Anthony Colaiacovo

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Education

University of Guelph April 2024
Hon. Bachelor of Computing in Computer Science, Minor in Biology GPA: 3.7/4.0

CIS*4900 | *C++, Python, OpenMP, LLVM, CUDA, CMake* January 2024 - Present

Currently working alongside Dr. Denis Nikitenko to modify the code generation and compilation processes in NVIDIA's Warp framework. Our work consists primarily of recognizing situations where OpenMP directives can be added to generated code, in hopes of speeding up kernels written for CPU execution.

Experience

Software Developer May 2023 - August 2023
University of Guelph Guelph, ON

- Refactored a GPGPU biology simulation project written in C++ and OpenCL by streamlining the build process, reducing total lines of code, and increasing execution speed by up to **28%**
- Ported the refactored project to other GPU compute frameworks such as CUDA and Metal, where the CUDA port was ∼**1.5x** faster than the OpenCL and Metal versions
- Wrote 7 testing scripts in Python to verify simulation results, such as validating the distribution of sites within a genome affected by mutation
- Automated the testing process with Python scripts, allowing for 37 different testing simulations to be run with with one command, significantly reducing time spent on QA

Head Teaching Assistant (CIS*2500, Intermediate Programming) January 2023 - April 2023
University of Guelph Guelph, ON

- Developed automatic grading software in Python and C which allowed the TA team to grade the assignments of over **300** students in a short period of time
- Presented a lecture to students about how to use Git and Make alongside another TA
- Taught intermediate programming concepts (dynamic memory management, pointers, data structures, sorting algorithms) to students in C
- Led 3 lab sections containing approximately 35 students each alongside another TA

Teaching Assistant (CIS*1300, Programming) September 2022 - December 2022
University of Guelph Guelph, ON

- Created Bash scripts to automate user input when grading assignments, leading to a significant increase in marking speed among all TAs
- Taught beginner programming concepts (arrays, loops, functions, files, pointers) to students in C
- Taught students how to use the Linux command line for software development and file management
- Led 3 lab sections containing approximately 40 students each alongside another TA

Teaching Assistant (CIS*1050, Web Design and Development) May 2022 - August 2022
University of Guelph Guelph, ON

- Graded and provided feedback for assignments written in HTML and CSS
- Encouraged by the professor to TA the class again in the future

Projects

SDF-Molecule-Viewer | *C, Python, JavaScript, jQuery, SQLite, SWIG* Repository

- A full-stack web application made with a C backend, Python server, and SQLite database for displaying and storing molecule data
- Allows the user to upload SDF files, and an SVG rendering of the molecule will be generated and saved at their request

Skills

Languages: C, C++, Python, Java, JavaScript, Objective-C, SQL, Bash

Technologies: CUDA, LLVM, OpenCL, Metal, OpenMP, Pthreads, WebGL, jQuery

Tools: Git, Linux, Valgrind, Docker, CMake, Makefile, Gradle, Maven, JUnit