Max Christman

Research Technician
Chapel Hill, North Carolina
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Education

University of North Carolina at Chapel Hill — **Chapel Hill, North Carolina**
Master of Science in Computer Science — Aug 2023 – Dec 2024
- **Courses**: Operating Systems, Hardware Security, Compilers, Computer Security, Algorithms

University of North Carolina at Chapel Hill — **Chapel Hill, North Carolina**
Bachelor of Science with Distinction in Computer Science and Mathematics — Aug 2019 – May 2023
- **Honors**: Graduation with Honors, Honors Carolina Laureate, Dean's List Fall 2019, Spring 2022, Fall 2022, Spring 2023
- **Courses**: Cryptography, Digital Logic, Computer Vision, Deep Learning, Mathematical Statistics, Real Analysis
- **Senior Thesis**: *Threshold Moderation for End-to-End Encrypted Messaging*

Research Experience

UNC Department of Computer Science — **Chapel Hill, North Carolina**
Research Technician in Hardware Security — Jan 2025 – Present
- Work on speculative heap and stack smashing attacks, building on published paper

Graduate Research Assistant in Hardware Security — Aug 2023 – Dec 2024
- Developed microarchitectural side-channel attacks exploiting speculative execution on modern CPUs
- Contributed to research paper on high-precision speculative attacks exploiting conditional branch misprediction

Undergraduate Research Assistant in Computer Vision — Oct 2022 – Jul 2023
- Worked on research project to relight webcam videos under arbitrary lighting conditions
- Contributed to research paper on novel portrait video relighting techniques

Undergraduate Research Assistant in Robotics — Oct 2020 – Oct 2022
- Developed 3DSlicer Python module to visualize motion plans for steerable needle robot
- Contributed to research paper examining uncertainty in safe needle starting positions

Undergraduate Research Assistant in Cryptography — Jun 2022 – Jul 2022
- Worked on research project to develop new system for moderating encrypted communications
- Developed new cryptographic scheme from existing protocols and cryptographic primitives

UNC School of Medicine — **Chapel Hill, North Carolina**
Undergraduate Research Assistant — Apr 2022 – Jul 2022
- Worked on National Science Foundation project using web scraping to collect data for a survey
- Developed algorithm to systematically collect information from over 100 university directories

Teaching Experience

UNC Department of Computer Science — **Chapel Hill, North Carolina**
Undergraduate Learning Assistant — Aug 2022 – May 2023
- Held office hours and graded assignments for Cryptography and Machine Learning courses
- Helped students understand cryptographic primitives and protocols and reason about their security

Conference Papers

Pathfinder: High-Resolution Control-Flow Attacks Exploiting the Conditional Branch Predictor
ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2024 — Apr 2024

Personalized Video Relighting With an At-Home Light Stage
European Conference on Computer Vision (ECCV) 2024 — Oct 2024

A Metric for Finding Robust Start Positions for Medical Steerable Needle Automation
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2022 — Oct 2022

Workshop Papers

Building Secure and Engaging Video Communication by Using Monitor Illumination
IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshop on Media Forensics (CVPR WMF) 2024 Jun 2024

Skills, Languages, Interests

- **Programming**: C, Python, Java, x86 Assembly
- **Tools**: Bash, Vim, Docker, Git
- **Systems**: Linux, macOS, Windows
- **Interests**: Long-distance running, Cycling, Jazz piano, Chess

*This document was last updated on Jan 18, 2025.