Cody A. Ray

Present Address
4042 Powelton Avenue #2
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Permanent Address
1726 Reyburn Creek Road
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(501) 337-8485

Education

B.S./M.S. in Electrical Engineering, Drexel University, Philadelphia, PA, June 2011
Undergraduate concentration in Telecommunications and Digital Signal Processing
Graduate concentration in Controls, Robotics, and Intelligent Systems, GPA 3.3

Employment

Research Assistant, The ACIN Center, Camden, NJ 2007 – 2009
- Investigated agent system security issues and countermeasures
- Prototyped transparent multicast communications security service
- Explored group-wise tactical edge networking using mDNS, SMF, XMPP

Research Intern, Agent Technology Center, Prague, Czech Republic Fall 2008
- Developed MANET simulation engine for agent communications research
- Extended AGLOBE agent framework using MANET simulation engine

Leadership Activities

President, Drexel Smart House, Philadelphia, PA 2009 – 2011
Vice President, Drexel Smart House, Philadelphia, PA 2008 – 2009
- Led renovation effort to transform historic home into "living laboratory" for student research and technology development
- Collaborated with faculty, staff, and industry to establish technology incubator
- Established Seed Fund micro-grant for use-inspired student research (up to $2,500)
- Awarded three Federal research grants totaling $160,000
- Raised $200,000 in financial and in-kind support for renovation
- Spun-off two technology companies focused on sustainable, healthy living

Technology Director, Philly Startup Leaders, Philadelphia, PA 2010 – 2011
- Managed information, communication technologies
- Launched technology solutions for special initiatives, trained leaders
- Developed mailing list analytics tool for making data-driven decisions

Co-founder, AIESEC at Drexel University, Philadelphia, PA 2010
- Established branch, global student-driven youth leadership development platform
- Recruited the founding student members of AIESEC at Drexel University
- Integrated the students into AIESEC Pennsylvania and the global network

Academic Honors

Dean's Scholarship
Drexel University STAR Scholar
Engineering SuperNOVA Scholar
Pennoni Honors College
U. Sidney Shuman Scholarship
William Utzy Scholarship

Computer Skills

Languages:	C, C++, Java, PHP, SQL, Python, Ruby
Software:	Apache, LabVIEW, LaTeX, Maple, MATLAB, MS Office, MySQL, Oracle, PostgreSQL,
Libraries:	Ant, CodeIgniter, Cucumber, jUnit, Rails, RSpec
Systems:	Linux (Debian, Red Hat), Mac OS X, Windows
Research:	Arduino, Function Generator, Pencilbox Logic Designer, Roomba, Spartan3 FPGA, TIMS

Recommendations: linkedin.com/in/codyaray Code samples: github.com/codyaray

Service and Outreach

- Member, College of Engineering Dean Search Committee, 2010–Present
- Sustainability Advisor, Freedom's Way Foundation in Ivyland, PA, 2009 – 2010
- Member, Organizing Committee, Revitalization Project for the Morton McMichael Elementary School in Mantua, Philadelphia, Fall 2009
- Mentoring Organization, Lindy Inner-City Public School Program, 2009
- Mentor, Science Leadership Academy high school ILP outreach program, 2008

Certifications

Leadership in Energy and Environmental Design Accredited Professional (LEED AP)

Press and Publications

- Interviewed by Avril David, "A Smart House at Drexel University in Philadelphia is a Living Laboratory of Sustainability," Forbes CSR Blog, August 2010.
- Cody Ray, Kellie Houx, "Drexel Smart House: Growing Strong", Creative Outlook magazine, December 2009.
- D. Denick, J. Detweiler, C. Ray, A. Cebulski, J. Bhatt, "Library-Smart House Collaboration for Information Literacy Development," American Society for Engineering Education Conference, Engineering Libraries Division, Austin, TX, June 14-17, 2009

Selected Technical Projects

Robot Control, ECES 690 ST: Robot Control Spring 2011

Model and Control DC-Driven Rotational-Prismatic (RP) Manipulator

- Modeled RP manipulator in vertical plane including actuator dynamics
- Verified dynamic robot model through MATLAB simulation
- Analyzed and compared seven control strategies for the task of drawing "5"
  - Decentralized PID control in joint and operational spaces
  - Lyapunov control in joint and operational spaces
  - Globally linearizing control in joint and operational spaces
  - Adaptive control in joint space for two unknown parameters

Mashbot Campaign Manager, Computer Science Senior Design 2009

Extensible online social media marketing campaign manager for small businesses

- Architected front-end system and contributed models and controllers
- Developed user and service API authentication systems (OAuth, user/pass, etc.)
- Implemented database watch daemon to push scheduled content for distribution
- Written in Ruby on Rails (front end), Ruby (middle), Java/Spring (back end)
- Finalist, Senior Design Competition

Image Recognition System, ECES 436 Image Signal Processing Spring 2009

Recognize objects using Fourier descriptors and minimum-distance classification

- Compute image Fourier descriptors, representing coordinates as complex numbers
- Reduce descriptors using low-pass filter to remove detail while retaining shape
- Classify shape against stored templates using minimum-distance classification

Transparent Cryptography, The ACIN Center Winter 2008

A transparent network communications security service for multicast applications

- Intercepted traffic in kernel-space, encrypt/decrypt as appropriate, and forward
- Used netfilter queue for packet filtering and mangling, and openssl's libcrypto
- Multicast addresses bound to particular crypto queues using iptables
- Written in C using open source best practices: OOP, automake, autoconf, gettext, Doxygen, gnulib, GNU command-line switches, signal handlers, daemonization