

# Harrison Williams

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## EDUCATION

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### Virginia Tech

PhD., Computer Science

Dual B.S., Electrical & Computer Engineering

Blacksburg, VA

Aug. 2019 – May 2024 (Expected)

Aug. 2015 – May 2019

## RESEARCH EXPERIENCE

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### Graduate Research Assistant

May 2019 – Present

My PhD research is principally focused on energy harvesting systems, small embedded devices running on tiny amounts of energy scavenged from the environment. I am advised by Dr. Matthew Hicks.

#### *Power Canary Hardware*

*August 2020 – Present*

- Currently designing low-power integrated circuits to efficiently inform embedded software of power conditions.

#### *Intermittent Computing for Flash Devices*

*May 2019 – Present*

- Built a system to extend continuous software execution across power interrupts using volatile data remanence checkpoints, targeting devices without high-performance non-volatile memory.
- Adapted low-level checkpoint code for a hardware-free version based on compiler analysis.
- Presented work as ASPLOS 2020.

### Undergraduate Research Assistant

September 2017 – May 2019

#### *Counterfeit Circuit Detection*

- Worked with faculty and other undergraduate students to develop a system to detect recycled microcontrollers and processors based on memory decay.
- Built hardware and software systems to rapidly age microcontrollers and collect/analyze memory startup statistics.

## WORK EXPERIENCE

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### Technical Intern

Summers 2017, 2018

#### *Raytheon Missile Systems*

*Tucson, AZ*

- Member of verification team supporting programs in the configurable digital logic department.
- Developed tests for combinational logic and state machines.
- Designed software abstractions for simulating communication interfaces across missile hardware stack.

## TEACHING

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### Graduate Teaching Assistant

August 2019 – December 2019

#### *Virginia Tech*

*Blacksburg, VA*

- Teaching Assistant for CS 4264: "Principals of Computer Security", an undergraduate class on the foundation of building, using, and managing secure systems.
- Developed and graded homework and projects, graded tests.
- Held office hours and helped students with completing projects and understanding class material.

## RECOGNITION

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### NSF Graduate Research Fellowship Program

2021

#### *Honorable Mention*

## PUBLICATIONS

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- [Harrison Williams](#), Michael Moukarzel, and Matthew Hicks. 2021. **Failure Sentinels: Ubiquitous Just-in-time Intermittent Computation via hardware support for continuous, low-cost, fine-grain voltage monitoring**. In Proceedings of the Forty-Eighth International Symposium on Computer Architecture (ISCA '21).
- [Harrison Williams](#), Xun Jian, and Matthew Hicks. 2020. **Forget Failure: Exploiting SRAM Data Remanence for Low-overhead Intermittent Computation**. In Proceedings of the Twenty-Fifth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS '20).

## SKILLS

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### Programming Languages

Experienced: Python, C, MSP430 Assembly

Familiar: C++, x86 Assembly, Verilog

### Software

Experienced: Git, LTSpice, Modelsim, Windows, Ubuntu

Familiar: MATLAB, Vivado