior Associate Dean for Computing and CCI Academic Affairs, College of Computing & Informatics, Drexel University
- **Angel Rivera** Senior Developer, Point.io; Hackathon Mentor
- **Frank Domizio** Computer Forensic Examiner at Federal Bureau of Investigation's Philadelphia Regional Computer Forensics Lab

*An additional panelist will provide an industry perspective to the discussion.

Monday, March 24
12:00 - 1:30 p.m.
Attendees should bring their own lunch.

Please RSVP at http://bit.ly/1cTxVP0

3401 Market Street, 3rd Floor Suite
Philadelphia, PA 19104

Evidence & Perspectives: Viewing a Cyber Event from the C-Suite

A panel of experts will address national cyber-based threats, what is needed today to counter emerging threats and risk, and the opportunities that professional cyber risk management and enforcement present.

Panelists include:

- **Norman Balchunas**, Col, USAF (Ret), Director of Strategic Solutions & Assistant Research Professor, Applied Informatics Group, Drexel University
- **Dr. Scott White**, Ph.D., Director, Computing & Security Technology and Associate Clinical Professor, Homeland Security, Drexel University
- **Harvey Rishikof**, J.D., Chair, ABA Advisory Committee on Law and National Security Co-Chair, American Bar Association Cybersecurity Legal Task Force Director of Cybersecurity and the Law, Drexel University School of Law

Tuesday, March 25
7:30-9:00 AM
Union League of Philadelphia
140 South Broad St., Philadelphia PA, 19102

Registration Cost(s):

General: $25.00
CLE Credit: $45.00

Click here for more info and to RSVP

Cybersecurity: A CIO's Worst Nightmare and Biggest Opportunity

The Institute is collaborating with Point.io and LiquidHub to host a roundtable discussion for CIOs in the Philadelphia region.

The focus of the discussion will be placed on challenges in the new digital economy, SMAC (Social, Mobile, Analytics, and Cloud), BYOD, and changes in the seat at the board table.

Mid-April (Date/Time TBD)
3401 Market Street, 3rd Floor Suite
Philadelphia, PA 19104

CYBERSECURITY SNIPPET: CYBERSECURITY AND THE CRISIS IN UKRAINE

Background

On March 1, 2014, Vladimir Putin, President of the Russian Federation, received authorization from the Russian Parliament to send troops to Ukraine in response to the Crimean crisis. As reports of physical violence have been coming out of Ukraine, cyber security experts are watching for evidence of large scale cyber attacks coming from Russia.

Cybersecurity Threat

Currently large scale attacks have not been reported. However, Ukraine's National Security and Defense Council reported a massive denial-of-service attack that paralyzed its servers for several hours. Experts believe that Russia holds the capability to use cyber attacks to take down critical infrastructure, including industrial control systems (for example power plants), in Ukraine. Even though no large scale cyber attacks have been reported, Russia may be using sophisticated and precise cyber attack tools to carry out attacks.

The crisis in Ukraine has also complicated bilateral relations on cybersecurity between the U.S. and Russia. Previously, the U.S and Russia worked on developing links between computer emergency response teams (CERTs) and established a White House - Kremlin hotline to address cyber incidents of concern. As a result of the crisis, the planning of bilateral cybersecurity meetings for this spring has been delayed.

Additional Information

With Russia and Ukraine, is all Really Quiet on the Cyber Front?

U.S.-Russian Cybersecurity Talks Face Uncertainty amid Ukrainian Crisis

GRAND OPENING SUCCESS

Thanks to all (161 in total) attendees from academia, industry, government, and military who participated in our grand opening on February 24th.

Click here for a video of the grand opening

Thanks to our guest speakers:

Representative Patrick Meehan

Drexel University President John Fry

Drexel University Provost Mark Greenberg

INVITATION TO COLLABORATE

Drexel faculty, researchers, professional staff, and students as well as researchers from other universities are invited to collaborate on research, education, and critical issues surrounding cybersecurity.

The Institute is also seeking collaboration partners within government and industry. For more information on partnership opportunities, please contact Norm Balchunas, Interim Director of the Institute, atnjb67@drexel.edu.

Norm Balchunas, Col., USAF (Ret.)
Interim Director,
Drexel University Cybersecurity Institute
njb67@drexel.edu

http://ccl.drexel.edu/research/labs-and-institutes/drexel-university-cybersecurity-institute.aspx

DREXEL UNIVERSITY
Cybersecurity Institute

February 2014

OUR MISSION

The Drexel University Cybersecurity Institute will address national cyber-based threats, and help prepare the next generation of cybersecurity leaders to meet industry, government, and military challenges. The Institute will foster collaborative partnerships among industry and academia to facilitate the advancement of critical infrastructure protection and incident response affecting the nation today.
Learn More

WELCOME TO THE GRAND OPENING

As we were snowed in for the original grand opening, we are now holding the grand opening on Monday, Feb. 24 at 10:30AM.

A special thank you to our guest speakers:

Representative Patrick Meehan (R-Pa.), Chairman, Subcommittee on Cybersecurity, Infrastructure Protection and Security Technologies, Committee on Homeland Security, U.S. House of Representatives. Rep. Meehan is leading the National Cybersecurity and Critical Infrastructure Protection Act which is designed to strengthen the nation's critical infrastructure networks by bolstering partnerships between private industry and the federal government.

Representative Chaka Fattah (D-Pa.), Senior Member of the House Appropriations Committee, Ranking Member of Subcommittee on Commerce, Justice and Science, and Chair of the Congressional Urban Caucus

Drexel University President John Fry

Drexel University Provost Mark Greenberg

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A small sample of featured faculty, research staff, and students at Drexel focusing on cybersecurity problems:

Dr. Murugan Anandarajan, Professor, Lebow College of Business

Murugan focuses his research on cyber crime, identity theft, computer forensics, and strategic management of information technology. His research has been sponsored by the U.S. Department of Justice, the National Institute of Justice, NSF, and various industry sponsors.

Patricia Q. Connolly, Director, Center for Corporate Governance, Lebow College of Business

Patricia develops strategic partnerships with public, private, and not-for-profit boards of directors address best practices in board governance. She works closely with the Center's Advisory Board of key corporate executives on addressing the "real world" needs of today's Boards including cyber security.

Dr. Kapil Dandekar, Associate Professor, Electrical and Computer Engineering Department

Kapil's current research interests involve MIMO ad hoc networks, reconfigurable antennas, software defined radio, free space optical communications, ultrasonic communications, and sensor networks. He is also the Director of the Drexel Wireless Systems Laboratory (DWSL). DWSL has been supported by the NSF, Army CERDEC, NSA, Office of Naval Research, and private industry.

Dr. Robert D'Ovidio, Associate Professor of Sociology and Criminal Justice, College of Arts & Sciences

Robert's research and teaching interests lie in the intersection of computer technology, crime, and the criminal justice system. In the past, Rob has worked with the New York City Police Department and Philadelphia Police Department on research projects involving computer crime.

Dr. Christopher Geib, Associate Professor, CCI

Christopher applies probabilistic plan recognition methods from artificial intelligence to recognize the actions and plans of computer network users. The objective is to identify system misuse both by authorized insiders as well as unauthorized hackers.

Thomas Heverin, Ph.D. Candidate, CCI

Thomas, a former Navy Surface Warfare Officer, focuses his research on the intuitive decision making and information seeking behaviors of cyber security experts when forming situation assessments of cyber attacks.

Dr. Spiros Mancoridis, Professor & Senior Associate Dean for Computing and CCI Academic Affairs, CCI

Spiros works in the area of anomaly detection for software systems that are failing due to implementation flaws or the execution of malware. He also works on real-time automatic malware classification and mitigation using techniques from detection and control theory as well as computational geometry.

Gaurav Naik, Applied Informatics Group, CCI

Gaurav, a research scientist with the Applied Informatics Group (AIG), is working on mobile operating system security. This work, funded by US Army CERDEC, investigates the computer network operations (CNO) capabilities of popular smartphone operating systems such as Android, iOS, and Symbian.

Harvey Rishikof, Law Professor, Earle Macke School of Law

Harvey is the Director of Cybersecurity and Law at the Earle Macke School of Law, the Co-Chair of the American Bar Association National Task Force on Cyber and the Law, and the Chair of the ABA Advisory Committee on Law and National Security.

Dr. Steven Weber, Associate Professor, Electrical and Computer Engineering Department

Steven's research interests in cybersecurity include: i) applications of machine learning tools for network anomaly detection, ii) economic models for incentivization security protocol adoption, and iii) efficient collection of data from distributed network monitoring systems. He is also the primary investigator for a project funded by the National Science Foundation Secure and Trustworthy Computing Program (SaTC).

Dr. Chris Yang, Associate Professor, CCI

Chris' research focuses on intelligence-related knowledge discovery, criminal data mining and network analysis, web-based intelligence monitoring and analysis, terrorist social network analysis, and terrorism informatics.

MARCH LUNCHTIME SEMINAR

Each month guest speakers will be invited to lead a discussion about current issues in cybersecurity ranging from predicting the insider threat to security issues with big data.

Seminar on the Training of Cybersecurity Professionals

In late March (date TBD), participate and challenge a panel of military, government, and industry members on the training requirements for future cybersecurity leaders in 2020. Panel speakers will come from a range of organizations such as the Department of Homeland Security, National Security Agency, and industry thought leaders.

The panel speakers will address topics such as:

- How can higher education, industry, and government experts work together to train the next cadre of cyber security experts?
- How should cyber security education be delivered?
- How do we contribute to the ongoing education of cyber security professionals?

All talks will be held in the Institute at 3401 Market Street (Corner of Market and 34th Streets), Philadelphia, PA 19104. **Please sign up at the Institute launch event to learn more about upcoming events.**

CYBERSECURITY SNIPPET: BITCOINS

Background

Bitcoin is a decentralized, peer-to-peer payment system that employs cryptography to create and transfer money. Bitcoins are obtained by mining or in exchange for products or services. Individuals can exchange bitcoins via mobile devices, web applications, or software on personal computers. Bitcoins are being used more and more by businesses as an alternative form of payment.

Cybersecurity Threat

Currently there is no regulatory authority over Bitcoin and there is concern over the lack of safeguards available to protect users. The popularity and increasing value of bitcoins make bitcoins high value items to steal. Additionally, the high level of anonymity of bitcoins has made them a preferred currency for such criminal activities as money laundering, illegal gambling, drug trafficking, and illegal weapons.

Additional Information

Bitcoin Price Plunges as Mt. Gox Exchange Halts Activity - Bloomberg Technology, 2/7/14

Our New Report Looks at Bitcoin in 40 Countries - U.S. Library of Congress, 2/4/14

Norm Balchunas, Col., USAF (Ret.)
Interim Director,
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http://www.drexel.edu/cci/cybersecurity

B Videos

The Drexel Cybersecurity Institute has developed a strong online video presence, including tapings of the DCI Symposia listed below. These videos are available at the Drexel College of Computing and Informatics (CCI) YouTube channel cybersecurity "playlist", accessible here:

`https://www.youtube.com/playlist?list=PLZvvnkvrLLnQ1-hoxgp8X30lkNp14wyTc`

1. *October 16, 2014*: Healthcare data security part I — Anatomy of a healthcare data breach
2. *August 6, 2014*: Electronic privacy
3. *July 17, 2014*: Advertisement for the Drexel University Masters in Cybersecurity degree
4. *June 25, 2014*: Cyber insurance
5. *May 29, 2014*: Auerbach & Berger Cybersecurity Laboratory ribbon cutting & dedication
6. *May 8, 2014*: Locking down your company's data: what keeps you awake as CIO?
7. *March 24, 2014*: Cybersecurity training / educating the next cybersecurity leaders
8. *February 24, 2014*: Drexel University Cybersecurity and Policy Institute launch

Video title: Anatomy of a Healthcare Data Breach
Event date: October 16, 2014
Video published: October 20, 2014
People: Ben Goodman (moderator), Lisa Clark, Elgan Jones, Joshua Ladeau, Charles Mann, Jay Orler, and Paul Rosovsky (panelists)
URL: `https://www.youtube.com/watch?v=a37AbkeEJww`
Summary: Listen in and join the discussion as this panel of industry leaders reveal what a continuous security and compliance model looks like. The panel of experts in information security, HIPAA-HITECH compliance and healthcare big data analytics systems design, will discuss the steps they take to prevent breaches and protect healthcare information, even in the event of a breach, with a forensics expert, a breach attorney and a cyber-insurance specialist who have had to pick up the pieces after a PHI breach has occurred. The discussion will be framed in the increasingly complex ecosystem of Healthcare IT, where information sharing is an essential component of achieving desired outcomes as well as the emerging compensation model.

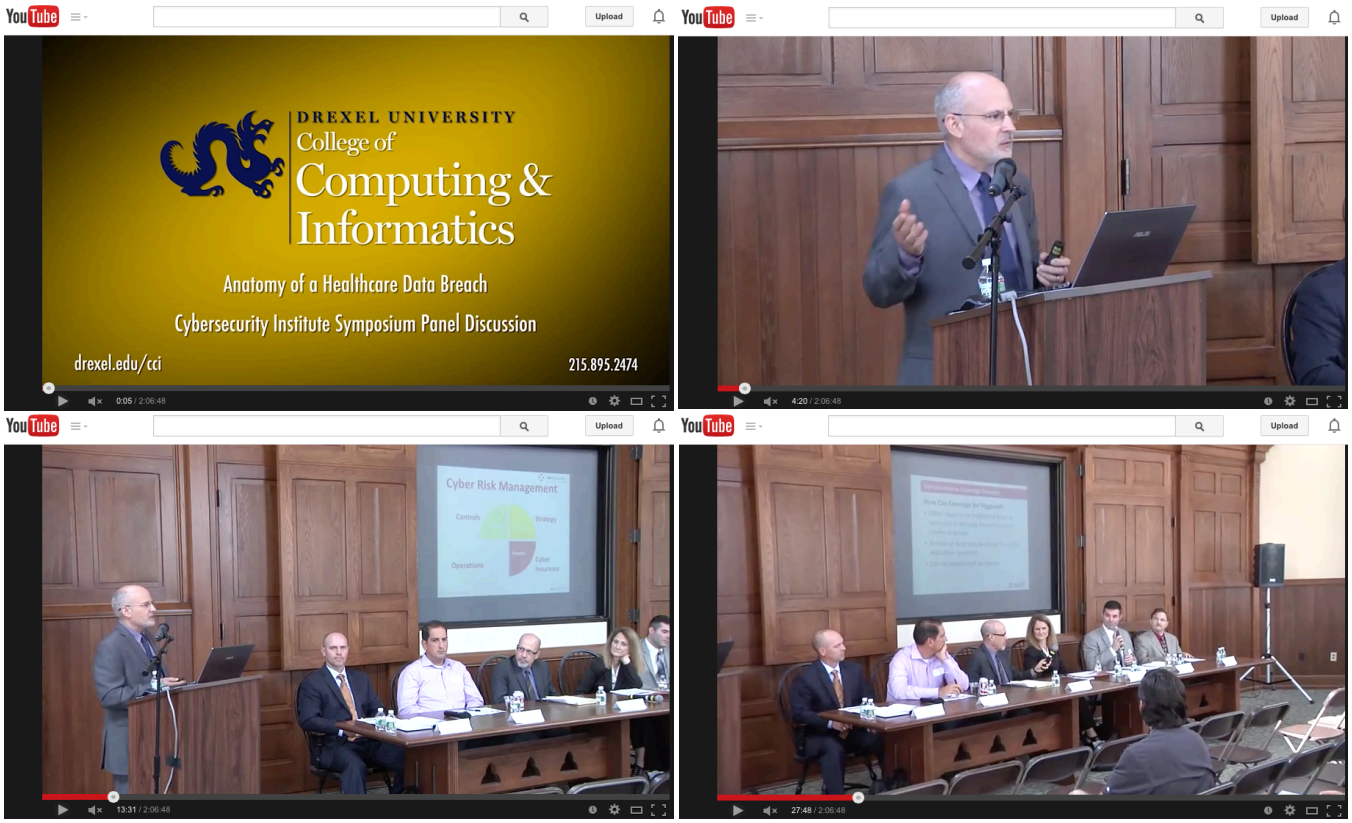


Figure 4: Symposium: "The Anatomy of a Healthcare Data Breach: Protecting Patient Data Before and After a Breach" moderated by Ben Goodman (President, 4A Security and Compliance), with panelists Lisa Clark (Partner, Duane Morris LLP), Elgan Jones (Director of Forensics, Kivu Consulting), Joshua Ladeau (Practice Lead – Privacy and Network Security, Allied World Insurance Company), Charles Mann (Regional Manager, Healthcare, Trend Micro), Jay Orler (Vice President, Security and Infrastructure, Lightbeam Health Solutions), and Paul Rosovsky (Vice President, Healthcare Compliance, 4A Security).

Video title: Drexel University Cybersecurity Institute Panel on Electronic Privacy
Event date: August 6, 2014
Video published: August 12, 2014
People: Rachel Greenstadt (moderator), Roger Dingledine (panelist) and Nadia Heninger (panelist)
URL: `https://www.youtube.com/watch?v=AUocXGA0WBg`
Summary: How can the privacy community respond to mass surveillance by governments and corporations? According to some, the Snowden/NSA/GCHQ revelations show that law and policy have failed to protect citizens around the globe from surveillance. It falls also upon the shoulders of the technical community to build solutions that are resilient to "mass surveillance" practices. But while Edward Snowden announced that "crypto still works", intelligence agencies will continue to find ways to work around it. So others have argued that technology is far from a complete answer and that working with policy and law is more necessary than ever. Both positions are troubled by motions to prevent companies from applying secure designs that may be seen as obstructing law enforcement agencies from conducting investigations. Further, governments around the globe are likely to consider implementing "back doors" as well as utilizing zero-day exploits as a way to guarantee law enforcement access. These aggressive policies raise questions about where privacy technologies can and should live; and, how to guarantee that their design remains robust, e.g., by keeping the implementation open to scrutiny? This roundtable discussion will discuss the current state of privacy enhancing technologies and their implications for individuals, engineers, and researchers. Rachel Greenstadt, Associate Professor of Computer Science at Drexel University will be the moderator. Dr. Greenstadt researches the privacy and security properties of intelligent systems and the economics of electronic privacy and information security. Her work is at "layer 8" of the network?analyzing the content. She is a member of the DARPA Computer Science Study Group and she runs the Privacy, Security, and Automation Laboratory (PSAL) which is a vibrant group of ten researchers. The privacy research community has recognized her scholarship with the PET Award for Outstanding Research in Privacy Enhancing Technologies, the NSF CAREER Award, and the Andreas Pfitzmann Best Student Paper Award. Panelists include: Roger Dingledine, Project Leader and Director of The Tor Project Nadia Heninger, Magerman Term Assistant Professor, Computer and Information Science, University of Pennsylvania.

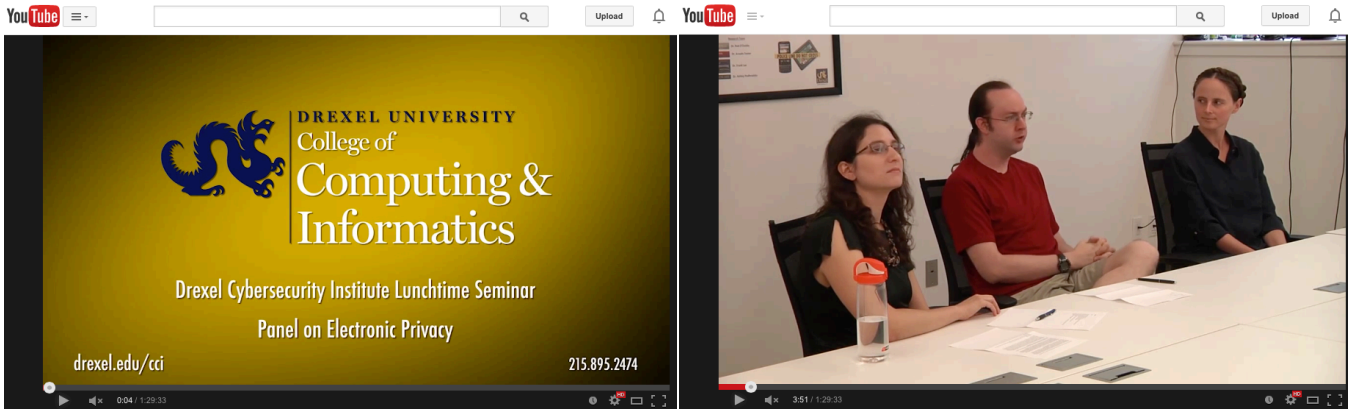


Figure 5: Symposium: "Electronic Privacy" moderated by Rachel Greenstadt (Associate Professor in Drexel CCI), with panelists Roger Dingledine (Director, Tor Project) and Nadia Heninger (Magerman Term Assistant Professor, Computer and Information Science, University of Pennsylvania).

Video title: MS Cybersecurity
Event date: N/A
Video published: July 17, 2014
People: Steven Weber, Kapil Dandekar, Constantine Katsinis
URL: `https://www.youtube.com/watch?v=0FtygqOmA6o`
Summary: Advertisement for the Drexel University Masters of Science in Cybersecurity.

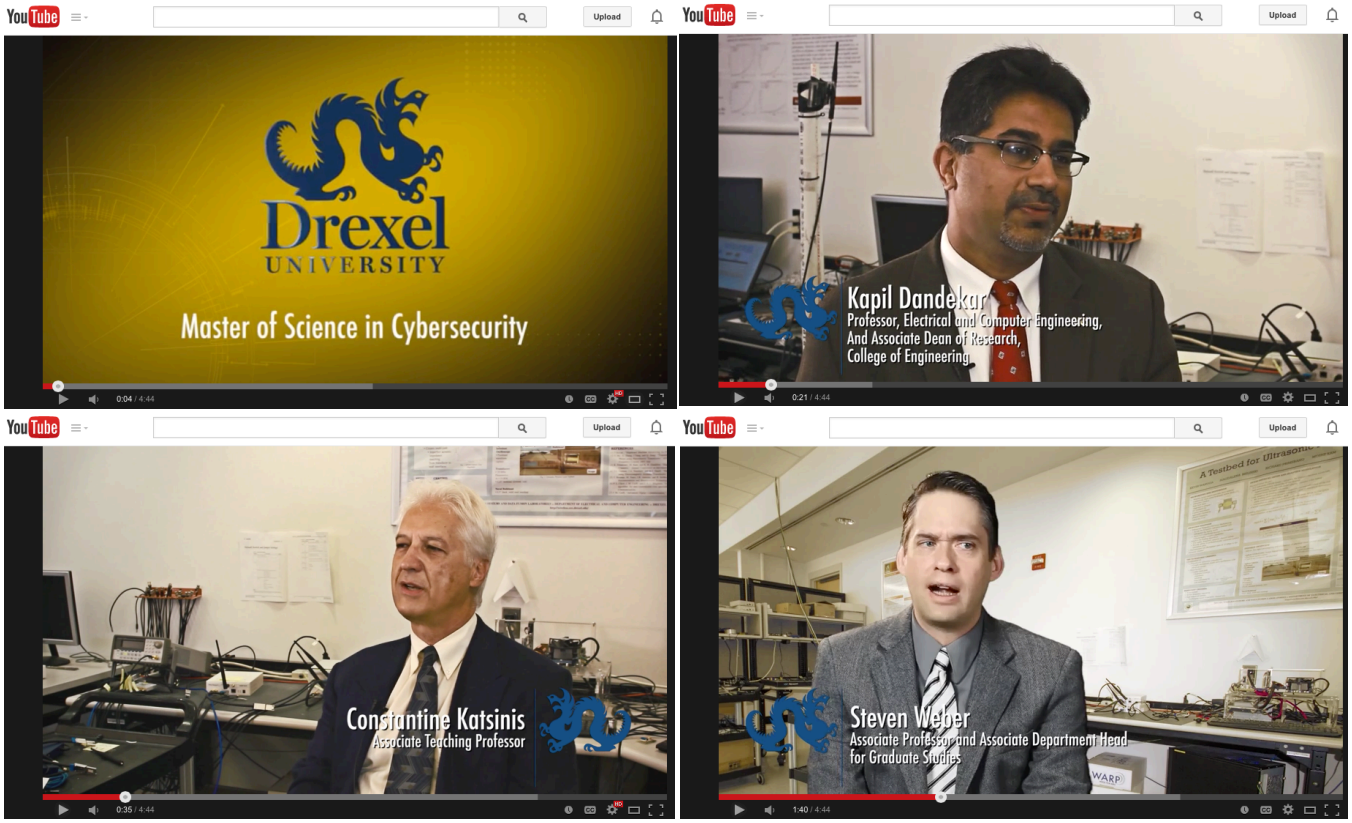


Figure 6: This was filmed in late May and early June, 2014, and features remarks by Steven Weber (Director of DCI), Constantine Katsinis (Associate Teaching Professor in CCI), and Kapil Dandekar (Professor in CoE). This five-minute video was orchestrated by Denise McLeod (Senior Director of Marketing Communications in CoE) and Brenda Sheridan (Director of Communications in CCI and Executive Director of the Drexel University Computing Academy).

Video title: Professional Development Symposium On Cyber Insurance
Event date: June 25, 2014
Video published: July 1, 2014
People: Austin Morris (moderator), Holly Meyers (panelist) and Nick Economidis (panelist)
URL: `https://www.youtube.com/watch?v=67Kd5QISScc`
Summary: Cyber insurance is no longer debatable for small to medium-size business owners and CFOs. The changes in underwriting, and the increases in class action suits, extortion attempts, gaps in coverage that don't cover data breaches mean that businesses that don't get coverage now, may not get coverage later (at least without a high premium). Most of all, your company's reputation is on the line?and you can't transfer responsibility. Join us for an informative symposium moderated by SunGard Consulting managing partner Austin Morris that will address questions such as:

- What is changing
- How savvy must you be
- How to save money
- How to save your company's reputation

Figure 7: Symposium: "Professional Development on Cyber Insurance" moderated by Austin Morris (Managing Partner in Energy Practice, SunGard Consulting Services), with panelists Holly Meyers (Senior Vice President, Quality and Risk Management for St. Joseph Health System) and Nick Economidis (Cyber insurance underwriter and expert, Beazley Group).

Video title: Auerbach & Berger Cybersecurity Laboratory Ribbon Cutting & Dedication
Event date: May 29, 2014
Video published: June 2, 2014
People: John Fry, David Fenske, Carol Auerbach, Albert Berger, Rob D'Ovidio, Harvey Rishikof
URL: `https://www.youtube.com/watch?v=1UIylXtY95I`
Summary: Remarks by Drexel President John Fry, CCI Dean David Fenske, CoAS Associate Professor Rob D'Ovidio, Law School Professor Harvey Rishikof, and donors Carol Auerbach and Albert Berger.

Auerbach & Berger Cybersecurity Laboratory Ribbon Cutting & Dedication; remarks by Drexel University President John Fry, CCI Founding Dean David Fenske, and CoAS Associate Professor Rob D'Ovidio, and donors Carol Auerbach and Albert Berger.

Video title: Locking Down Your Company's Data: What Keeps You Awake as CIO?
Event date: May 8, 2014
Video published: May 9, 2014
People: Mark Greisiger (moderator), Vinny Sakor (panelist) and Brian Schaeffer (panelist)
URL: `https://www.youtube.com/watch?v=VBfvaWMmXt0`
Summary: Moderated by Mark Greisiger, President of NetDiligence, you'll hear a panel of CIOs from leading healthcare, banking and mobile communications companies discuss:

- As CIO, how much Cyber Literacy is enough?
- Identifying high-value information targets in your corporation
- Formulation of cyber threat detection and response plans
- Balancing the human factor with technology

Panelists include: Vinny Sakor, who leads the Cloud Security program for ICSA Labs and serves on Verizon's HIPAA Security team; and Brian Schaeffer, a CIO and CSO in financial services serving regional banks and Dow Jones, where he helped manage Internet security services and the systems that create the Wall Street Journal.

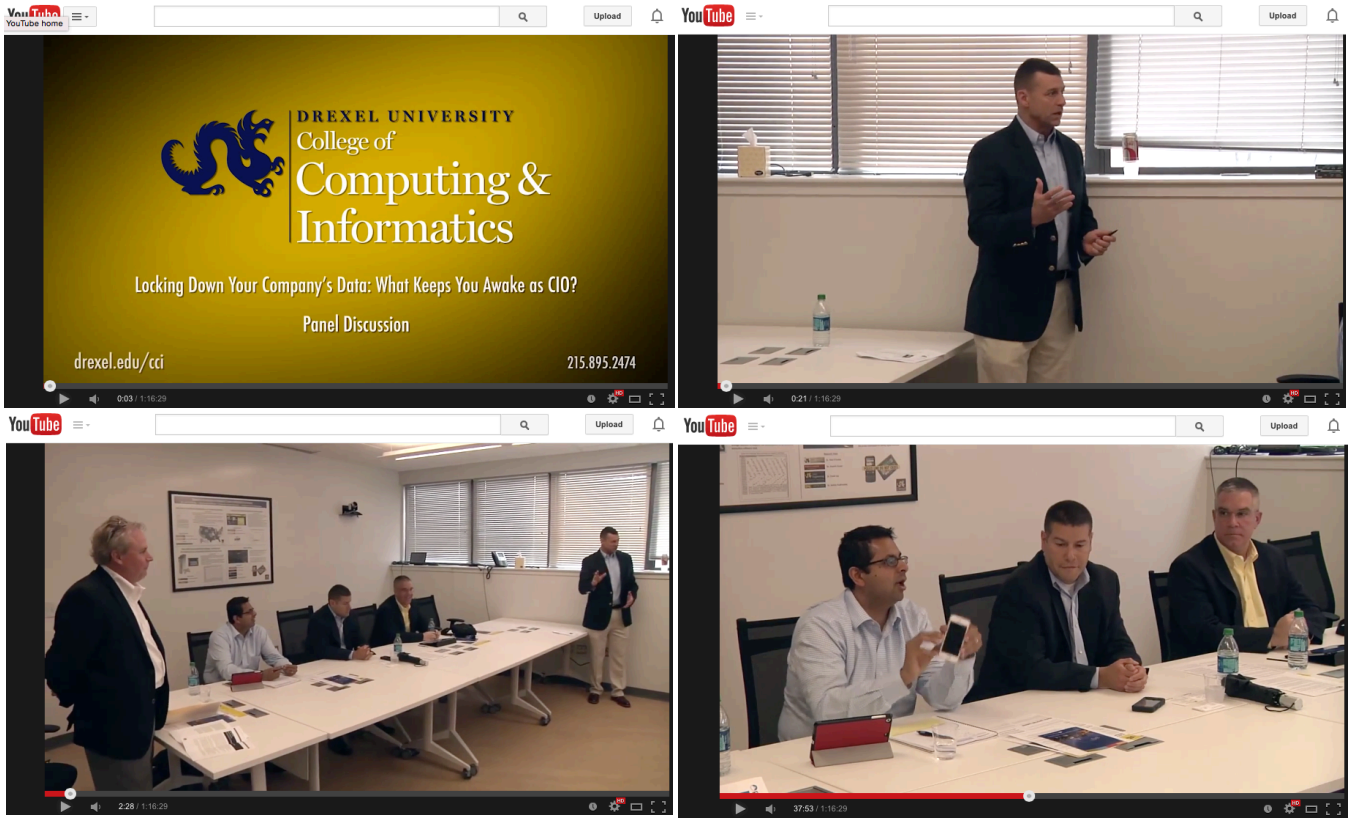


Figure 8: Symposium: "Locking Down Your Company's Data: What Keeps You Awake as CIO?" a.k.a. "Cybersecurity: A CIO's Worst Nightmare and Biggest Opportunity", in partnership with Point.io and LiquidHub. Moderated by Mark Greisiger (President, NetDiligence), with panelists Vinny Sakor (Cloud Security for ICSA Labs and Verizon HIPAA Security), Brian Schaeffer (senior-level information security and risk management practitioner for financial services), and Jorge Nieves (Senior Director of the Comcast Security Response Center).

Video title: Drexel University Cybersecurity Institute Lunchtime Seminar and Panel
Event date: March 24, 2014
Video published: March 31, 2014
People: Spiros Mancoridis, Angel Rivera, and Frank Domizio (panelists)
URL: `https://www.youtube.com/watch?v=7req4vY5q_I`
Summary: Drexel University Cybersecurity Institute Lunchtime Seminar and Panel - 03.24.2014

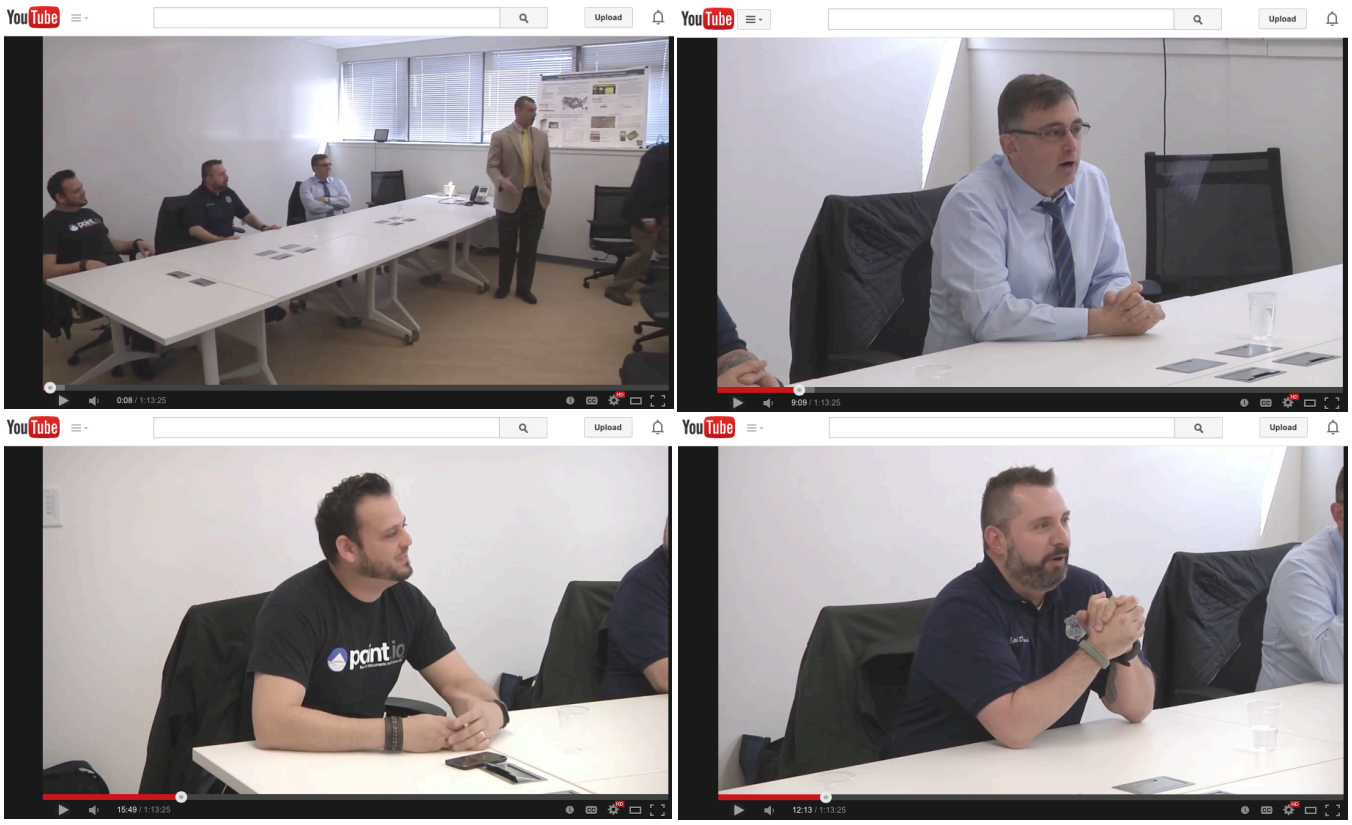


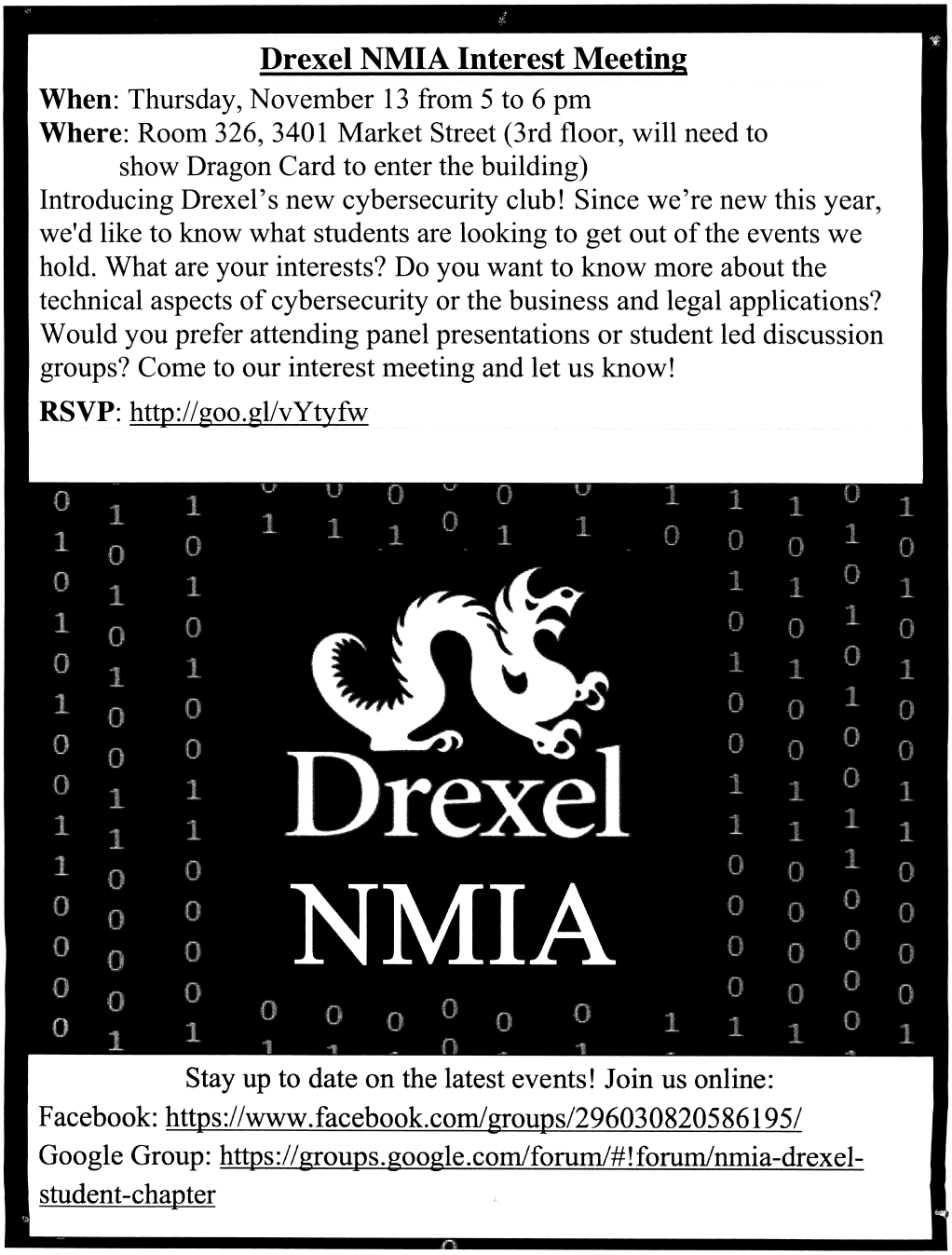
Figure 9: Symposium: "Cybersecurity Training Panel" / "Educating the next cybersecurity leaders" with Spiros Mancoridis (Professor in CCI), Angel Rivera (Senior Developer, Point.io), and Frank Domizio (Computer Forensic Examiner at Federal Bureau of Investigation's Philadelphia Regional Computer Forensics Lab).

Video title: Drexel University Cybersecurity and Policy Institute Launch
Event date: February 24, 2014
Video published: March 6, 2014
People: David Fenske, Mark Greenberg, John Fry, Patrick Meehan
URL: `https://www.youtube.com/watch?v=nu45qXxAklU`
Summary: The Northeast Corridor's focal point for research, and educational programs in organizational cyber risk management. Within the modern urban environment's critical infrastructure, public companies and private networks are all vulnerable to nefarious cyber threats. These threats can mean the loss of private financial and privileged information, or worse, potential tampering with the supervisory control and data acquisition systems that run our essential industrial base. Increasingly, the distinctions between the virtual and real world environments are being blurred and programs are required that appreciate this evolving and dynamic landscape. The Institute educates the next cyber intelligent cadre that our city, region and nation requires to counter emerging threats and risks, while advancing professional cyber risk management in law and policy, privacy and enforcement in order to counter both criminal and advanced persistent threats associated with cyberattacks.

Figure 10: Cybersecurity Institute kickoff, with 175 attendees, including CCI Dean David Fenske, Drexel President John Fry, Provost Mark Greenberg, and Representative Patrick Meehan (R-Pa.), Chairman, Subcommittee on Cybersecurity, Infrastructure Protection, and Security Technologies, Committee on Homeland Security, U.S. House of Representatives.

C Scrapbook of events and meetings

The following pages hold pictures, announcements, and agendas for important events.



Drexel NMIA Interest Meeting

When: Thursday, November 13 from 5 to 6 pm
Where: Room 326, 3401 Market Street (3rd floor, will need to show Dragon Card to enter the building)

Introducing Drexel's new cybersecurity club! Since we're new this year, we'd like to know what students are looking to get out of the events we hold. What are your interests? Do you want to know more about the technical aspects of cybersecurity or the business and legal applications? Would you prefer attending panel presentations or student led discussion groups? Come to our interest meeting and let us know!

RSVP: http://goo.gl/vYtyfw

Drexel NMIA

Stay up to date on the latest events! Join us online:
Facebook: https://www.facebook.com/groups/296030820586195/
Google Group: https://groups.google.com/forum/#!forum/nmia-drexel-student-chapter

Figure 11: November 13, 2014 – Flier for the inaugural meeting of the Drexel student chapter of the National Military Intelligence Association (NMIA).

DREXEL UNIVERSITY

Cybersecurity Institute

Drexel University Cybersecurity Institute Symposium

The Anatomy of a Healthcare Data Breach: Protecting Patient Data Before and After a Breach

Listen in and join the discussion as a panel of industry leaders reveal what a continuous security and compliance model looks like. The panelists—including a forensics specialist, a breach attorney and a cyber-insurance specialist who have experience in recovering from a PHI breach —are experts in information security, HIPAA-HITECH compliance and healthcare big data analytics systems design. The panel will primarily discuss the steps they take to prevent breaches and protect healthcare information, even in the event of a breach.

The discussion will be framed in the increasingly complex ecosystem of healthcare IT, where information sharing is an essential component of achieving desired outcomes as well as the emerging compensation model.

Date: **Thursday, October 16, 2014**
Time: **12:00 - 2:00 p.m.**
Location: **Drexel University, Paul Peck Alumni Center**
32nd & Market Streets, Philadelphia, PA 19104

Note: **Lunch will be sponsored by 4A Security.**

FREE REGISTRATION at: http://4asecurity.com/drexelhealthcarepanel

Panelists:

Lisa Clark	Partner, Duane Morris LLP
Elgan Jones	Director of Forensics, Kivu Consulting
Joshua Ladeau	Practice Lead - Privacy & Network Security, Allied World Insurance Company
Charles Mann	Regional Manager, Healthcare, Trend Micro
Jay Orler	Vice President, Security and Infrastructure, Lightbeam Health Solutions
Paul Rosovsky	Vice President, Healthcare Compliance, 4A Security

About the Moderator:
Ben Goodman is President of 4A Security and Compliance. 4A Security is focused on helping the Healthcare Industry comply with the security and privacy requirements of HIPAA-HITECH, Meaningful Use and other federal and state regulations. In addition to helping healthcare organizations assess their cyber risk and protect their information assets, 4A Security helps organizations develop Cyber Risk Management strategies that build organizational resilience across the enterprise. Ben has worked in and around the technology industry for over two decades and he is a member of the Casualty Actuarial Society Cyber Risk Task Force, OWASP, ISACA, the Cloud Security Alliance, and the Information Systems Security Association.
For more information, please email info@4ASecurity.com or visit www.4ASecurity.com/hipaa.

About the Panelists:

4A Security
Enterprise Information Assurance

484.858.0427
info@4ASecurity.com
www.4ASecurity.com

Figure 12: October 16, 2014 – Flier for a Drexel Cybersecurity Institute Symposium.

DIGILE **FINLAND-US WORKSHOP ON BIG DATA AND CYBER SECURITY**
1 October, 2014, Vaisalantie 6, DIGILE, Espoo, Finland

WEDNESDAY 1 OCTOBER 9.00 – 16.00

9.00-9.03 Welcome Words by co-hosts Jani and Moncef
9.03-9.05 Introduction of Participants
9.05-9.15 Presentation on TUT plans towards CVDI cooperation by Moncef
9.15-9.30 Presentation on NSF & DIGILE cooperation by Shashank and Keith
9.30-9.45 Presentation on Ongoing Big Data Research at CVDI by Raju
9.45-10.00 Presentation Cyber Security by Steven
10.00-10.30 Coffee break
10.45-11.00 Presentation on DIGILE's Data-to-Intelligence Programme by Matti and Petri
11.00-11.15 Presentation on DIGILE's Cyber Trust Programme by Markku
11.15-11.45
Commentaries
- Vijay, Tony, Lauri, Jarno, Roope and Kimmo

Open discussion
11.45-13.00 Lunch break
13.00-16.00
Commentaries
- Jukka R., Jukka S., Jukka H., Alexey, Jorma, and Reijo

Planning joint research projects, concrete focus areas, open discussion, and next steps
15.30-16.00 Conclusions and Closing the workshop

INVITED EXPERTS TO THE INTERNAL WORKSHOP

1. Shashank Priya, Program Director, Industry&University Cooperative Research Program, National Science Foundation
2. Keith Marzullo, Division Director, Division of Computer and Network Systems, National Science Foundation
3. Vijay V. Raghavan, Professor, Director, NSF Center for Visual and Decision Informatics, Center for Advanced Computer Studies, University of Louisiana at Lafayette
4. Tony Xiaohua Hu, Professor, Co-Director, NSF Center for Visual and Decision Informatics, University of Drexel
5. Raju Gottumukkala, Research Director, Interim Site Director, NSF Center for Visual and Decision Informatics, University of Louisiana at Lafayette
6. Steven Weber, Director, Cybersecurity Institute, Associate Professor, Department of Electrical and Computer Engineering, Drexel University
7. Lauri Oksanen, Vice President, Research and Technology, NSN & Chairman, Board of Directors, DIGILE
8. Jarno Limnell, Cyber Security Director, McAfee
9. Kimmo Pentikäinen, Vice President, Development, Elisa
10. Roope Takala, Head, Innovation Programs, Nokia & Focus Area Director, DIGILE's Digital Services Programme
11. Moncef Gabbouj, Academy Professor, Tampere University of Technology
12. Petri Myllymäki, Professor, University of Helsinki & Academic Coordinator, DIGILE's Data-to-Intelligence Programme
13. Matti Vakkuri, Director, Tieto & Focus Area Director, DIGILE's Data-to-Intelligence Programme
14. Markku Korkiakoski, Program Manager, Elektrobit
15. Jukka Riekki, Professor, University of Oulu
16. Jukka P. Saarinen, Research Fellow, Nokia Research Center, Nokia
17. Jukka Heikkilä, Professor, University of Turku & University of Jyväskylä
18. Alexey Kirichenko, Research Collaboration Manager, F-Secure Corporation
19. Jorma Laaksonen, Teaching Research Scientist, Aalto University
20. Reijo Paajanen, CEO, DIGILE
21. Ulo Parts, Research Director, DIGILE
22. Jani Kaarlejärvi, Director, DIGILE

Figure 13: October 1, 2014 – Agenda for the Finland-U.S. Workshop on Big Data and Cybersecurity.

DIGILE

- BUILDING GLOBAL LEADERSHIP –
FORUM ON FINLAND-US R&D&I COOPERATION

Date: Tuesday, 30 September, 2014 **Location: Hotel Crowne Plaza Helsinki, Forum Room Lumo, Mannerheimintie 50, Helsinki**	
Morning Session: Finland-US Innovation Cooperation **Session Host: Mrs. Outi Vainionkulma-Immonen, Head of Communications, DIGILE**	
8:30 – 9:00	**Registration**
	Keynotes
9:00	*Opening Remarks: DIGILE Searching for Best Global Partners in Internet Economy* Mr. Reijo Paajanen, CEO, DIGILE
9:15	*Views on US-Finland Innovation Partnership* Mr. Bruce J. Oreck, U.S. Ambassador to Finland, U.S. Embassy, Helsinki
9:30	*Finland-US Cooperation in Innovation* Mr. Petri Peltonen, Director General, Ministry of Employment and the Economy
9:45	*R&D&I Opportunities in Finland for US Companies* Mr. Micah Gland, Deputy CEO, Greater Helsinki Promotion
10:00 – 10:20	**Coffee/Tea**
10:20	*National Science Foundation and US-Finland Programmes* Mr. Shashank Priya, Program Director, Industry & University Cooperative Research Program (I/UCRC), National Science Foundation
10:40	*International Cooperation in the Tampere University of Technology* Mr. Moncef Gabbouj, Academy Professor, Department of Signal Processing, Tampere University of Technology
11:00	*Center for Visual and Decision Informatics: Opportunities for Academic and Industrial Partners* Mr. Vijay V. Raghavan, Professor, Director, NSF Center for Visual and Decision Informatics, Center for Advanced Computer Studies, University of Louisiana at Lafayette
11:20	*Signing Ceremony: Memorandum of Understanding on Establishing a NSF Site-Center for Visual and Decision Informatics in Finland* Mr. Shashank Priya, Program Director, National Science Foundation Mr. Vijay V. Raghavan, Professor, Director, NSF Center for Visual and Decision Informatics Mr. Moncef Gabbouj, Academy Professor, Tampere University of Technology Mr. Pauli Kuosmanen, CTO, DIGILE
11:30 – 12:30	**Lunch**
Afternoon Session: Joint Development, Global Solutions **Session Host: Mr. Pauli Kuosmanen, CTO, DIGILE**	
12:30	*DIGILE as the New Site-Center Coordinator for NSF Visual and Decision Informatics: New Business-oriented Research, New Solutions* Mr. Pauli Kuosmanen, CTO, DIGILE
12:45	*Big Data: American Perspectives* Mr. Tony Xiaohua Hu, Professor, Co-Director, NSF Center for Visual and Decision Informatics, University of Drexel
13:15	*Big Data: Finnish Perspectives* Mr. Matti Vakkuri, Program Director, Big Data, Tieto & Focus Area Director, DIGILE's Data-to-Intelligence Programme
13:30	*Cyber Security: Overview of Drexel University Cybersecurity Research Initiatives* Mr. Steven Weber, Director, Cybersecurity Institute, Associate Professor, Department of Electrical and Computer Engineering, Drexel University
13:45	*Cyber Security: Overview of the Cyber Trust Programme* Mr. Markku Korkiakoski, Program Manager, Elektrobit & Focus Area Director, DIGILE's Cyber Trust Programme
14:00 – 14:30	**Coffee/Tea**
14:30	*Roundtable on Finland-US R&D&I Cooperation: Together Faster Forward* Moderator: Mr. Pauli Kuosmanen, CTO, DIGILE Panelists: Mr. Keith Marzullo, Director, Division of Computer and Network Systems, National Science Foundation Mr. Raju Gottumukkala, Research Director, Interim Site Director, NSF Center for Visual and Decision Informatics, University of Louisiana at Lafayette Mr. Steven Weber, Director, Cybersecurity Institute, Drexel University Mr. Eero Silvennoinen, Director, Strategic Support for Innovation Funding, Tekes Mr. Kimmo Pentikäinen, Vice President, Development, Elisa Mr. Petri Myllymäki, Professor, University of Helsinki & Academic Coordinator, DIGILE's Data-to-Intelligence Programme
15:45	**Closing of the Forum**

Figure 14: September 30, 2014 – Agenda for the Forum on Finland–U.S. Research and Development and Innovation Cooperation (Helsinki, Finland).

Navigating Cybersecurity: Best Business Practices for the Defense Industrial Base

Delaware Valley Chapter
NDIA
National Defense Industrial Association

Tuesday, September 9, 2014

8:00 a.m.-11:30 a.m.

(registration 7:30 a.m.)

at

DREXEL UNIVERSITY

Philadelphia, PA

Drexel UNIVERSITY

Presented by the National Defense Industrial Association, Delaware Valley Chapter in collaboration with Drexel University

Government, business, legal, and technical experts will discuss the cybersecurity threat and address best practices to identify vulnerabilities and adopt a secure cyber infrastructure for the defense industry in an interactive, panel format.

Confirmed speakers to date include:

- **KEYNOTE:**
  - Suzanne E. Spaulding, Under Secretary for the National Protection and Programs Directorate, Department of Homeland Security

- **PANELISTS (list in formation):**
  - Nate Lesser, Deputy Director, Cybersecurity Center of Excellence, National Institute of Standards & Technology
  - Ed Lowery, Special Agent In Charge, United States Secret Service, Criminal Investigative Division
  - Jack Tomarchino, Buchanan Ingersoll & Rooney PC, former Deputy Under Secretary for Intelligence and Analysis Operations, Department of Homeland Security
  - Vinny T. Sakore, Cloud Security Lead, Verizon & ICSA Labs
  - Good Harbor Security Risk Management, LLC
  - Dr. Steven Weber, Director, AJ Drexel Cyber Security Institute, Associate Professor, Electrical and Computer Engineering, Drexel University
  - Steven L. Caponi, Blank Rome, LLP

Supporting Organizations:
National Contract Management Association, Greater Philadelphia Chapter
Association of the United States Army, William Penn Chapter

Continuing Legal Education Credit, CEU & CLP Certificates Available
Option Tour of Drexel's new CyberSecurity and Innovation Centers following the program

REGISTER:

http://www.lebow.drexel.edu/event/2014/09/09/best-business-practices-navigating-cybersecurity

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Figure 15: September 9, 2014 – Flier for the annual meeting of the Delaware Valley Chapter of the National Defense Industrial Association (NDIA).

DREXEL UNIVERSITY
College of
Computing & Informatics

The Drexel University Cybersecurity Institute invites you to the August cybersecurity brown-bag seminar featuring an expert panel on electronic privacy.

Date: Wednesday, August 6, 2014
Time: 12:00 - 1:30 PM (bring your own lunch)
Location: 3401 Market Street, Suite 300, Auerbach and Berger Families Cybersecurity Laboratory

Moderator:
Rachel Greenstadt, PhD, Associate Professor of Computer Science at the College of Computing & Informatics will serve as moderator. Dr. Greenstadt researches the privacy and security properties of intelligent systems and the economics of electronic privacy and information security. Her work is at "layer 8" of the network-analyzing the content. She is a member of the DARPA Computer Science Study Group and she runs the Privacy, Security, and Automation Laboratory (PSAL) which is a vibrant group of ten researchers who explore topics at the intersection between artificial intelligence, privacy and security, and human-computer interaction. The privacy research community has recognized her scholarship with the PET Award for Outstanding Research in Privacy Enhancing Technologies, the NSF CAREER Award, and the Andreas Pfitzmann Best Student Paper Award.

Panelists include:

- Roger Dingledine, Project Leader and Director of The Tor Project
- Nadia Heninger, Magerman Term Assistant Professor, Computer and Information Science, University of Pennsylvania

Click here to RSVP: http://bit.ly/1zwNpVV

This event will be recorded and made available online via CCI's YouTube channel for viewing after the event.

Figure 16: August 6, 2014 – Flier for a Drexel Cybersecurity Institute Symposium.

Figure 17: August 6, 2014 – Rachel Greenstadt (Associate Professor, Drexel College of Computing and Informatics), Roger Dingledine (President, Director and co-founder of the Tor Project), and Nadia Heninger (Magerman Term Assistant Professor, University of Pennsylvania Department of Computer and Information Science) at the Electronic Privacy symposium.

DREXEL UNIVERSITY
Cybersecurity Institute

Professional Development Symposium On Cyber Insurance

Cyber insurance is no longer debatable for small to medium-size business owners and CFOs. The steady increase in data breaches and cybercrime, extortion attempts, and emerging threats make cyber insurance important. Standard general liability policies are not intended to cover these types of losses. Your company's financial health and reputation could be on the line—and you can't transfer responsibility.

Join us for an informative symposium moderated by risk management expert Austin Morris, Jr. that will address questions such as:

- What is new in the cyber liability marketplace
- Facts you should know
- How to protect your company's financial health and reputation
- How to save money with favorable underwriting

The event features panelists **Holly L. Meyers**, RN, FACHE, Senior Vice President, Quality and Risk Management for Sylvania Franciscan Health and Beazley Group cyber insurance underwriter and expert, **Nick Economidis**.

Date: Wednesday, June 25, 2014
Time: 12:00 - 1:30 p.m.
Location: 3401 Market Street, Suite 300, Philadelphia, PA

Note: *This is a brown bag event—attendees are encouraged to bring their own lunch.*

RSVP online at http://bit.ly/1jVj6Od

About the Moderator:
Austin Morris, Jr. is the founder of Morris Risk Management LLC. MRM provides sophisticated products from leading insurers and advanced risk management solutions to businesses and nonprofits dependent on information and technology and/or producing information and technology. Security and privacy (cyber liability) insurance and technology errors & omissions insurance are our specialties. Morris Risk Management combines diverse professional experience in software, the Internet, media, technology, e-commerce, mobile, cybersecurity, and insurance. For more information, please visit www.morrisrisk.com.

Figure 18: Jun 25, 2014 – Flier for a Drexel Cybersecurity Institute Symposium.

Philadelphia-Israel Chamber of Commerce
P A N J D E

Israeli Technology:
Meeting Today's Cyber & Homeland Security Challenges

June 24, 2014, 8:00-10:00 am
Fox Rothschild LLP, 2000 Market St, Philadelphia, PA 19103

Hosted by the Consulate General of Israel to the Mid-Atlantic Region and the Philadelphia-Israel Chamber of Commerce

The US federal and local authorities as well as business stake holders are challenged to craft encompassing security solutions to protect our nation's critical infrastructure, buildings, assets, information and people. Please join us to discuss the challenges and some of Israel's advanced technologies which to help us reach a more secure reality.

Guest Speakers:

- **Keynote Speaker: Dr. Starnes Walker**, Founding Director, University of Delaware Cybersecurity Initiative (UDCSI)
- **Dr. Scott J. White,** Associate Professor, National Security & Computing & Security Technology & Director, External Academic Programs at The College of Computing & Informatics, Drexel University

Israeli Companies - Discussion Panel:

- Galina Datskovsky, Vice President for Business Development, **Covertix**
- Kim Loy, Chief Product Officer and Vice President Global Marketing, **DVTEL**
- Amit Meir, US General Security Manager, **ICTS US**

We thank our event sponsors: **Fox Rothschild LLP**

Early bird registration by June 17, 2014. Click for Registration here.

Dr. Starnes Walker, Founding Director, University of Delaware Cybersecurity Initiative (UDCSI)

Scott J. White, Ph.D., Associate Professor, National Security & Computing & Security Technology & Director, External Academic Programs at The College of Computing & Informatics,

Drexel University

Figure 19: June 24, 2014 – Flier for a cybersecurity event sponsored by the Philadelphia–Israel Chamber of Commerce, featuring remarks by Scott White of the Drexel College of Computing and Informatics.

Figure 20: May 29, 2014 – Drexel President John Fry, donors Carol Auerbach and Albert Berger, and College of Computing and Informatics Dean David Fenske at the ribbon cutting for the Auerbach and Berger Families Cybersecurity Laboratory.

point.io

Drexel UNIVERSITY

liquidhub

Locking Down Your Company's Data: What Keeps You Awake as CIO?

Point.io, Drexel University's Cybersecurity Institute and LiquidHub are hosting a 90 minute CIO Panel Discussion on May 8th

We are looking forward to a great discussion with leaders in the field. Please RSVP by April 30th to:

Norman Balchunas
DU Cybersecurity Institute
571-269-2656
njb67@drexel.edu

David Moore
Point.io
610-306-9800
dmoore@point.io

Moderated by Mark Greisiger, President of NetDiligence, you'll hear a panel of CIOs from leading healthcare, banking and mobile communications companies discuss:

- As CIO, how much Cyber Literacy is enough?
- Identifying high-value information targets in your corporation
- Formulation of cyber threat detection and response plans
- Balancing the human factor with technology

Drexel University's Cybersecurity Institute
3401 Market Street #300, Philadelphia, PA
May 8th, 12:00 noon – 1:30pm

Mark Greisiger, President of NetDiligence

NetDiligence®

Panelists include Vinny Sakor, who leads the Cloud Security program for ICSA Labs and serves on Verizon's HIPAA Security team; Brian Schaeffer, a senior-level information security and risk management practictioner for financial services; and Jorge Nieves, Senior Director of the Comcast Security Response Center.

Seating is Limited
Lunch will be provided

Figure 21: May 8, 2014 – Flier for a Drexel Cybersecurity Institute Symposium; co-organized with Point.io and LiquidHub.

Figure 22: May 8, 2014 – Mark Greisiger, President, NetDiligence, at the Symposium.

Figure 23: March 24, 2014 – Panelists Spiros Mancoridis (Professor, Drexel College of Computing and Informatics), Angel Rivera (Senior Developer, Point.io), and Frank Domizio (Computer Forensic Examiner at Federal Bureau of Investigation's Philadelphia Regional Computer Forensics Lab) speak at a Drexel Cybersecurity Institute Symposium.

Drexel UNIVERSITY

Please join us for the launch of the
Drexel University Cybersecurity and Policy Institute

Wednesday, January 22, 2014
2:00 p.m.

With special guest speakers:
Representative Patrick Meehan (R-Pa.),
Chairman, Subcommittee on Cybersecurity, Infrastructure Protection,
and Security Technologies, Committee on Homeland Security,
U.S. House of Representatives
&
Representative Chaka Fattah (D-Pa.),
Senior member of the House Appropriations Committee, Ranking
member of Subcommittee on Commerce, Justice and Science,
and Chair of the Congressional Urban Caucus
&
Drexel University President John Fry

Location:
Drexel University's ExCITe Center
3401 Market Street
(Corner of Market and 34th Streets)
Philadelphia, PA 19104

Event Schedule:
1:00 p.m. Registration Opens
2:00 p.m. Remarks and Presentation
3:00 p.m. Reception and Facility Tours

RSVP online at http://cci.drexel.edu/events/RSVP.aspx?id=432515

Hosted by the College of Computing & Informatics on behalf of
the participating colleges of Drexel University

Figure 24: February 24, 2014 – Announcement of the launch of the Drexel University Cybersecurity and Policy Institute (January 22 date was postponed due to weather).

Figure 25: February 24, 2014 – Congressman Patrick Meehan, Member of the U.S. House of Representatives, Chairman of the House Subcommittee on Cybersecurity, Infrastructure Protection, and Security Technologies, speaks at the institute launch.

DREXEL UNIVERSITY

Cybersecurity Institute