

## Cody A. Ray

### Present Address

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### Permanent Address

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**Objective** Software Engineering

**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
- 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

<b>Academic Honors</b>	Dean’s Scholarship	Pennoni Honors College
	Drexel University STAR Scholar	U. Sidney Shuman Scholarship
	Engineering SuperNOVA Scholar	William Utzy Scholarship

<b>Computer Skills</b>	<u>Languages:</u>	C, C++, Java, PHP, SQL, Python, Ruby
	<u>Software:</u>	Apache, CVS, Eclipse, Git, LabVIEW, $\text{\LaTeX}$ , Maple, MATLAB, MS Office, MySQL, Oracle, Pivotal Tracker, PostgreSQL, Subversion
	<u>Libraries:</u>	Ant, CodeIgniter, Cucumber, jUnit, Rails, RSpec
	<u>Systems:</u>	Linux (Debian, Red Hat), Mac OS X, Windows
	<u>Research:</u>	Arduino, Roomba, Spartan3 FPGA

Recommendations: [linkedin.com/in/codyaray](https://www.linkedin.com/in/codyaray) Code samples: [github.com/codyaray](https://github.com/codyaray)

**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

**Mashbot Campaign Manager**, Computer Science Senior Design 2009  
Extensible social media marketing campaign manager for

- 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, Computer Science Design Competition

**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