Marcin Krzysztof Szczodrak
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Education

- **Ph.D.**, Computer Science, **Columbia University in the City of New York** Feb. 2015
  Thesis: *Multitasking on Wireless Sensor Networks*
- **M.S.**, Computer Science, **The City College of New York** (CUNY) 2010
  Completed at **CUNY Graduate Center** as part of the Ph.D. Program in Computer Science 2007 - 2009
- **B.S.**, Computer Information Systems, **John Jay College of Criminal Justice** (CUNY) 2004 - 2007
  Summa Cum Laude, GPA: 3.932/4.0 and 4.0/4.0 in major, minor in Mathematics

Employment

- **Columbia University** - Graduate Research Assistant Fall 2009 - Spring 2015
  - Research focus on Internet-of-Things, Wireless Sensor Networks and Cyber-Physical Systems with applications in Smart Cities and Intelligent Homes.
  - Dissertation on the design methodology for the first system platform enabling execution of multiple heterogenous applications on a single low-power wireless network installation.
  - Developed Fennec Fox and Swift Fox open source software for embedded system networking and programming. Currently used in academia and industry.
  - Designed translation method from a closed-loop feedback system model into a sensor firmware for high-performance buildings (NSF GOALI).
  - Wrote radio driver, prototyped network protocols and mentored students for the Energy-Harvesting Active Network Tags project. Won the best demo award, SenSys'11.
  - Mentored nine student research projects, each concluded with a technical report.
  - Teaching Assistant for Computer Architecture CSEE4824 in 2010 & 2011
  - Advisor prof. Luca Carloni, *System Level Design Group*
- **Google - Nest Labs** - Software Engineer Intern
  - Designed and implemented a framework for prototyping a virtual network of embedded devices communicating over physical, low-power radios. The framework tests fidelity of the embedded firmware, quality of the production-code radio-drivers and supports development of new protocols and distributed applications. Summer 2014
- **Philips Research North America** - Research Intern, *Lighting and Services*
  - Designed and prototyped a framework for: analytics of 300GB of sensor data, control algorithm optimization and actuation visualization for outdoor LEDs. Summer 2013
  - Developed and published first outdoor low-power wireless sensor testbed for SmartCity LED applications prototyping. OpenWRT Linux, msp430 toolchain, Python, Google API. This led to hiring a full-time employee to continue the work. Summer 2012
  - Prototyped the first platform for design and evaluation of outdoor lighting solutions for SmartCity applications. Web2py and Android-based software. The project got founds to hire a full-time employee who transferred the prototype to business. Summer 2011
  - Submitted seven Invention Disclosures.
- **CUNY Research Foundation** - Graduate Research Assistant, *USUKITA Project 7* 2007 - 2009
  - Developed software simulator and statistical data models used to test and prototype algorithms for computing Quality of Information of Sensor Data.
  - Worked together with the US Army Research Lab and the UK Ministry Of Defense, for the International Technology Alliance in Network and Information Sciences, led by IBM

Skills

- Day-to-Day: Python, nesC, C, Swift Fox, vi, LaTeX, Ubuntu OS
- 10,000+ lines projects: C++, Java (Android), C#, Ruby, Perl, Haskell, Eclipse

Awards & Honors

- Science Fellowship, Graduate Center (CUNY) 2007-2009
- Tuition Fellowship, Graduate Center (CUNY) 2007-2012
- Undergraduate Research Incentive Scholarship, John Jay College 2007
- Young Scholars, John Jay College 2007
- The Ruth S. Lefkowitz Mathematics Award, John Jay College 2007
- Polish and Slavic Federal Credit Union Scholarship 2006-2007
- Polish Student Organization Scholarship 2006-2007
- John Jay College Dean's List 2005-2007
- Achievement in Russian Studies and Culture 2006
- NYC Merit Scholarship 2004-2007

Publications

[1] M. Szczodrak, O. Gnawali, and L. P. Carloni, "Modeling and implementation of energy neutral sensing systems," in *Proc. of ENSSys Work.*, Nov. 2013, pp. 9:1–9:6.

[2] M. Szczodrak, Y. Yang, D. Cavalcanti, and L. P. Carloni, "An open framework to deploy heterogeneous wireless testbed for Cyber-Physical Systems," in *Proc. of IEEE SIES Symp.*, 2013, pp. 215–224.

[3] M. Szczodrak, O. Gnawali, and L. P. Carloni, "Dynamic reconfiguration of wireless sensor networks to support heterogeneous applications," in *Proc. of IEEE DCOSS Conf.*, May 2013, pp. 51–61.

[4] M. Gorlatova, R. Margolies, J. Sarik, G. Stanje, J. Zhu, B. Vigraham, M. Szczodrak, L. P. Carloni, P. Kinget, I. Kymissis, and G. Zussman, "Prototyping energy harvesting active networked tags (enhants)," in *Proc. IEEE INFOCOM'13 mini-conference*, Apr. 2013, pp. 585–589.

[5] M. Szczodrak and L. Carloni, "A complete framework for programming event-driven, self-reconfigurable low power wireless networks," in *Proc. of SenSys Conf.*, Nov. 2011, pp. 415–416.

[6] G. Stanje, P. Miller, J. Zhu, A. Smith, O. Winn, R. Margolies, M. Gorlatova, J. Sarik, M. Szczodrak, B. Vigraham, L. Carloni, P. Kinget, I. Kymissis, and G. Zussman, "Organic solar cell-equipped energy harvesting active networked tag (EnHANT) prototypes," in *Proc. of SenSys Conf.*, Nov. 2011, pp. 385–386, **Best Demo Award**.

[7] J. Zhu, G. Stanje, R. Margolies, M. Gorlatova, J. Sarik, Z. Noorbhaiwala, P. Miller, M. Szczodrak, B. Vigraham, L. Carloni, P. Kinget, I. Kymissis, and G. Zussman, "Demo: prototyping UWB-enabled enhants," in *Proc. of MobiSys Conf.*, 2011, pp. 387–388.

[8] S. Zahedi, M. Szczodrak, P. Ji, D. Mylaraswamy, M. Srivastava, and R. Young, "Tiered architecture for on-line detection, isolation, and repair of faults in wireless sensor networks," in *Proc. of MILCOM Conf.*, Nov. 2008.

[9] M. Szczodrak, S. Zahedi, P. Ji, D. Mylaraswamy, M. Srivastava, and R. Young, "Simulation framework for qoi characterization of sensor networks in the presence of faults," in *The International Technology Alliance Conf.*, Sep. 2008.

[10] J. Ping and M. Szczodrak, "A multivariate model for data cleansing in sensor networks," in *The International Technology Alliance Conf.*, Sep. 2008.

[11] S. Zahedi, M. Szczodrak, P. Ji, D. Mylaraswamy, M. Srivastava, and R. Young, "Two-tier framework for sensor fault characterization in sensor networks," in *The International Technology Alliance Conf.*, Sep. 2008.

[12] M. Szczodrak, J. Kim, and Y. Baek, "Two-level zigbee-4g design for secure and efficient communications in the resources constrained military environment," in *International Journal of Computer Science and Network Security*, vol. 7, Oct. 2007.

[13] M. Szczodrak and J. Kim, "4G and MANET, wireless network of future battlefield," in *Proceedings of the 2007 International Conference on Security & Management*, Jun. 2007.

[14] M. Szczodrak, J. Kim, and Y. Baek, "4GM@4GW: Implementing 4g in the military mobile ad-hoc network environment," vol. 7, no. 4, Apr. 2007.