# Weihang (Frank) Fan

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## EDUCATION

**Carnegie Mellon University**, Pittsburgh, PA May 2020

B.S. in Computer Science, Minor in Sonic Arts, QPA: 3.97/4.00

- 15-418 Parallel Computer Architecture and Programming
- 15-440 Distributed Systems
- 15-745 Optimizing Compilers for Modern Architectures

## EXPERIENCE

Software Engineering Intern, Query Execution Team, **MemSQL** 05/2019 – 08/2019

- Designed and implemented new functionalities for time series data, involving work in network serialization and type system.
- Implemented functionalities from other database systems to database engine, such as NULLS FIRST/LAST and bit aggregate functions.
- Worked on and fixed bugs in database language parser, type system, user-defined aggregate functions (UDAF), distributed query execution, and LLVM code generation.

Teaching Assistant, **Carnegie Mellon University** 01/2018 – 12/2019

- Parallel Computer Architecture and Programming - Caching, SIMD, GPU, Parallel Architectures
- Introduction to Computer Systems - Signals, Dynamic memory allocation, Concurrency

Undergraduate Researcher, **CMU Parallel Data Lab** 12/2017 – 08/2018

- Modified Hadoop Gridmix and Hadoop YARN to submit DAG workloads with runtime estimates using Hadoop Tez to the resource manager and cluster scheduler.

## PROJECTS

**Intel TurboBoost Analysis**

- Analyzed performance variation due to Intel TurboBoost, the Intel CPU feature that dynamically boosts core frequencies within the thermal limit.
- Found that the effect of TurboBoost increases the more sequential a program is, and that context switching overhead is significant in sequential-parallel interleaved programs.

**OpenMP Runtime Instrumentation**

- Modified the GCC OpenMP runtime to dynamically profile processor cache misses and false sharing, and reduce the degree of parallelism accordingly.
- Used Intel Cache Allocation Technology (CAT) to perform runtime way-based hardware L3 cache partitioning based on the above dynamic profiling results to reduce cache contention.

## ACTIVITIES

**Student Body Vice President for Finance** 05/2019 – Present

- Responsible for supervision and auditing of student organization finances.
- Lead a 25-person committee that allocates the $2.1 million Student Activities Fee at the university.

## SKILLS

**C++**, **Relational Database Systems**, **Parallel Architectures**, CUDA, MPI, Python, Git, Unix/Linux