

Cody A. Ray

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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

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

Computer Skills	<u>Languages:</u>	C, C++, Java, PHP, SQL, Python, Ruby
	<u>Software:</u>	Apache, CVS, Eclipse, Git, LabVIEW, \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

**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