Michael Paciullo

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EDUCATION

2020-2024 New York University, B.A. Computer Science and Mathematics (GPA 3.468, CS GPA 3.756) LANGUAGES/TECHNOLOGIES/TOOLS

Proficient: C, C++, Julia, MATLAB, CUDA, SYCL, OpenMP, Java, Python, numpy, JavaScript (ES6), Node.js **Familiar:** Rust, Svelte, Keras, PyTorch, matplotlib, scipy, Seaborn, SQL

WORK EXPERIENCE

- 5/23- Scientific Computing Intern, Flatiron Institute (Scientific Computing Core)
 - Implemented and benchmarked parallel high-performance large matrix factorizations on GPUs with CUDA and SYCL
 - Improved LDL^T matrix factorization performance with high-performance GPU computing by up to 150x over CPUs
 - Designed a research poster and communicated results effectively to interdisciplinary computational scientific teams

8/22-11/23 Undergraduate Research Assistant, New York University

- Maintained the CMake build pipeline for SymbolicLib, an expression tree compiler for optimizing repeated sparse matrix operations
- Integrated cuSolverDN, a GPU-based dense linear solver for the CUDA platform, into polyfem, a C++ finite element library, and polysolve, a wrapper for linear solvers
- Compared assembly and solving times for finite element method problems between dense and sparse matrix data structures using matplotlib, numpy, PolyFEM, and libigl
- 1/21-5/22 Grader for CSCI-102 Data Structures, New York University
 - Graded weekly homeworks and project assignments for an intro-level data structures course taught in Java using Gradescope and JUnit
 - Provided thorough feedback to students through the Gradescope platform to improve class performance
 - Connected with instructors to proofread and verify assignments and other materials prior to distribution to students
- 5/21-8/21 Course Assistant and Tutor, New York University
 - Tracked attendance across summer sections of CSCI-102 Data Structures and CSCI-201 Computer Systems Organization for a combined total of over 100 students
 - Scheduled regular tutor office hours for intro-level data structures and systems programming students learning Java, C, and x86 assembly
 - Spearheaded four virtual recitation sections over Zoom for overseas students to encourage attendance and provide extra support

SOFTWARE PROJECTS

- $\label{eq:split} 5/23-8/23 \quad \mbox{ldl-benchmark(https://github.com/map9959/ldlt-benchmark)} \\ \mbox{Implementing the LAPACK routines } sytrf() \mbox{ a cross-platform GPU programming language} \\$
 - 11/22 Dense Assembly Timing (https://github.com/map9959/dense-assembly-timing) Measured time to use dense versus sparse matrices for finite element assembly and solving
 - 11/22 polysolve (https://github.com/map9959/polysolve)
 Updated a linear solver interface to include cuSolverDN, a GPU-based dense linear solver
 written in CUDA
 - 7/21 Quod Erat Osthenes (https://github.com/map9959/quod-erat-osthenes) Designed a multi-threaded prime number finder in C using POSIX threads