Samuel Stoke

Charlottesville, VA

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Active Secret Security Clearance

Education

Virginia Tech *Blacksburg, Virginia*

BS in Computer Engineering

BS in Mathematics *Aug 2022 - May 2026 (Expected)*

- GPA: 3.88
- Honors College
- **Coursework:** Data Structures & Algorithms, Embedded Systems, Digital Design, Computer Architecture, Probability & Statistics, Real Analysis, Abstract Algebra, Graduate Graph Theory, Graduate Combinatorics

Eötvös Loránd University *Budapest, Hungary*

Study abroad experience in mathematics at Eötvös Loránd University in Budapest, Hungary. *Aug 2024 - Dec 2024*

- **Coursework:** Deep Learning, Measure Theory, Mathematical Network Science, Problem Solving

Work Experience

Virginia Tech Competitive Robotics Organization (CRO) *Blacksburg, Virginia*

Software Engineer *Jan 2025 - Current*

- Recruited for hardware integration for robot control and machine learning vision tasks.

Commonwealth Cyber Initiative *Blacksburg, Virginia*

Undergraduate Research Fellow *Aug 2023 - Current*

- Conducting research in algebraic coding theory and cryptography.
- Discovering and formalizing constructions of Rank-Metric code families, with the purpose of maximizing security while minimizing data size.
- Utilizing MAGMA computational algebra system to construct, analyze, and validate novel algorithms in coding theory.
- Preparing a manuscript for submission to a peer-reviewed mathematics conference.

Naval Research Laboratory *Washington, D.C.*

Hardware & Software Engineering Intern *May 2022 - Aug 2024*

- Worked on a low-latency cross domain solution project for signal processing to be deployed on the AEGIS system.
- Created a custom Linux image for the ZCU106 Evaluation Board with various security features including a secure boot system using the Yocto Project.
- Wrote VHDL and Python programs to test hardware and software functionality on cross domain solution.
- Replaced existing protocols for EQT testing, reducing bitstream count by 87.5%, significantly decreasing memory space and runtime.
- Used Vivado and ModelSim to implement FPGA block designs for signal filtering.
- Collaborated with software engineers to develop and test application procedures for system efficiency, utilizing Git version control system.

Projects & Other Experiences

FPGA Simple Computer

- Designed and implemented a 16-bit simple computer architecture simulation in Verilog.
- Created custom instruction set for computer functionality.
- Ran and verified on the DE10-Lite FPGA board.

Autonomous Trumpet

- 2024 Hackathon at the University of Virginia. Completed within 24 hours.
- Created a website with React and Express.js that allows a user to upload an image of a music file and uses the Optical Music Recognition Model to store data in a JSON-like structure.
- Programmed an ESP32-Wroom microcontroller to connect to the internet and request the JSON file from the server, and power an Arduino which plays the corresponding music on the trumpet using motors.

Infrared Radioteletype System

- Designed and created a transmitter/receiver system capable of delivering messages with a single 5mm infrared LED.
- Created an interrupt-driven Arduino program to receive and handle transmitted UART packages at a commercial standard 45.45 BAUD rate with 100% accuracy within 50ft.

Skills

Programming Python (Pandas, Networkx, PyTorch, NumPy, Scikit-learn. etc.), C/C++, Rust, Verilog/VHDL

Miscellaneous Linux, Git, Jira, Bitbucket, LaTeX