

Education

Liberal Arts and Science Academy

High School Diploma with Magnet Endorsement

- Relevant Enrollments: AP Calculus BC, Discrete Math, Linear Algebra, Multivariable Calculus

GPA: 4.68

2021-2025

University of Texas at Austin

B.S. in Computer Science and B.S. in Mathematics

- Relevant Enrollments: Probability 1, Calculus with Applications, Data Structures, Discrete Math

GPA: N/A

Expected: May 2029

Experience

Applied Research Laboratories | Apprenticeship Program

Jun 2025 - Aug 2025

- Optimized and implemented a high-throughput and high-performance FFT algorithm for GPU-based signal acquisition
- Achieved 20x speedup resulting in real-time acquisition on the GPS L1 C/A band using PyTorch on a 2019 GPU
- Extracted partial ephemeris data bits proving real-time application and speedup for commercial usage
- Developed a 50 FPS display of satellite heatmaps across time and Doppler using OpenGL using max pooling
- Conducted literature review of GPU-based GPS methods culminating in a technical report and poster presentation

BioBQ | Data Analyst Intern (remote)

Aug 2024 - May 2025

- Planned the configuration and specifications for a bioreactor microscope camera system with a focus on foam effects
- Employed YOLO (You Only Look Once) object detection models to analyze cell growth and type in a team of 3
- Prototyped approaches for bovine cell monitoring using transducer measurements and Doppler effect analysis

Institute for Computing in Research | Research Intern

Jul 2024 - Aug 2024

- Deployed and planned an R-based model for the identification of transmission clusters from phylogenetic trees
- Conducted an analysis of state-by-state transmission clusters for SARS-CoV-2 for insights on outbreak dynamics
- Synthesized results and methods into a technical methods summary, a report, and a slideshow presented at TyRex

ACES Academic Enrichment Center | Chess Teacher

Jul 2023 - Aug 2023

- Analyzed major tournaments, including the 2023 Tata Steel Masters and World Championship
- Tailored individualized puzzles and study materials for 12 students bringing about a maximum rating increase of 800

XBiotech | Quality Control Intern

Jul 2022 - Aug 2022

- Utilized instruments including the Octet Red96e, osmometers, and pH meters to conduct quality control assays
- Shadowed blood, hematological assays and gained knowledge on monoclonal antibody development

Projects

ViralSim | C++, Bash, Python, Snakemake

- Built agent-based pandemic simulator modeling substitutions, indels, and recombination with configurable event logic
- Designed a pseudo-programming language with conditionals and timing constructs for user-defined simulation inputs
- Evaluated phylogenetic methods such as maximum likelihood and ancestral character estimation using simulated viral data, with results presented at the Oden Institute and in a preprint on medRxiv

Chess Hangman | JavaScript, HTML, CSS, Python

- Created a chess visualization trainer where players guess missing pieces to train board awareness
- Generated puzzles from two chess engines of differing ELO playing each other and arriving at novel positions
- Implemented a web-based application for students and peers to practice interactively

Genus N Probability Distributions | Python

- Applied normalizing flows in PyTorch to approximate complex probability distributions defined on the unit disk
- Constructed base distribution from truncated Gaussian and Beta components as the flow's latent space
- Designed a KL divergence-based loss function ensuring accurate log probabilities and stable training
- Developed mapping from the unit disk to Genus N surfaces under mentor guidance for Genus N sampling

Organizations

UT Chess Club | Competitor

Aug 2025 - Present

- Participated in the Collegiate Chess League, maintaining a USCF classical rating of 1900 and Blitz rating of 1800

Combat Robotics | Programmer

Aug 2025 - Present

- Contributed to chassis and weapon design using Onshape CAD software and Bambu PIP 3D printing technology
- Learned about the different choices in robotics design and physics constraints on weapon rotation

Skills

Proficient: Python, C++, R, bash, Java, JavaScript, Git, LaTeX, NextStrain, Linux

Familiar: Lua, Ngspice, C, CUDA, Snakemake, CAD, Onshape