

Privacy & Security in the Internet of Things
Fall 2016
Camp, Henry, Myers with Kohno and Patel

Date	Topic	Student Deliverables	Readings: Read BEFORE class on the day they are listed	Instructor
22-Aug	Introduction, Course Overview, Course Policy	+10 points if you have the syllabus printed first day of class draft individual statement of goals	Syllabus, will be provided What is a statement of goals?	Camp Henry
25-Aug	Overview of possible projects	meet in class, form groups based on previous statement	Request for comments identifying the open questions for the Internet of things. https://www.ntia.doc.gov/files/ntia/publications/fr_rfc_iot_04062016.pdf IU Comments, Russo et al. On Canvas	Henry
30-Aug	Privacy in IoT	In-class quiz	Cornwall, J., Fette, I., Hsieh, G., Prabaker, M., Rao, J., Tang, K., & McLaren, B. (2007). User-controllable security and privacy for pervasive computing. HotMobile 2007. Shankar, K., Camp, L. J., Connelly, K., Huber, L. (2012). "Aging, Privacy, and Home-Based Computing: Development of a Framework for Design". IEEE Pervasive Computing, 11 (4), 46-54.	Camp

1-Sep			Nate Husted and Steven Myers, Emergent Properties & Security: The Complexity of Security as a Science, (Accepted & To Appear) Proceedings of the New Paradigms of Security Workshop, Victoria, BC, Canada, Sept, 2014.	Myers
6-Sep	Allan Friedman		Director of NTIA Working Group on IoT	
8-Sep		Extended abstract	Shin, Youngsang, Minaxi Gupta, and Steven Myers. "A Study of the Performance of SSL on PDAs." <i>INFOCOM Workshops 2009, IEEE</i> . IEEE, 2009.	Myers
13-Sep	Information leakage		Tadayoshi Kohno, Andre Broido, and K.C. Claffy. Remote physical device fingerprinting. <i>IEEE Transactions on Dependable and Secure Computing</i> , 2(2):93–108, April 2005. Nathaniel Husted and Steven Myers, Mobile Location Tracking in Metro Areas: Malnets and Others, Proceedings of the ACM Conference on Communications and Computer Security (CCS) 2010, pp. 85-96, 2010	Camp
15-Sep	Information leakage in a network		Tim Kelley, Jean Camp, "Modeling Marketplace Mitigation of Mobile Malware", under review Nate Husted and Steve Myers, Why Mobile-to-Mobile Wireless Malware Won't Cause a Storm, Nathaniel Husted and Steven Myers, Proceedings of the 4th USENIX Workshop on Large-Scale Exploits and Emergent Threats 2011	Camp
20-Sep	User driven design		L. Jean Camp & Kay Connelly, "Beyond Consent: Systematic Design for Privacy in Ubicomp", <i>Digital Privacy: Theory, Technologies and Practices</i> eds. Alessandro Acquisti, Sabrina De Capitani di Vimercati, Stefanos Gritzalis and Costas Lambrinoudakis, Taylor & Frances. (New York, NY) 2007. Tamara Denning, Batya Friedman, Brian Gill, Daniel B. Kramer, Matthew R.	Camp

			Reynolds, and Tadayoshi Kohno. CPS: Beyond usability: Applying VSD-based methodologies to investigate domain characteristics for security for implantable cardiac devices ACSAC, 2014	
22-Sep			<p>Lesa Huber, L. Jean Camp, "User-Driven Design in Smart Homes: Ethical Aspects". Handbook of Smart Homes, Health Care and Well-Being. 2014, pp 1-10</p> <p>Tamara Denning, Alan Borning, Batya Friedman, Brian T. Gill, Tadayoshi Kohno, and William H. Maisel. Patients, pacemakers, and implantable defibrillators: Human values and security for wireless implantable medical devices. In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2010), April 2010.</p>	Camp
27-Sep	Privacy Interactions		<p>Lin, Jialiu, et al. "Modeling users' mobile app privacy preferences: Restoring usability in a sea of permission settings." Symposium On Usable Privacy and Security (SOUPS 2014). 2014.</p> <p>Caine, K. E., Zimmerman, C. Y., Schall-Zimmerman, Z., Hazlewood, W. R., Camp, L. J., Connelly, K. H., Huber, L. L., & Shankar, K, "DigiSwitch: A device to allow older adults to monitor and direct the collection and transmission of health information collected at home", Journal of Medical Systems Vol. 35: 5, 1181-1195, 2011</p>	Camp
29-Sep			<p>Felt, A.P., Ha, E., Egelman, S., Haney, A., Chin, E. and Wagner, D., 2012, July. Android permissions: User attention, comprehension, and behavior. In Proceedings of the Eighth Symposium on Usable Privacy and Security (p. 3). ACM.</p> <p>Wijesekera, Primal, Arjun Baokar, Ashkan Hosseini, Serge Egelman, David Wagner, and Konstantin Beznosov. "Android permissions remystified: A field study on contextual integrity." In 24th USENIX Security Symposium (USENIX Security 15), pp. 499-514. 2015.</p>	Camp

4-Oct	Privacy Perceptions and Behaviors	Revised Abstract & Outline	D Machuletz, H Send, Laubeř and R Böhmeř , 2016, "Users Protect Their Privacy If They Can: Determinants of Webcam Covering Behavior", EuroUSEC '16, July 2016, Garg, Vaibhav, Kevin Benton, and L. Jean Camp. "The privacy paradox: a Facebook case study." 2014 TPRC Conference Paper. 2014.	Camp
6-Oct	Group 1	All: peer review. Group:	Readings provided by student groups, Student related work presentations group 1. Group must select & present motivating works, and lead discussion.	Camp Henry Myers*
11-Oct	Group 2	Same as above	Readings provided by student groups, Student related work presentations group 2. Group must select & present motivating works, and lead discussion.	Camp Henry Myers*
13-Oct	Group 3	Same as above	Readings provided by student groups, Student related work presentations group 3. Group must select & present motivating works, and lead discussion.	Camp Henry Myers*
18-Oct	Group 4	Same as above	Readings provided by student groups, Student related work presentations group 4. Group must select & present motivating works, and lead discussion.	Camp Henry Myers*
20-Oct	Group 5	Same as above	Readings provided by student groups, Student related work presentations group 5. Group must select & present motivating works, and lead discussion.	Camp Henry Myers*
25-Oct	Group 6	Same as above	Readings provided by student groups, Student related work presentations group 6. Group must select & present motivating works, and lead discussion.	Camp Henry Myers*
27-Oct		Initial Research Results	Presentations if needed (> 6 groups) ---or --- William Melicher, Blase Ur, Sean M. Segreti, Saranga Komanduri, Lujo Bauer, Nicolas Christin, Lorrie Faith Cranor Carnegie Mellon University, "Fast, Lean,	Camp

			and Accurate: Modeling Password Guessability Using Neural Networks”, Usenix 2016 L Jean Camp, Jacob Abbott, and Siyu Chen, “CPasswords: Leveraging Episodic Memory and Human-Centered Design for Better Authentication” <i>Hawaii International Conference on System Sciences</i> , (Kauai, HI) 5-9 Jan 2016.	
1- Nov	Using data analytics in design, electrical home usage case study		Gupta, S., Reynolds, M.S., Patel, S.N. ElectriSense: Single-Point Sensing Using EMI for Electrical Event Detection and Classification in the Home. In the Proceedings of the ACM International Conference on Ubiquitous Computing. pp. 139-148. 2010 Patel, S.N., Robertson, T., Kientz, J.A., Reynolds, M.S., Abowd, G.D. At the Flick of a Switch: Detecting and Classifying Unique Electrical Events on the Residential Power Line. In the Proceedings of the International Conference on Ubiquitous Computing (UbiComp 2007).	Patel
3- Nov	System deployment and design		Patel, S.N, Gupta, S., Reynolds, M. The Design and Evaluation of an End-User-Deployable, Whole House, Contactless Power Consumption Sensor. ACM Conference on Human Factors in Computing Systems (CHI 2010). pp. 2471-2480. 2010.	Patel
8- Nov	Privacy as social behavior		Dong, Z., Garg, V., Camp, L. J., & Kapadia, A. (2012, September). Pools, clubs and security: designing for a party not a person. In Proceedings of the 2012 workshop on New security paradigms (pp. 77-86). ACM.	
10- Nov	Privacy in cameras		Hoyle, Roberto, Robert Templeman, Denise Anthony, David Crandall, and Apu Kapadia. "Sensitive lifelogs: A privacy analysis of photos from wearable cameras." In Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems, pp. 1645-1648. ACM, 2015.	

15- Nov	Automotive IoT case study	Research progress documentation	<p>Karl Koscher, Alexei Czeskis, Franziska Roesner, Shwetak Patel, Tadayoshi Kohno, Stephen Checkoway, Damon McCoy, Brian Kantor, Danny Anderson, Hovav Shacham, and Stefan Savage. Experimental security analysis of a modern automobile. In IEEE Symposium on Security and Privacy. IEEE Computer Society, May 2010.</p> <p>Stephen Checkoway, Damon McCoy, Brian Kantor, Danny Anderson, Hovav Shacham, Stefan Savage, Karl Koscher, Alexei Czeskis, Franziska Roesner, and Tadayoshi Kohno. Comprehensive experimental analyses of automotive attack surfaces. In 20th USENIX Security Symposium, August 2011.</p>	Kohno
17- Nov	Medical IoT case study		<p>William H. Maisel and Tadayoshi Kohno. Improving the security and privacy of implantable medical devices. New England Journal of Medicine, 362(13):1164–1166, April 2010.</p> <p>Daniel Halperin, Thomas S. Heydt-Benjamin, Benjamin Ransford, Shane S. Clark, Benessa Defend, Will Morgan, Kevin Fu, Tadayoshi Kohno, and William H. Maisel. Pacemakers and implantable cardiac defibrillators: Software radio attacks and zero-power defenses. In IEEE Symposium on Security and Privacy. IEEE Computer Society, May 2008.</p>	Kohno
22- Nov	Smart Locks case study	Initial report	<p>Ho, Grant, Derek Leung, Pratyush Mishra, Ashkan Hosseini, Dawn Song, and David Wagner. "Smart locks: Lessons for securing commodity internet of things devices." In Proceedings of the 11th ACM on Asia Conference on Computer and Communications Security, pp. 461-472. ACM, 2016.</p>	
24- Nov	Privacy Monitoring		<p>Shuba, Anastasia, Anh Le, Minas Gjoka, Janus Varmarken, Simon Langhoff, and Athina Markopoulou. "Demo: AntMonitor: A System for Mobile Traffic Monitoring and Real-Time Prevention of Privacy Leaks." In Proceedings of the 21st Annual International Conference on Mobile Computing and Networking, pp. 170-172. ACM, 2015.</p>	
29- Nov			<p>Determined by student interest.</p>	

1- Dec			Determined by student interest.	
6- Dec			Determined by student interest and student presentation time requirements.	
8- Dec			Determined by student interest and student presentation time requirements.	
13-15 Dec	Final exam period, Groups present	Final Report		