Anthony Colaiacovo

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Education

University of Guelph — Expected 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 JIT compiler in NVIDIA's Warp framework to support OpenMP directives within kernels written for CPU execution.

Experience

Software Developer/Undergraduate Research Assistant — May 2023 - August 2023
University of Guelph — Guelph, ON

- Refactored an OpenCL (C++) project that uses a stochastic model to simulate processes in population genetics and molecular evolution over millions of generations
- Ported the refactored project to other GPU compute frameworks such as CUDA (C++) and Metal (Objective-C++), where the CUDA port was **∼1.5x faster** than the Metal and OpenCL versions.
- Created 7 Python scripts to verify simulation results, such as validating the distribution of sites within a genome affected by mutation
- Created 3 Python scripts to automate part of the testing process, allowing for 37 different datasets to be run with with one command, rather than one at a time

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, SQL* — Repository

- A full-stack web application made with a C/Python 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
- Makes use of regular expressions to parse the SDF files

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, JUnit