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## PATRICK DREW MCDANIEL

Professor ◊ Computer Science and Engineering ◊ Pennsylvania State University

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### ACADEMIC AND RESEARCH APPOINTMENTS

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<b>Distinguished Professor</b> Computer Science and Engineering, Pennsylvania State University, University Park, PA	2016-present
<b>Director, Institute for Networking and Security Research</b> College of Engineering, Pennsylvania State University, University Park, Pennsylvania	2016-present
<b>Professor</b> Computer Science and Engineering, Pennsylvania State University, University Park, PA	2011-2015
<b>Associate Professor</b> Computer Science and Engineering, Pennsylvania State University, University Park, PA	2007-2011
<b>Hartz Family Career Development Assistant Professor</b> Computer Science and Engineering, Pennsylvania State University, University Park, PA	2004-2007
<b>Co-Director, Systems and Internet Infrastructure Security Laboratory</b> Computer Science and Engineering, Pennsylvania State University, University Park, PA	2005-2016
<b>Adjunct Professor</b> Stern School of Business, New York University, New York, NY	2003-2009
<b>Senior Research Staff Member</b> AT&T Labs - Research, Florham Park, NJ	2001-2004
<b>Research Assistant</b> University of Michigan, Ann Arbor, MI	1996-2001
<b>Research Intern</b> AT&T Labs - Research, Florham Park, NJ	1999

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### EDUCATION

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<b>University of Michigan</b> , Ann Arbor, MI • <b>Ph.D.</b> , Computer Science and Engineering • Dissertation: <i>Policy Management in Secure Group Communication</i> • Advisor: Dr. Atul Prakash	2001
<b>Ball State University</b> , Muncie, IN • <b>M.S.</b> , Computer Science • Thesis: The Analysis of $D_i$ , a Detailed Design Metric on Large Scale Software	1991
<b>Ohio University</b> , Athens, OH • <b>B.S.</b> , Computer Science	1989

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### STUDENTS

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#### Past Post-Docs

- *Vaibhav Rastogi*, graduated Northwestern University, joined
- *Robert Walls*, graduated University of Massachusetts, Amherst, joined

#### Past PhD Students

- *Wenhui Hu*, Fall 2016
- *Devin Pohly*, Spring 2016, now **Assistant Professor**, Wheaton College

- *Damien Oceau*, Summer 2014, now **Software Engineer in Security**, Google
- *Steve McLaughlin*, Spring 2014, now **Senior Software Engineer**, Samsung Research America
- *Thomas Moyer*, Summer 2011, now **Technical Staff**, Massachusetts Institute of Technology-Lincoln Labs
- *William Enck*, Spring 2011, now **Assistant Professor**, North Carolina State University
- *Kevin Butler*, Summer 2010, now **Associate Professor**, University of Florida
- *Machigar Ongtang*, Summer 2010, now **Assistant Professor**, Dhurakij Pundit University
- *Patrick Traynor*, Spring 2008, now **Associate Professor**, University of Florida, co-advisor
- *Fr. Boniface Hicks*, Fall 2007, now **Assistant Professor**, St. Vincent College

**Current PhD Students** : *Z. Berkay Celik*, Pennsylvania State University, Spring 2019 ◊ *Nicolas Papernot*, Pennsylvania State University, Spring 2019

**Past Masters Students** : *Nathan Lagerman*, Pennsylvania State University, Spring 2016 ◊ *Matthew Dering*, Pennsylvania State University, Spring 2014 ◊ *Phil Koshy*, M.S. Pennsylvania State University, Fall 2013 ◊ *Diana Koshy*, M.S. Pennsylvania State University, Fall 2013 ◊ *Steve McLaughlin*, M.S. Pennsylvania State University, Spring 2011 ◊ *Sergei Miadzezhanka*, M.S. Pennsylvania State University, Spring 2011 ◊ *Adam Delozier*, M.S. Pennsylvania State University, Spring 2011 ◊ *Juliet Uhlott*, M.Eng. Pennsylvania State University, Fall 2010 ◊ *Damien Oceau*, M.S. Pennsylvania State University, Spring 2010 ◊ *Thomas Moyer*, M.S. Pennsylvania State University, Spring 2009 ◊ *Luke St. Clair*, M.S. Pennsylvania State University, Summer 2008 ◊ *Lisa Johansen*, M.S. Pennsylvania State University, Spring 2008 ◊ *Sunam Ryu*, M.S. Pennsylvania State University, Spring 2007 ◊ *Dhananjay Bapat*, M.S. Pennsylvania State University (Electrical Engineering), Fall 2006 ◊ *Jennifer Plasterr*, M.Eng. Pennsylvania State University, Summer 2006 ◊ *Adam Kerr*, M.Eng. Pennsylvania State University, Fall 2006 ◊ *William Enck*, M.S. Pennsylvania State University, Spring 2006 ◊ *Wesam Lootah*, M.S. Pennsylvania State University, Spring 2006 ◊ *Jon Hansford*, M.Eng. Pennsylvania State University, Fall 2005 ◊ *John van Bremer*, M.Eng. Pennsylvania State University, Spring 2005

**Past Undergraduate Honors Students** : *Tim Misiak*, Schreyer Honors College, Pennsylvania State University, Spring 2007 ◊ *Kiyan Ahmadizadeh*, Schreyer Honors College, Pennsylvania State University, Spring 2006

## TEACHING

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- **CMPSC311 - Introduction to Systems Programming**  
Fall 2013, Fall 2014, Fall 2015, Fall 2016
- **CMPSC443 - Introduction to Computer and Network Security**  
Spring 2006, Spring 2009
- **CSE543 - Computer and Network Security**  
Fall 2004, Fall 2005, Fall 2008, Fall 2009, Fall 2011, Fall 2014
- **CSE544 - Advanced System Security**  
Spring 2005, Spring 2007
- **CSE545 - Advanced Network Security**  
Spring 2006, Spring 2008, Spring 2011
- **CSE597g - Principles, Analysis, and Applications of Computer Security**  
Fall 2015
- **Security and Privacy of Machine Learning**  
Fall 2016
- **Advanced Topics in the Security and Privacy of Machine Learning**  
Spring 2017
- **CSE598 - Cell Phone Operating Systems**  
Spring 2009

- **CSE598i - Web 2.0 Security**  
Spring 2010
- **CSE598d - Topics in Applied Systems Security**  
Fall 2010
- **CSE598e - Critical Infrastructure Security**  
Fall 2011

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## INDUSTRIAL EXPERIENCE

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<b>Software Developer</b> Applied Innovation, Inc., Columbus, OH	1994-1995
<b>Project Manager</b> Primary Access Corporation, San Diego, CA	1993-1994
<b>Software Developer</b> Primary Access Corporation, San Diego, CA	1991-1993
<b>Software Developer</b> Integrated Technologies, Inc., Muncie, IN	1989

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## AFFILIATIONS

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Association for Computing Machinery (ACM), *Fellow*  
 The Institute of Electrical and Electronics Engineers (IEEE), *Fellow*  
 USENIX Advanced Computing Systems Association (USENIX)  
 American Association for the Advancement of Science (AAAS)

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## HONORS, AWARDS, AND KEYNOTE ADDRESSES

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**Best Student Paper, 2017 ACM Symposium on SDN Research (SOSR)**, with Stefan Achleitner, Thomas La Porta and Trent Jaeger, April 2017

**IEEE Technical Committee on Security and Privacy Outstanding Community Service Award**, in recognition for leadership of the Technical Committee on Security and Privacy, May 2016

**ACM Fellow**, for contributions to computer and mobile systems security, December 2015

**Science of Security Index of Significant Research in Cyber Security**, acknowledging paper 'Toward a Science of Secure Environments', Science of Security Virtual Organization (SOS-VO), August 2015

**IEEE Fellow**, for contributions to the security of mobile communications, November 2014

**Best Artifact Award, 20th International Symposium on the Foundations of Software Engineering (FSE)**, with advisee Damien Ochteau and collaborator Somesh Jha, November 2012

**Best Paper, 25th Annual Computer Security Applications Conference**, with advisees Machigar Ongtang, Stephen McLaughlin, and William Enck, December 2009

**Faculty Marshal, College of Engineering**, selected by student marshals for contributions to undergraduate education, leads procession into graduation ceremony, May 2009

**Penn State Engineering Society Outstanding Research Award**, highly selective award by the Penn State Engineering Society given to faculty in the College of Engineering who have made significant contributions to knowledge in their field, March 2009

**Google Security and Product Safety Acknowledgement**, in recognition of efforts in improving the security of Google Android cellular phone operating system, 2008

**Commendation for Exceptional Leadership and Achievement**, in recognition of efforts as PI of the EVEREST study, from Ohio Secretary of State Jennifer Brunner, August 2008

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**IEEE Technical Committee on Security and Privacy Outstanding Community Service Award**, *in recognition for technical program management of the IEEE Security and Privacy symposia, August 2008*

**National Science Foundation CAREER Award**, *Faculty early career development grant, August 2007*

**Penn State Computer Science and Engineering Outstanding Teaching Award**, *Given to best teacher in the department as selected by students, March 2007*

**ACM Certificate of Meritorious Service**, *Certificate acknowledging exemplary service as associate editor of ACM Transactions on Internet Technologies, April 2007*

**Best Student Paper, 22nd Annual Computer Security Applications Conference**, *as advisor, with Boniface Hicks and Kiyun Ahmadizadeh, December 2006*

**Best Paper, Innovations and Commercial Applications of Distributed Sensor Networks Symposia**, *Awarded for best paper in conference, October 2005.*

**Hartz Family Career Development Professor**, *Endowed Professorship, Pennsylvania State University, Fall 2004-2007*

**Bang for the Buck Award, DARPA Dynamic Coalitions Program**, *Award for most feature-rich/useful software system, April 2002*

**National Aeronautics and Space Administration, Kennedy Space Center Fellowship**, *Research Fellowship, September 1997 - August 2000*

**Electrical Engineering and Computer Science Summer Fellowship Award**, *University of Michigan, June 1997*

**Dean's Citation for Perfect Academic Record**, *Ball State University, June 1991*

#### **Keynote Addresses**

1. Tracing the Arc of Smartphone Application Security. 2017 ACM on International Workshop on Security And Privacy Analytics. Scottsdale, AZ, March, 2017.
2. Tracing the Arc of Smartphone Application Security. 12th International Conference on Information Systems Security, Jaipur, India, December, 2016.
3. The 25th International Conference on Computer Communication and Networks (ICCCN 2016), August, 2016, Waikoloa, Hawaii.
4. Learning from Ourselves: Where are we and where can we go in mobile systems security?. Mobile Security Technologies (MOST) 2016 Workshop, IEEE Computer Society Security and Privacy Workshops, San Jose, CA, May, 2016.
5. Eight Years of Mobile Smartphone Security. Center for Secure and Dependable Systems (CSDS) Cybersecurity Symposium, Coeur d'Alene, April, 2016.
6. The Importance of Measurement and Decision Making to a Science of Security, 2015 IEEE Conference on Communications and Network Security (CNS), September 2015, Florence, Italy.
7. The Importance of Measurement and Decision Making to a Science of Security. 3rd International Symposium on Resilient Cyber Systems, Philadelphia, PA, August, 2015.
8. The Importance of Measurement and Decision Making to a Science of Security, 2015 Symposium And Bootcamp on the Science of Security (Hotsos), April 2015, University of Illinois at Urbana-Champaign
9. Security and Science of Agility, ACM Workshop on Moving Target Defense (MTD 2014), November 2014, Scottsdale, AZ
10. A Secondary Internet Revolution: How the Smart Device has Changed the Information Security Landscape, IEEE New Technology Industry Seminar (NTIS '13), Everett WA, August, 2013
11. Permission-based Application Governance; A Step Forward or Backward?, 26th Annual WG 11.3 Conference on Data and Applications Security and Privacy (DBSec'12), Paris, France, July 2012.

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12. Scalable Integrity-Guaranteed AJAX, The 14th Asia-Pacific Web Conference (APWeb), Kunming, China, April 2012.
  13. Security Challenges and Solutions in Mobile Smartphone Applications, IEEE Computer Security Foundations (CSF 2011), Abbaye des Vaux de Cernay, France, June 2012.
  14. Password Exhaustion: Predicting the End of Password Usefulness. 2nd International Conference on Information Systems Security, Kolkata India, December, 2006.
  15. Physical and Digital Convergence: Where the Internet is the Enemy. Eighth International Conference on Information and Communications Security (ICICS '06), Raleigh, NC, December, 2006.

### Distinguished Lectures

1. Tracing the Arc of Smartphone Application Security, University of Texas-Dallas Department of Computer Science, Dallas, TX, May 2017.
2. Tracing the Arc of Smartphone Application Security. Rochester Institute of Technology, College of Computing and Information Sciences, Rochester, NY, May 2017.
3. Tracing the Arc of Smartphone Application Security. University of California-Irvine, Computer Science Department, Irvine CA, March, 2017.
4. Tracing the Arc of Smartphone Application Security. The Ohio State University, Department of Computer Science and Engineering, Columbus, OH, March, 2017.
5. Tracing the Arc of Smartphone Application Security. Virginia Technical University, Department of Computer Science, Blacksburg, VA, March, 2017.
6. Six Years of Mobile Smartphone Security, CISPA Distinguished Lecture Series, Max Planck Institute/Saarland University, Saarbrücken Germany, July, 2015.
7. Six Years of Mobile Smartphone Security. Technische Universität Darmstadt, Darmstadt Germany, July, 2015.
8. Security Challenges and Solutions in Mobile Smartphone Applications. Computer and Information Science Department, University of Oregon, Eugene, OR, April, 2011.
9. Security Challenges and Solutions in Mobile Smartphone Applications. Department of Software Information Systems College of Computing and Informatics, UNC Charlotte, Charlotte, NC, December, 2010.

### PATENTS

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**U.S. Patent 8,732,293**, System and method for tracking individuals on a data network using communities of interest, Patrick McDaniel, Subhabrata Sen, Oliver Spatschek, Jacobus E. Van de Merwe, May 20, 2014.

**U.S. Patent 8,453,227**, Reverse firewall with self-provisioning, William A. Aiello, Charles Robert Kalmanek, Jr., William J. Leighton, III, Patrick McDaniel, Subhabrata Sen, Oliver Spatschek, Jacobus E. Van der Merwe, May 28, 2013.

**U.S. Patent 7,975,044**, Automated disambiguation of fixed-serverport-based applications from ephemeral applications, Oliver Spatschek, Subhabrata Sen, Jacobus E. Van der Merwe, Patrick McDaniel, May 28, 2013.

### RESEARCH SUPPORT

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**PI**, *2017 SaTC PI Meeting*, NSF (CNS), \$99,999 (PSU award \$50,230), 8/15/2016-3/31/2017, Collaborators: Antonakakis (GaTech), Mason (UIUC).

**PI**, *TWC: Medium: Collaborative: Scaling and Prioritizing Market-Sized Application Analysis*, NSF (CNS), \$1,147,213 (PSU award \$547,213), 7/01/2016-6/30/2020, Collaborators: Jha (Wisconsin).

**PI**, *Student Travel Support for Symposium on Security and Privacy 2014*, Army Research Office, \$10,000, 5/1/14-5/1/15.

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