

## Cody A. Ray

### Present Address

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### Permanent Address

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### 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

- Led renovation effort to transform historic home into “living laboratory” for student research and technology development
- Established technology incubator in collaboration with faculty, staff, and industry
- Created 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
- Mentored for four years by Baiada Center for Entrepreneurship in Technology

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

Awarded \$120,000 in merit-based scholarships

### Computer Skills

Languages: C, C++, Java, PHP, SQL, Python, Ruby  
Software: Apache, CVS, Eclipse, Git, LabVIEW, L<sup>A</sup>T<sub>E</sub>X, Maple, MATLAB, MS Office, MySQL, Oracle, Pivotal Tracker, PostgreSQL, Subversion  
Libraries: Ant, CodeIgniter, Cucumber, JUnit, Rails, RSpec  
Systems: Linux (Debian, Red Hat), Mac OS X, Windows  
Research: Arduino, Roomba, Spartan3 FPGA

**Selected  
Technical  
Projects**

**Robot WiFi Localization**, CS 610 Advanced Artificial Intelligence      Winter 2011  
Localize mobile robot using RSSI information from fixed routers in LOS environment

- Fit path loss model to empirical Received Signal Strength Indicator (RSSI) data
- Estimated maximum-likelihood position by atomic multilateration of WiFi routers
- Fused the odometry measurements and ML RSSI estimates using Kalman filtering
- Used a mixture of MATLAB, SQL (MySQL), shell scripting, awk, and gnuplot.

**Command-Line Kalah**, CS 510 Artificial Intelligence      Fall 2010  
Play Kalah against the computer or pit different AI algorithms against one another

- Developed two-player turn-based zero-sum game engine
- Implemented random, minimax, and alpha-beta pruning AI players
- Written in Ruby with functional tests in RSpec and Cucumber

**Mailalytics**, Philly Startup Leaders      Summer 2010  
Mailing list analytics tool to statistically gauge member engagement

- Extracted per member, message frequency, and email thread length statistics
- Qualitatively interpret activity as announcements or sharing versus discussions, quality of conversation, and regularly active membership
- Written as a Ruby library and set of command-line scripts

**WAMAS**, Agent Technology Center, Czech Technical University      Fall 2008  
Provide agent simulators with facilities for approximating wireless communications

- Simulated transmit power decay, network latency, finite bandwidth, throughput
- Designed OSI-inspired communication models to approximate network processes: link connectivity, media access control, ad-hoc routing, data transport
- Integrated into AGLOBE framework as alternative to perfect/no communications
- Written in Java using Eclipse and CVS

**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, gnuilib, GNU command-line switches, signal handlers, daemonization

**Ad-Hoc Routing Protocol**, Arkansas School for Mathematics and Sciences      2006  
Gradient Flow-Channel Routing with Persistent Messaging

- Devised delay and disruption tolerant network routing protocol for MANETs
- Finalist, Arkansas Regional Science Fair Competition
- Accepted for presentation at the 2006 Conference on Computer, Information, Systems Sciences, and Engineering