

# Sam Green

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**Email** samgreen@gmail.com

## Education

**2015 – Present** PhD in Computer Science - University of California, Santa Barbara

*Research Topics:* 1) Low-power machine learning architectures for real-time control of cyber-physical systems, with a focus on safety and security. 2) True random number generation and evaluation for use as root-of-security in cryptographic systems.

*Publications:*

1. S. Green. Inductive image editing based on learned stylistic preferences. US Patent Nr. 6,343,305. 2017.
2. S. Green, İ. Çiçek, and Ç. K. Koç. Continuous-Time Computational Aspects of Cyber-Physical Security. FDTC, 2016.

*Coursework:* (Spring 2017) Cryptographic Engineering; Pattern Recognition, Artificial Neural Networks, and Machine Learning; Matrix Analysis; Elliptic Curve Cryptography; Advanced Topics in Security (hacking); Computational Algebra; Advanced Computer Architecture.

*GPA:* 3.88

**2009** MS in Applied Mathematics - University of Central Arkansas

*Master's thesis:* FPGA Coprocessing for Computational Mathematics. Explored the ways in which computational fluid dynamics solvers could be accelerated in a hybrid CPU+FPGA system.

*GPA:* 4.0

**2006** BS in Computer Science - University of Central Arkansas

*GPA:* 3.79

## Employment History

**Jul 2015 –** *Research Assistant*

**Present** Koç Lab, University of California, Santa Barbara (<http://koclab.cs.ucsb.edu>)

My position at Koç Lab is mixed academic and industrial. Contributions include:

- *Various Implementations:* Have written C++, Python, and Verilog for research projects related to cryptography, random number generation, and machine learning. Led efforts to build a custom drone for testing efficient machine learning implementations for safety and security applications. Currently focused on random number testing and efficient neural network implementations.
- *Post-Quantum NTRU:* Implemented NTRU-based key exchange protocol in both C (used the Fast Library for Number Theory) and SageMath. The protocol was designed by Koç Lab as a privately-funded R&D effort.
- *Research and Proposals for Voting Non-Profit:* Canvassed academic, industrial, and government literature related to voting, with the objective of building a full understanding of the respective groups' past, present, and future voting efforts. Met with academics specialized in voting issues. Wrote white papers to summarize findings.
- *National Science Foundation Proposals:* Primary author for two proposals to the NSF. Most significant proposal was related to the development of a new cyber-physical systems security curriculum development workshop which was funded (<http://cpsed.org>).

**Jun 2010** – *Senior Member of Technical Staff*

**Jun 2015** Sandia National Laboratories, Albuquerque, New Mexico

Provided technical contributions and technical leadership to interdisciplinary cryptographic hardware assessment projects. Achievements included:

- *Research and Technical Leadership*: Proposed and received funding for two new cryptographic assessment techniques; also lead development of several other smaller proposed projects. Designed and implemented new analytical algorithms. Also wrote software contributions to support team's greater research efforts.
- *Consulting*: Provided cryptographic engineering consultation to internal design projects and external commercial entities regarding best practices. Consultation ranged from discussing systems at a high level, to providing feedback on a proprietary commercial cipher design, to analysis of open source publications.
- *Teaching and Presentations*: Prepared and presented technical material monthly. Presented at government conferences, as well as project reviews, technical briefings, and literature discussions. One of three lead instructors for Sandia's in-house *Introduction to Cryptography* course; this course introduced engineers to cryptographic primitives, design, implementation, and best practices.
- *Awards*: Certificate of Appreciation for Technical Excellence; Employee Recognition Award for unparalleled technical innovation, exceeding customer expectations, exceptional teamwork, and dedication to project; two Sandia inventor awards; Certificate of Excellence for Teamwork and Technical Ability; Certificate of Excellence for Leadership and Technical Leadership on Multiple Projects.

**Oct 2009** – *Firmware Engineer*

**Jun 2010** ARMA Design, San Diego, CA

ARMA was a Microchip Technology design partner. Responsibilities included frequent travel to customer sites to assist with embedded system development and debugging. Wrote C or assembly code to solve the following customer firmware challenges:

- Wrote firmware upgrades for courtroom panic notification system, with only remote black-box testing available for functional verification.
- Implemented CDMA modem code to connect a crop moisture monitoring system to a cellular network.
- Wrote USB firmware and software to communicate between a microcontroller and a Windows application.
- Developed Python-based GUI application to interact with barcode scanner for use in controlling and logging results of system burn-in stress testing.

**Summer 2008** *Software Developer Intern III*

Ball Aerospace, Boulder, CO

Participated in the complete life cycle for a NASA satellite simulation component. Wrote high-level formal requirements based on general operational descriptions. Derived lower-level requirements and C++ code from the approved formal requirements.

**May 2007** – *Teaching Assistant*

**May 2009** University of Central Arkansas, Conway, AR

Taught two college algebra courses and one business calculus course.

**May 2006** – *Software Developer*

**Feb 2007** Axiom, Little Rock, AR

Member of web development team for a Linux-based grid computing environment. Used Javascript and XML to build front-end modules. Wrote Perl to interface with server-side code. Implemented automatic generation and installation of web browser X.509 security certificates.