Sam A. Markelon

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Education

2020– **PhD in Computer Science, University of Florida**
Florida Institute for Cybersecurity Research
Advisor: Vincent Bindschaedler and Thomas Shrimpton

2016–2020 **BS in Computer Science, University of Connecticut**
Minor in Mathematics
Summa Cum Laude
Honors Scholar
Upsilon Pi Epsilon

Professional Experience

Summer 2023 **NCC Group (New York, NY)**
Cryptography Services Intern

Summer 2019 **NCC Group (New York, NY)**
Cryptography Services Intern

Summer 2018 **Institut de Physique Nucléaire d'Orsay (Orsay, France)**
Scientific Computing Intern

Summer 2017 **Jefferson National Laboratory (Newport News, VA)**
Software Engineering Intern

Awards and Grants

2023 **ThinkSwiss Research Scholarship**
Academic Guest for Fall 2023 with Prof. Kenneth Paterson's Applied Cryptography Group at ETH Zürich.

2023 **Gartner Group Graduate Fellowship**

2020 **University of Florida Graduate School Preeminence Award**

2019 **Barry M. Goldwater Scholarship**

2018 **University of Connecticut IDEA Grant**
NTRUEncrypt implementation and usage research.

2016 **University of Connecticut STEM Scholar**

Teaching Experience

As teaching assistant at the University of Florida.

Spring 2025	**COP 3530: Data Structures and Algorithms**
Fall 2024	**CIS 6930: Randomized Algorithms and Probability in Computing**

As undergraduate teaching assistant at the University of Connecticut.

Spring 2020 Fall 2019	**CSE 3400: Introduction to Computer and Network Security**
Spring 2019	**CSE 3150: C++ Essentials**
Fall 2018	**CSE 2050: Data Structures and Object Oriented Programming**

Publications

Various author ordering conventions used.

Journal and Conference Papers

1. Luke A. Bauer, James K. Howes IV, Sam A. Markelon, Vincent Bindschaedler, and Thomas Shrimpton. **Covert Message Passing over Public Internet Platforms Using Model-Based Format-Transforming Encryption**. In *Proceedings of the 2024 ACM Conference on Data and Application Security and Privacy*. Association for Computing Machinery, 2024

2. Sam A. Markelon, Mia Filić, and Thomas Shrimpton. **Compact Frequency Estimators in Adversarial Environments**. In *Proceedings of the 2023 ACM SIGSAC Conference on Computer and Communications Security*, CCS '23, New York, NY, USA, 2023. Association for Computing Machinery

3. Sam A. Markelon and John True. **The DecCert PKI: A Solution to Decentralized Identity Attestation and Zooko's Triangle**. In *2022 IEEE International Conference on Decentralized Applications and Infrastructures (DAPPS)*, pages 74–82, 2022
Best Paper Award.

4. Walter O. Krawec and Sam A. Markelon. **A semi-quantum extended B92 protocol and its analysis**. In Eric Donkor and Michael Hayduk, editors, *Quantum Information Science, Sensing, and Computation XII*, volume 11391, page 113910G. International Society for Optics and Photonics, SPIE, 2020

5. Walter O. Krawec and Sam A. Markelon. **Genetic Algorithm to Study Practical Quantum Adversaries**. In *Proceedings of the Genetic and Evolutionary Computation Conference*, GECCO '18, page 1270–1277, New York, NY, USA, 2018. Association for Computing Machinery

Posters and Poster Papers

6. Walter O. Krawec and Sam A. Markelon. **Discovery of Robust Protocols for Secure Quantum Cryptography**. In *Proceedings of the Genetic and Evolutionary Computation Conference Companion*, GECCO '19, page 379–380, New York, NY, USA, 2019. Association for Computing Machinery

7. Sam A. Markelon. **gemcWeb: A Cloud Based Nuclear Physics Simulation Software**. *Bulletin of the American Physical Society*, 2017

Preprints

8. Nicholas Brandt, Mia Filić, and Sam A. Markelon. **A Formal Treatment of Key Transparency Systems with Scalability Improvements**. Cryptology ePrint Archive, Paper 2024/1938, 2024

9. Mia Filić, Jonas Hofmann, Sam A. Markelon, Kenneth G. Paterson, and Anupama Unnikrishnan. **Probabilistic Data Structures in the Wild: A Security Analysis of Redis**. Cryptology ePrint Archive, Paper 2024/1312, 2024