Cody A. Ray

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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

Software Engineer, BrightTag, Chicago, IL — August 2011 – Present

- Led the integration of 10 server-side vendors and built vendor infrastructure
- Helped launch 4 services: OAuth, Provisioning, Stats, Search-by-Markup APIs
- Designed and built queuing and pubsub systems on Redis, replacing RabbitMQ
- Integrated asynchronous HTTP client in Camel, replacing Apache HttpClient
- Served rotational roles as buildmaster, scrummaster, and client support

Residential Teaching Assistant, Northwestern University, IL — Summer 2011

- Helped teach Honors, AP Computer Science to gifted 7-12th grade students
- Planned and facilitated afternoon, evening, and weekend recreational activities

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

Leadership Activities

President, Drexel Smart House, Philadelphia, PA — 2009 – 2011

- Led renovation effort to transform historic home into "living laboratory"
- Established technology incubator in collaboration with faculty, staff, and industry
- 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

- Launched technology solutions for special initiatives, trained leaders
- Helped lead strategic discussion for Philly startup community, like Gigabit City

Academic Honors

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

Awarded $120,000 in merit-based scholarships

Computer Skills

Languages:	C, C++, Java EE, Javascript, Python, Ruby, SQL
Software:	Apache, Cassandra, Fabric, Git, Graphite, LabVIEW, LaTeX, Maple, MATLAB, Mongo, MySQL, PostgreSQL, Redis, Subversion, Tomcat
Libraries:	Camel, Cucumber, EasyMock, Guava, Guice, Haml, Hibernate, Jersey, jUnit, Maven, Node.js, Rails, Riot, RSpec, Sass, Sinatra, Vows.js
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

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 drawing task

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 versus discussions
- Written as a Ruby library and set of command-line scripts

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

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

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