Jess Woods

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EDUCATION

Ph.D. Student in Computer and Information Science — Aug 2020 – Present
University of Pennsylvania — GPA: 4.0

Graduate courses: Software Foundations, Analysis of Algorithms, Theory of Computation, Operating System Design and Implementation, Computer-Aided Verification, Cryptography, Computer and Network Security, Advanced Topics in Cryptography, Advanced Topics in Privacy and Anonymity

B.S. in Computer Science & B.A. in Studio Art, *Highest Distinction* — Aug 2015 – May 2019
University of North Carolina at Chapel Hill — GPA: 3.9

RESEARCH

Graduate Research Assistant, Distributed Systems Laboratory — Aug 2020 – Present
University of Pennsylvania

Current Projects	Efficient secure aggregation methods; Zero-knowledge proofs of race conditions
Advisor	Prof. Sebastian Angel
Research Area	cryptography, cybersecurity, programming languages

Post Baccalaureate Research Intern
Oak Ridge National Laboratory, TN

- **Computer Science Research Group** — Aug 2019 – Jul 2020

Project	Programming models for fully homomorphic encryption on a supercomputer
Advisor	Dr. Oscar Hernandez
Focus	cryptography, parallel programming, programming languages & models

- **Center for Molecular Biophysics** — Jun 2019 – Aug 2019

Project	Fast open source protein folding
Advisor	Dr. Ada Sedova
Focus	molecular dynamics codes, high performance computing

PUBLICATIONS

"Efficient Representation of Numerical Optimization Problems for SNARKs,"
with* Sebastian Angel, Andrew J. Blumberg, Eleftherios Ioannidis. *ePrint Report 2021/1436*, Oct 2021.

"Modeling protein structures from predicted contacts with modern molecular dynamics potentials: accuracy, sensitivity, and refinement,"
R. Davidson, M. Thavappiragasam, T. Effler, J. Woods D. Elias, J. Parks, A. Sedova. *ACM-BCB*, Aug 2021.

*authors ordered alphabetically

WORKSHOP

"Using Python for Improved Productivity in HPC and Data Science Applications: the Time is Now," J. Woods, M. Baker, M. Thavappiragasam, A. Sedova, O. Hernandez, V. Sarkar. *Collegeville Workshop*, Apr 2020.

TALKS

"Performance and portability of abstract algebra operations in C++, Python, and Julia," *P3HPC*, Sep 2020.

"Parallelization of Fully Homomorphic Data Encoding," *ORNL Ignite Talks*, Dec 2019

SKILLS

Programming Languages	C, C++, Java, Python, Coq, Haskell, Julia, Verilog, x86 Assembly Dafny, FORTRAN, JavaScript, HTML, CSS, TypeScript
Software Tools & Systems	vim, Git, Bash, gdb, LaTeX, Linux, FPGAs, OpenMP, MPI, CUDA, Z3

TEACHING

Head Teaching Assistant, Computer and Network Security, UPenn — Aug 2021 – Dec 2021
Lectured on *Probability*, *One Time Pads*, *Entropy*, held office hours

Master Teacher, High School Java, Steppingstone Scholars, Philadelphia, PA — Jun 2021 – Aug 2021
Solo Instructor, supervised team of 20 other instructors, lead curriculum creation

Head Teaching Assistant, Discrete Mathematics, UNC — Aug 2018 – May 2019
Led weekly recitations, solo lectures on *Intro to Proofs*, *Induction*, and *Set Theory*

Solo Instructor, K-12 Math, Reading Writing Arithmetic Center, NC — Apr 2018 – Aug 2018
Taught *Grade 3 Math*, *Pre-Algebra*, *Algebra I*, *Advanced Functions & Modeling*

MISC WORK

Visual artist: oil painting, screenprinting, murals, photography, zine-making — 2015 – Present
Hundreds of prints/paintings sold, exhibited nationally, permanent collections in NYC, Durham NC

Barber, Pop-Up Barbershop, NC — 2016 – 2019

Beekeeper, Carolina Beekeeping Club, NC — 2016 – 2018

Drumline Instructor, Polk County High School, NC — 2015 – 2016

House painter, Elite Shutters and Blinds, NC — 2015

Construction, carpenter, landscaper, (picture) framer, Booth Framing Arts, NC — 2014 – 2015

AWARDS

Best Ignite Speaker, Oak Ridge National Lab — 2019

Best Student Abstract, Oak Ridge National Lab — 2019

James M. Johnston Scholar, UNC Chapel Hill — 2015 – 2019
Full-tuition academic merit scholarship

Jonathon E. Sharpe Award, Kachergis Award, UNC Chapel Hill — 2017 – 2018