

Alexander Wei

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Skills

Programming	Python	MATLAB	C++	Java	PHP
	HTML/CSS	SQL	Linux Shell	Docker	LaTeX
OS	Linux Administration	Apache	Git	Foreign Language	Advanced French

Education

Tufts University

Medford, MA

M.S. Mathematics with Concentration in Applied Mathematics 2020 – 2022

B.A. Mathematics 2016 – 2020

Winchester High School

Winchester, MA

2012 – 2016

Relevant Coursework

Data Structures and Algorithms in C++, Multivariable Calculus, Linear Algebra, Cryptography, Discrete Mathematics, Abstract Algebra, Numerical Linear Algebra, Numerical Analysis, Real Analysis, Analysis, Probability, Statistics, Differential Geometry, Markov Chain Monte Carlo

Projects *(for more details see www.alexwei.net)*

Object Detector via Accelerated Matrix Factorization

- Implemented a block-based RRQR factorization algorithm in MATLAB using the Woodbury identity
- Tested and tuned block size as a parameter on the Tufts HPC cluster
- Designed a filter capable of detecting objects in a matrix image by its factorization

Metropolis-Hastings Monte-Carlo Substitution Decipher

- Developed a Markov Chain algorithm in MATLAB for the global combinatorial optimization problem of solving a monoalphabetic substitution cipher
- Adapted the Ising electron spin model from statistical physics to the task of sampling cipher keys

Plant Pair Clustering Algorithm

- Designed a map partitioning algorithm in Python to divide the Tufts campus into tiles
- Collected and transformed GIS plant-location records into a ranking of distinct plant pairs

Experience

Customer Service Representative

2018 – 2019

Winchester Savings Bank
Winchester, MA

- Agilely assisted customers with accessing their bank accounts
- Maintained an organized workspace, simultaneously coordinating multiple queues during peak hours

July 2017

Robotics Instructor

College Academy
Winchester, MA

- Educated and supervised classes of twenty students aged 9–14 in a three week summer day-camp
- Monitored class progress in delivering mini-lectures on torque, friction, and gravity at the best possible moments

2015 – 2016

Secretary

National Honor Society
Winchester, MA

- Codirected the chapter's monthly meetings and communications
- Implemented an email survey protocol to support records-keeping exchanges with chapter members
- Interfaced incoming and outgoing emails with database software to automate the entry of member community service records as well as the distribution of monthly personalized status reports

2015 – 2016

Team Leader

CyberPatriot, MIT Lincoln Lab Team
Cambridge, MA

- Studied security techniques and vulnerabilities in Linux and Windows servers, workstations
- Strategically directed the team in patching machines against real-time simulated attacks during national cyber-defense competitions

Activities and Awards

Directed Reading Program 2019, Tufts Math Department, Medford, MA

- Delivered a ten minute lecture to students and faculty
- Presented theorems used in identifying torsion points on real elliptic curves

**French Language Gold Biliteracy Award 2016, Commended National Merit Scholar 2016,
CyberPatriot National Semifinalist 2015**