

## Education

### Texas A&M University — College Station, TX

Master of Science — Computer Science / GPA: 3.9 Jan 2025 — May 2026

Bachelor of Science — Computer Science / GPA: 4.0 Aug 2021 — Dec 2024

Selected Coursework: Operating Systems, Computer Networking, Parallel Algorithms, Software Engineering, Machine Learning, Deep Learning

## Work Experience

### High Performance Computing (HPC) Software Engineer

May 2023 – Present

Texas A&M University High Performance Research Computing

College Station, TX

- Benchmarked multi-core FFT and sparse matrix multiplication (**FFTW**, **oneMKL**) in C++ on Intel Optane configured as swap; analyzed performance tradeoffs for memory-bound HPC workloads
- Migrated Fermilab **FPGA** software simulation workflows from **Kubernetes** to Slurm, improving reproducibility and reducing researcher setup overhead
- Co-authored peer-reviewed publication resulting from Fermilab collaboration: “*wa-hls4ml: A Benchmark and Surrogate Models for hls4ml Resource and Latency Estimation*”, arXiv:2511.05615 (2025)
- Built an Open OnDemand interactive app for distributed local **LLM** inference across multi-node jobs using **Python** (4 Intel GPU Max 1100s per node)
- Shipped an Open OnDemand app to automate ML pipelines with AutoGluon on Slurm; standardized job specifications and reduced experiment setup time
- Automated ticketing workflows by integrating Slack with the Slack API; built a CLI workflow engine enabling ticket state changes without code changes
- Resolved HPC support tickets across software troubleshooting, job scheduling, and environment configuration on **Linux (RHEL 8)** systems

### Software Engineer (Full Stack)

May 2023 – Present

AKW Ventures

College Station, TX

- Built and maintained backend systems for “College Football: Rapid Roster” iOS app (Swift, JavaScript, CloudKit JS)
- Scaled the app to thousands of active users and \$2,500 monthly recurring revenue
- Developing a full-stack sports betting analytics platform that detects arbitrage, +EV, and middles opportunities
- Designed cloud deployment on **AWS** (Lambda, SQS, RDS/Postgres, ECS/Fargate, ECR) with **Docker** + GitHub Actions CI/CD
- Implemented a C++ datafeed pipeline, a **Go REST API** backend, and a **SwiftUI** frontend

### Software Engineer Intern

May 2024 – Aug 2024

The Coca-Cola Company

Atlanta, GA

- Built a Vue.js + Flask web app for segmenting and analyzing 8,861 retail outlets using **Python** and **Pandas**
- Developed a promotion recommendation algorithm generating 124,054 outlet-relevant promotions to confirm targeting and reduce manual analysis
- Delivered an end-to-end analytics workflow that improved speed and consistency of sales planning decisions

## Research

### Parallel Bridge Finding

January 2025 - Present

Texas A&M University, under Dr. Roger Pearce

- Developed and iterated upon a novel parallel bridge finding algorithm (graph theory)
- Achieved near linear scaling up to 768 cores - 15.36 times as many cores as the current literature supports
- Distributed computing on Lawrence Livermore National Labs systems, notably Dane
- Implemented in C++ using the YGM library (built on **OpenMPI**)

## Projects

### Temporal Frequency Analysis on CPU, GPU, FPGA

August 2024 - December 2024

Texas A&M University capstone project done in collaboration with Sandia National Labs

- Optimized an existing temporal frequency analysis algorithm for CPU, GPU, and FPGA architectures
- Won 3rd place in the Texas A&M Engineering Project Showcase Fall 2024
- GPU implementation achieved 125x throughput improvement over the original FPGA implementation; improved FPGA throughput by 4.23x
- Used C++, Vitis HLS, CUDA, OpenMP, JavaScript, Express.js, React.js

## Technical Skills

**Languages:** C++, Python, Go, Java, Bash, Swift (SwiftUI), JavaScript, Scheme

**HPC / Systems:** MPI (OpenMPI), OpenMP, CUDA, Slurm, YGM, FFTW, oneMKL, Vitis HLS, Linux (RHEL 8), Unix

**Machine Learning / AI:** PyTorch, TensorFlow, Pandas, AutoGluon, LLM Inference, Prompt Engineering

**Web / Backend:** Flask, FastAPI, Vue.js, React.js, Express.js, REST APIs, CloudKit JS, Ruby on Rails

**Cloud / DevOps:** AWS (Lambda, SQS, RDS/Postgres, ECS, Fargate, ECR), Docker, Singularity, GitHub Actions, CI/CD

**Databases:** PostgreSQL, DynamoDB, MongoDB

**Tools:** Git, GitHub, Vim, GoogleTest

**Methodologies:** Object-Oriented Programming (OOP), Functional Programming, Test-Driven Development (TDD), Agile