

William Andrews

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EDUCATION

The College of William & Mary - GPA 3.8
B.S. in Computer Science and Mathematics

Williamsburg, VA
Sept. 2023 – Expected May 2027

RELEVANT COURSEWORK — GRADUATE CLASSES IN **Bold**

- Operating Systems – **Compiler Optimization** (upcoming) – **Advanced Computer Architecture** (upcoming)
- **Systems Programming** – Directed Study in High Performance Computing – Algorithms
- Honors Elementary Analysis – Graph Theory – Intermediate Linear Algebra
- Advanced Multivariable Calculus – Probability (upcoming) – Network Systems (upcoming)

PROJECTS

Directed Study in High Performance Computing - C/C++, CUDA Aug. 2025 – Present
The College of William & Mary Williamsburg, VA

- Researching high-performance CPU and GPU algorithms with a focus on numerical kernels and scientific workloads.
- Developing shared and distributed memory parallel programs using (**OpenMP**) and (**MPI**) models.
- Exploring performance optimization techniques including multi-threading with memory and cache-efficient designs in C.
- Implementing **SIMD** vectorized matrix operations in C using **AVX/AVX-512** intrinsics; benchmarking against compiler auto-vectorization.
- Optimizing C/C++ code for cache locality, memory bandwidth, and multi-thread scaling.
- Final Project Goal: Develop a high-performance 2D Gauss–Seidel solver in C for Laplace/Poisson PDEs, implement 5-point stencils, and OpenMP parallelization to efficiently compute steady-state solutions on large grids.

Graph Theoretic Transit Routing Engine - C++, Docker Aug. 2025
Personal Project Alexandria, VA

- Implemented a Waze-inspired **routing engine** to explore open source shortest path computation methods.
- Developed a multi-threaded, bidirectional A* algorithm in **C++** reducing long distance computation times.
- Visualized graphs using GraphViz, deployed in a **Docker** containerized server using **Flask**.

Matroid Algorithm Optimization - C++ May. 2025 – Aug. 2025
Personal Project Alexandria, VA

- Designed a **C++ framework** to solve matroids in **combinatorial optimization**.
- Implemented matroid greedy algorithms to find minimum spanning trees in regular and bipartite graphs, find the minimum basis for matrices, and solve abstract set systems.
- Generalized an algorithm to solve multiple unrelated and cross-disciplinary algebraic problems.

INTERNSHIP EXPERIENCE

Software Engineer Intern Sept. 2024 – Present
DisinfoLab W&M Williamsburg, VA

- Developed **Python** software tools using **Hugging Face transformer** models for sentiment analysis.
- Developed backend components and data-processing pipelines using Python.
- Maintained containerized infrastructure on Linux-based systems.

SysOps Intern Jan. 2025 – Present
Nova.org - Private Internet Service Provider Remote

- Gaining experience with Linux systems, networking, and virtualization.
- Supporting deployment of open-source alternatives to mainstream cloud platforms.
- Assisting with integration of cPanel and related tools into existing virtual machine to improve service management.

SKILLS & TOOLS

Languages: C, C++, Python

Systems & HPC: Linux, OpenMP, MPI, SIMD (AVX/AVX-512), Docker

Topics: Algorithms, Operating Systems, HPC, Computer Architecture, Linear Algebra, Graph Theory