Brian Shen

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EDUCATION

University of Chicago | Chicago, IL — September 2025 - December 2026
Masters of Science: Computer Science
- Specialization: High Performance Computing

University of Wisconsin-Madison | Madison, WI — September 2021 - May 2025
Bachelor of Science: Computer Science
- Relevant Coursework: Data Structures & Algorithms, Operating Systems, Computer Networks, Artificial Neural Networks and Deep Learning, Linear Algebra, Statistics for Engineers, Building User Interfaces,

PROFESSIONAL EXPERIENCE

Synopsys | Sunnyvale, CA — May 2023 - August 2023
Software Engineering Intern
- Designed and implemented a multithreaded tool (4 threads, 3.6x speedup) to analyze logs from 10,000+ distributed processing tasks
  - Extracted per-task CPU/memory utilization, I/O throughput, and runtime; designed algorithm to capture idle periods between two tasks in IBM's DP logs.
- Built a dynamic profiling tool using "strace", "top" and custom logic to trace CPU, memory, and I/O usage of executing code in real time
  - Applied tool to Synopsys Proteus, analyzed multiple test cases and identified heavy I/O bottlenecks affecting runtime performance

Milliman MedInsight | Seattle, WA — May 2024 - August 2024
Data Engineering Intern
- Developed a python script to parse and transform batches of internal job logs (~2,000 + lines per run), extracted error patterns and filetype data into a structured table for ingestion into PowerBI
  - Created a KPI dashboard to visualize trends in system log errors, including frequency by filetype and error code; used weekly by the team to analyze issues and spot recurring failures
- Researched and evaluated multiple data confidence platforms (e.g., Collibra, Snowflake) to handle terabyte-scale EHR and claims data; summarized findings for the engineering team to inform future data pipeline structure

PROJECTS & EXTRACURRICULARS

High-Performance Real-Time Option Pricing Engine — June 2025 - Present
- Built a C++ option pricer with OpenMP and CUDA, parallelizing Monte Carlo for European and American (Longstaff–Schwartz) options using real-time market data from Tradier and FRED APIs
- Achieved 3× CPU (OpenMP) and 47× GPU (CUDA) acceleration for American options, and 5× CPU / 180× GPU for European options, versus serial baselines
- Implemented validation against Black-Scholes and Cox-Ross-Rubinstein models to ensure pricing accuracy

MAGIC Lab (UW - Madison) | Madison, WI — Oct 2024 - Jan 2025
Software Assistant
- Investigated integration of 3D Motion capture APIs (Google's MediaPipe Pose Landmarker) for STEM educational games with real life body tracking
- Debugged frontend Javascript logic to enhance gameplay responsiveness and player feedback

March Madness Neural Network — March 2024 - May 2024
- Collaborated with a 3-person team to build a neural network with TensorFlow and scikit-learn to predict NCAA tournament outcomes using KenPom data; applied regularization and dropout to prevent overfitting

SKILLS

- **Languages**: C++, C, Java, Python, R, Javascript, HTML, CSS, C#
- **Frameworks/Libraries:** CUDA, OpenMP, TensorFlow, pandas, scikit-learn, PySpark, React
- **Tools:** PowerBI, Databricks, Apache Spark, Azure Monitor, Perforce, Intel vTune