CESAR ARGUELLO

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EDUCATION

Ph.D. in Computer Science — September 2022 - Present
Dartmouth College — *Hanover, NH, USA*
Advisor: Dr. David Kotz
Research Area: Security and Privacy in the Lifecycle of IoT for Consumer Environments

B.S. in Physics & Computer Science — August 2018 - May 2022
University of Florida — *Gainesville, FL, USA*

International Baccalaureate Diploma Programme (IB) — August 2016 - May 2018
UWC Red Cross Nordic — *Flekke, Norway*

INSUSTRY EXPERIENCE

Product Development Engineer Intern — January 2022 - May 2022
Intel Corporation — *Santa Clara, CA, USA*

- Designed, developed, and debugged sort test programs for server products.
- Tested, validated, modified, and redesigned circuits to guarantee component margin to specification.
- Analyzed and evaluated component specification versus performance to ensure optimal match of component requirements with production equipment capability.

RESEARCH EXPERIENCE

Gradute Research Assistant — January 2023 - Present
Dartmouth College — *Hanover, NH, USA*
Department of Computer Science
Advisor: Dr. David Kotz and Dr. Timothy Pierson

- Maintain a C, C++, and Python codebase for a harmonic radar controller, ensuring optimal performance and reliability for various research applications.
- Design and implement experiments and circuit prototypes for novel applications of harmonic radars in IoT security, focusing on advancing research and practical use cases.
- Develop comprehensive research plans targeting conference and journal publications while actively reviewing and discussing relevant literature on IoT security.

Research Assistant — June 2021 - May 2022
Univeristy of Florida — *Gainesville, FL, USA*
Florida Institute of Cybersecurity
Advisor: Dr. Sara Rampazzi and Dr. Kevin Butler

- Designed and developed experiments to test theoretical frameworks on EM side channel disassembly.
- Collected, processed, and analyzed EM traces using statistical and machine learning models.
- Developed research plans leading to the successful completion of project deliverables (publications, presentations, etc.).

Research Assistant — May 2021 - May 2022
Univeristy of Florida — *Gainesville, FL, USA*
Department of Physics, SuperCDMS HVeV-DMC Data Analysis and Simulations Team
Advisor: Dr. Tarek Saab

- Designed and developed Ionization Measurement with Phonons At Cryogenic Temperatures (IMPACT) simulation files for the Geant4 simulator.
- Analyzed Geant4 simulation results with Python.
- Lead discussions about Geant4 simulation results.

Research Assistant August 2020 - February 2021
Univeristy of Florida *Gainesville, FL, USA*
Department of Mechanical and Aerospace Engineering, ADAMUS Lab
Advisor: Dr. Riccardo Bevilacqua

- Designed, developed, and deployed C++ libraries for control of a CubeSat's magnetometers, EPS, and battery, utilizing I2C protocol communication and integrating with Beagle Bone Black microcontroller.
- Tested and debugged flight component prototypes.
- Authored weekly project reports highlighting software development achievements, challenges faced, and innovative solutions implemented during the development of flight software.

TEACHING EXPERIENCE

Gradute Teaching Assitant September 2022 - January 2023
Dartmouth College *Hanover, NH, USA*
CS50: Software Design and Implementation

- Developed and maintained automated grading scripts using Bash and Python to evaluate student assignments.
- Conducted in-depth code reviews for programming projects, providing constructive feedback to enhance code quality, efficiency, and adherence to best practices.
- Held office hours to provide one-on-one mentorship to students on course material and programming projects.

Undergraduate Teaching Assistant January 2021 - May 2021
Univeristy of Florida *Gainesville, FL, USA*
CDA3101: Introduction to Computer Organization

- Assisted student achieved proposed academic goals by leading discussions on lecture material.
- Supported instructors by managing the evaluation of course assignments and providing detailed feedback to students.
- Held office hours to review course material, answer general questions, and provide some assistance on assignments.

PUBLICATIONS

Conference Papers

CP1 Ravindra Mangar, **Cesar Arguello**, David Inyangson, Tina Pavlovich, Karen Gareis, and Tushar Jois. *Proceedings of the 56th ACM Technical Symposium on Computer Science Education V. 1 (SIGCSE TS)*, 2025. Acceptance rate 33%.

CP2 **Cesar Arguello**, Beatrice Perez, Timothy J. Pierson, and David Kotz. Detecting Battery Cells with Harmonic Radar. *Proceedings of the ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec)*, 2024. Acceptance rate 21%.

CP3 Beatrice Perez, **Cesar Arguello**, Timothy J. Pierson, Gregory Mazzaro, and David Kotz. *Proceedings of the IEEE Military Communications Conference (MILCOM)*, 2023. Acceptance rate 40%.

Journal Articles

JA1 Timothy J. Pierson, **Cesar Arguello**, Beatrice Perez, Wondimu Zegeye, Kevin Kornegay, Carl Gunter, and David Kotz. We need a "building inspector for IoT" when smart homes are sold. *IEEE Security & Privacy*, 2024.

Posters

P1 **Cesar Arguello**, Hunter Searle, Sara Rampazzi, Kevin Butler. [Poster]: A practical methodology for ML-Based EM Side Channel Disassemblers. *Proceedings of the 2022 Poster Session of the 7th IEEE European Symposium on Security and Privacy*, 2022.

PATENTS

[In application] Cesar Arguello, Beatrice Perez, Timothy J. Pierson, and David Kotz. Harmonic radar for battery detection. U.S. Provisional Patent Application 63/651,278, United States Patent and Trademark Office. Filed May 23, 2024.

PROJECTS

SDR FM Radio Demodulator August 2024

Real Time FM radio demodulator for HackRF and RTL SDR written in Python. Future Work: Support other SDRs and improve audio streaming. [GitHub Repository]

Bi-detectional Intercom Novermber 2021

Bi-directional intercom based on operational amplifiers, BJT transistors, and diodes. [LTSPice Sim]

Shell for UNIX-Based Systems January 2021

A shell for Unix-based system with basic capabilities, such as I/O redirection, piping, wildcarding, tilde-expansion, and background processing. [GitHub Repository]

OTHER ACADEMIC ACTIVITIES

Student Participant, CyberTruck Challenge *June 2024*

OTHER EXPERIENCE

Audio Visual Specialist May 2019 - March 2022
J. Wayne Reitz Union *Gainesville, FL, USA*

- Managed and installed audio-visual equipment for shows, meeting, and events held at the J. Wayne Reitz Union.
- Aided costumers with audio-visual technical difficulties.

TECHNICAL SKILLS

Languages	English, Spanish
Programming Languages	Python, MATLAB, C++, C, LaTex, x86
Frameworks	Pytorch
Software	Microsoft Suite, Git, GDB, Wireshark
Web skills	HTML5, CSS

AWARDS

Latin Honors, Cum Laude B.S. *May 2022*
Honor Society, Phi Betta Kappa *May 2022*
Academic Scholarship, Davis UWC Scholar *August 2018*