ANTHONY ETIM

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RESEARCH INTERESTS

My research interests lie in computer architecture and security, especially focusing on cloud infrastructures and the security of FPGA-accelerated cloud environments by evaluating and defending various types of side channels and covert channels, as well as how to enable secure multi-tenant Cloud FPGAs.

EDUCATION

Yale University, New Haven, CT August 2021 – Present
Ph.D. in Electrical Engineering
Research Assistant, Computer Architecture and Security (CAS) Lab.
Advisor: Prof. Jakub Szefer

Villanova University, Villanova, PA August 2017 – May 2021
B.S. in Electrical Engineering

TECHNICAL SKILLS

Programming: C++, C, JavaScript, MATLAB, HTML, CSS, Java, Python, SQL, VHDL, Verilog/ System Verilog, Haskell
Tools: AWS tools, Docker, Xilinx Vivado/ISE, Quartus, Jupyter Notebook
Technological Devices: Raspberry Pi, Arduino

PUBLICATIONS

- **Anthony Etim**, Shanquan Tian, and Jakub Szefer. "Extending FPGA Information Leaks with Trojan Phantom Circuits". In Review by the IEEE International Symposium on Secure and Private Execution Environment Design (**SEED**), 2024.
- Theodoros Trochatos, **Anthony Etim,** and Jakub Szefer. "Covert-channels in FPGA-enabled SmartSSDs". Accepted by the 22nd International Conference on Field-Programmable Technology (**FPT**), 2023 Journal Track at ACM Transactions on Reconfigurable Technology and System **(TRETS)**.

RESEARCH EXPRIENCE

Yale University, *Graduate Researcher*, New Haven, CT August 2021 – Present
- Exploring information leaks and using Ring Oscillators (ROs) to sense voltage and thermal changes in FPGA-accelerated cloud environments.

Villanova University, *Undergraduate Researcher*, Villanova, PA Fall 2020 – Spring 2021
- Developed a deep neural network to achieve a secrecy capacity for efficient, reliable and secure transmission of information.

Villanova University, *Undergraduate Researcher*, Villanova, PA Fall 2020
- Used Matrix Singular Value Decomposition (SVD) technique to optimize the deep neural network (DNN) on the AVNET Ultra96-V2 FPGA development board.

- Evaluated the performance, accuracy, and energy consumption of the optimized system.

Villanova University, *Undergraduate Researcher*, Villanova, PA Spring 2020

- Estimated the added value and future costs of coordinated economics dispatch in Central America through the electrical system load.
- Trained the neural network to forecast the electrical system load.

Villanova University, *Undergraduate Researcher*, Villanova, PA Summer 2019

- Collaborated with a team of 3 in conjunction with L3 Harris in the creation of an efficient food purchasing and tracking system for dining services to reduce food waste.
- Developed software system that is simple to populate and used to track purchased quantities and consumption to reduce waste significantly.
- Filed a provisional patent for the software system.

Villanova University, *Undergraduate Researcher*, Villanova, PA March 2018 – May 2019

- Conducted research on the development of the flow network modeling tool Villanova Thermodynamic Analysis of Systems (VTAS), which models the energy flows throughout a data center.
- Upgraded the Graphical User Interface (GUI) for the Villanova Thermodynamic Analysis of Systems (VTAS) data center flow network modeling tool.
- Developed the GUI Interface for the VTAS electrical system layout.

PROFESSIONAL EXPERIENCE

Electrical Engineering Intern, National Grid, Albany, NY, Remote Summer 2020

- Collaborated with a team of 4 engineers to help reorganize and plan the grid network using various tools.
- Modelled data to fit various design requirements and constraints of the power system.
- Assisted in the management and creation of a SharePoint Setting Repository for the handoff of smart control settings to the field device engineers.
- Collaborated with other engineers to build a database of DMX and control house plans for the grid network.

Web Developer Intern, Kumba Africa, Philadelphia, PA Summer 2018

- Built reusable code to be utilized in other projects, effectively streamlining spending.
- Contributed back-end experience and collaborated on APIs.
- Collaborated on the design and development on a team of 4 of client and server database applications.
- Analyzed project requirements to find bugs and eliminate issues within a timely manner.

TEACHING EXPERIENCE

- **Teaching Fellow,** Yale University, New Haven, CT Spring 2023
  Introduction to Computer Engineering (EENG 201)
- **Teaching Fellow,** Yale University, New Haven, CT Fall 2022
  Introduction to Electronics (EENG 200)

POSTERS

- Oct. 2019. Feastimate. Future of Packaging Consortium, Villanova University, PA
- April 2019. Improving the user interface of Data center modeling Software. (Project #1) Center for Energy-Smart Electronic Systems, Industrial Advisory Board Meeting at Binghamton University, NY.
- Oct. 2018. Improving the user interface of Data center modeling Software. (Project #1) Center for Energy-Smart Electronic Systems, Industrial Advisory Board Meeting at Villanova University, PA.
- Sep. 2018. Improving the user interface of Data center modeling Software. Undergraduate Research Symposium at Villanova University, PA.

SERVICE

- **Yale Cloud Computing and FPGA Security Symposium (CCFS) 2022,** Co-organizer November 2022
- **Yale Grad Society of Women Engineers,** Undergrad Liaison Co-chair Fall 2022 - Present

LEADERSHIP EXPERIENCE

Tau Beta Pi, National Engineering Honor Society, Villanova Chapter, Vice-President March 2020-May 2021

- Planned and conducted various professional events for the chapter's members such as the initiation information session for new members.
- Helped in the advancement of the technical and professional education of the active members by connecting them with various alumni.

Villanova Engineering Student Council, Co-Chair September 2019- May 2021

- Planned events for the College of Engineering and acted as a bridge between the students and faculty.

National Society of Black Engineers, Senator August 2017-September 2018

- Represented Villanova chapter at the 2017 Fall Regional Conference in Greensboro, NC.

SELECTED HONORS AND AWARDS

- Yale New Student Fellowship September 2021
- Dean's Award for Academic Excellence May 2021
- Dean's Award for Meritorious Service May 2021
- Dean's List Every Semester
- Klingler Unitas Prize, April 2020
  Villanova Student Entrepreneurship Competition
- Klingler Unitas Prize, April 2019

Villanova Student Entrepreneurship Competition

- Tau Beta Pi, the National Engineering Honor Society, Spring 2020
  Selected based on academic ranking 1/8th of the junior class.