

Marika Swanberg

Computer science PhD student integrating the theory and practice of cryptography.

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EDUCATION

Boston University, Boston — PhD Computer Science

August 2019 - May 2025

Adviser: Adam Smith. Awarded Hariri Institute Graduate Student Fellowship, awarded to outstanding PhD students doing data-driven research based on nominations by faculty.

Reed College, Portland OR — BA Computer Science/Mathematics

August 2015 - May 2019

Graduated Phi Beta Kappa with a 3.8 GPA and Commendations for Academic Excellence for all 4 years.

RESEARCH PROJECTS AND PUBLICATIONS

Erasure, GDPR, and Machine Learning Models — Current research

Currently working with Aloni Cohen and Adam Smith on formally conceptualizing data erasure and The Right to be Forgotten (GDPR Article 17) in the context of machine learning models.

Improved Differentially Private Analysis of Variance — Published in Privacy Enhancing Technologies Symposium 2019

I presented this work at PETS 2019 in Stockholm, Sweden. We created a new test statistic for measuring analysis of variance in a differentially private way and gained an order of magnitude on the statistical power compared to previous work. Wrote much of the code, proofs, and manuscript. See paper

<https://petsymposium.org/2019/files/papers/issue3/popets-2019-0049.pdf>.

Noisy Quantum Oracles: A Study of Algorithmic Robustness — Undergraduate thesis

Original work analyzing the robustness of quantum decoding algorithms for various geometric error-correcting codes. View pdf here

<https://github.com/marikaswanberg/Thesis/blob/master/thesis.pdf>.

CODING PROJECTS

Differential privacy implementation for paper

Django-based web application

Asynchronous web server and client written with C sockets

RELEVANT COURSES

Graduate: Network Security, Law for Algorithms

Undergraduate: Advanced Computer Systems Seminar, Cryptography, Abstract Algebra, Real Analysis, Combinatorics, Computability and Complexity, etc.

LANGUAGES

Human: English, Swedish
Computer: C++, C, Python, MIPS Assembly, R, Golang, Latex, HTML

AWARDS

Hariri Institute Graduate Student Fellow

Phi Beta Kappa

Commendation for Academic Excellence