Jess Woods

woodsjk@seas.upenn.edu ♦ +1 (828) 899-1611 ♦ https://jkwoods.github.io/

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 Project Compiling high-level languages for zero-knowledge proofs

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," Manuscript in Progress.

"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.

WORKSHOP

J. Woods, M. Baker, M. Thavappiragasam, A. Sedova, O. Hernandez, V. Sarkar, "Using Python for Improved Productivity in HPC and Data Science Applications: the Time is Now," in *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," Oak Ridge National Laboratory 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
Lectured on *Probability*, *One Time Pads*, *Entropy*, held office hours

Aug 2021 – Dec 2021

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 Hundreds of prints/paintings sold, exhibited nationally, permanent collections in NYC, Durham NC	2015 – Present
	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 Full-tuition academic merit scholarship	2015 – 2019
	Jonathon E. Sharpe Award, Kachergis Award, UNC Chapel Hill	2017 – 2018