Arteen Abrishami

+1 (760) 846-5020 • arteen1000@gmail.com • arteen1000.github.io

Education

University of California, Los Angeles — **Westwood**
Major 1: Computer Science, Minor: Mathematics, GPA: 3.95, Dean's Honors List — *expected June 2025*

Relevant Courses: Operating Systems, Data Structures & OOP, Advanced Linear Algebra, Discrete Mathematics, Computer Architecture, Software Construction, Single & Multi-Variable Calculus, Logic Design of Digital Circuits, Computer Organization, Differential Equations, Microeconomic Theory, Symbolic Logic

Honors: ACT (36), SAT (1550)

Publication: Convergent Total Synthesis of (+)-Calcipotriol: A Scalable, Modular Approach to Vitamin D Analogs

Experience

Positions Held

PolyArch Research Group — **Westwood**
Research Assistant — *November 2022–Current*

- Member of Professor Tony Nowatzski's research group, focused on architectural specialization
- Responsible for configuration and development of novel architecture simulations using gem5
- Pursuing build of effective microarchitectural chiplet design with near-stream computing capabilities
- Write, modify, and test novel network configuration scripts using Python API with SCONS and Makefile builds
- Expand, modify, and extend gem5 simulator capabilities using SLICC protocols and C++

Scripps Research Institute — **La Jolla**
Research Assistant — *September 2018–June 2019*

- Member of Professor Phil Baran's laboratory, focused on organic synthesis
- Worked on large-scale research project, developed a convergent approach for the total synthesis of calcipotriol for Leo Pharma
- Developed novel purification methods to better extract reagent quantities, resulted in improved titration results
- Improved reaction mechanisms, diverging from previous semi-synthetic approaches, resulted in a greater yield of reagents
- Successfully developed total-synthetic, scalable approach; optimized production of calcipotriol on an industry level
- Listed as a co-author on the resulting publication

Notable Projects

Matrix Command Line Tool: *C++,*

- Command line user interface for performing common linear-algebra/matrix operations
- Novel input validation system to ensure speed and correctness of user input, used sstream library
- Refactors user input, presents in aligned, readable manner using escape sequences, comparable to GitHub CLI
- Library to perform matrix operations, communicates with UI to display operation results to user
- Result-saving to allow user to streamline their operations

Histogram/Kernel Optimization: *C*

- Tiled, optimized for cache & compiler for 3D Stencil operations to increase performance by energy-delay improvement of 580.94
- Performed 8-thread parallelism on histogram computations for speedup of 8.6 in typical and 4.3 in pathological case
- Synchronized using GCC atomic-built-ins, memory barriers, and semaphores; used pthreads library
- Performed race, deadlock analysis using process graphs to simulate possible topological orderings
- Received highest score in class of 250 students for both optimization projects

SimplyTasks: *React, JavaScript, Node.js, CSS*

- Created dynamic, responsive user interface for task manager app using React and JSX
- Styled with CSS to make user interface visually appealing and user-friendly
- Integrated state-tracking and level-hierarchy of components to implement multiple, interactive web pages
- Developed server backend using Node.js and JSON in order to keep track of specific users and their tasks
- Project available for viewing on GitHub

Skills

Languages: C, C++, JavaScript, Python, Lisp, Shell
Systems and Frameworks: MIPS/x86 assembly, gdb, gem5, Linux/Unix, Git, Emacs