Frank Ding

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Summary

Technical Skills: C++, C, Python, Java, Bash, R, Assembly, Git, GDB, perf, Linux

Interests: Algorithms, Systems Software, Graphics, Performance Optimization, Quantitative Finance

Education

University of Waterloo Graduating May 2022
Honours Bachelor of Mathematics, Double Major in Computer Science & Statistics Waterloo, ON

- 4.00/4.00 GPA, 96.2% CS average, 94.4% Statistics average
- Coursework: Algorithms, Data Structures, Operating Systems, Computer Networks, Machine Learning, Artificial Intelligence, Graphics (F20), Linear Models, Sampling, Forecasting (F20), Graph Theory

Experience

Citadel Securities Jun 2021 – Aug 2021
Software Engineer Intern, Advanced Technologies Group Chicago, IL

Snowflake Jan 2021 – Apr 2021
Software Engineer Intern, Query Engine San Mateo, CA

- Wrote high-performance C++ to optimize various components of Snowflake's distributed SQL execution engine; most notably, improved table join performance by up to 15% in an industry-standard benchmark
- Implemented fast compression algorithms using compiler intrinsics; profiled and benchmarked these algorithms to determine the most efficient way to compress sparse bloom-filters before broadcasting to worker servers

Citadel Securities Jan 2020 – Mar 2020
Software Engineer Intern, Low Latency Chicago, IL

- Developed and productionized infrastructure to add multi-hardware support to options trading libraries running in FPGA-based trading systems, using C++ template meta-programming
- Improved the robustness and functionality of the testing framework for a packet retransmission mechanism via FPGAs to exchanges using C++ and Boost

SideFX Software May 2019 – Aug 2019
Software Engineer Intern, R&D Toronto, ON

- Designed and built tools using C++ and Python which allow artists to interactively deform 3D geometric models in Houdini, an animation and VFX application; shipped in the 2019 major product release

Research

University of Waterloo Oct 2020 – Dec 2020
Undergraduate Research Assistant, Programming Languages Group Waterloo, ON

- Investigated a pluggable type system for Java which allows for units of measurement types and methods of inference and annotation for these types with Dr. Werner Dietl
- Created code generation tools in Python which produce Java files for micro-benchmarking the solving time of various inference and annotation tasks; deduced trends and relationships using these tools

Facial Expression Recognition

- Wrote a survey paper with a friend comparing deep-learning methods for classifying emotions in faces against SVM-based conventional approaches involving handcrafted features
- Implemented algorithms from several papers using Python, Keras, NumPy, and sklearn