

William Andrews

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PROFESSIONAL SUMMARY

William & Mary student with a passion for math and computer science, currently advancing proficiency in **C/C++** and **HPC**, while applying advanced **mathematics** in problem-solving. Has a solid grasp of **Assembly** and machine level programming concepts.

EDUCATION - CS GPA: 3.90 | Math GPA: 3.79 | Total GPA: 3.80

College of William & Mary | Williamsburg, Virginia

Expected Spring 2027

Bachelor of Science | 1st Major: Computer Science | 2nd Major: Mathematics

Relevant Courses: Operating Systems, System Programming, Computer Organization, Directed Research in HPC, Algorithms, Honors Elementary Analysis, Graph Theory, Intermediate Linear Algebra, Abstract Algebra, Advanced Multivariable Calculus

WORK HISTORY

IT Intern

@ Nova.org Internet Service Provider

Fall 2024 - Current

- Supporting deployment of open-source alternatives to mainstream cloud platforms.
- Gaining experience in Linux-based system administration and networking services.

Software Engineer Intern @ DisinfoLab W&M

Fall 2024 - Current

- Developing software tools to analyze political and technological trends.
- Contributed to research on judicial public opinion, culminating in a [published article](#).

Software Engineer Intern @ Compliancy

Summer 2024

- Partnered with a startup to develop software notifying Florida roofers of updated permit requirements due to frequent PDF changes on municipality websites, using a concurrent, recursive web-scraping algorithm.

PROJECTS

Dynamic Transit Routing Engine (C++, Python, OSM, GTFS)

- Developing a real-time transit router using GTFS and OSM data for traffic-aware urban pathfinding.
- Planning to implement parallel A* in C++, and a neural network model for dynamic route planning.
- Will compare both approaches on speed and accuracy under traffic disruptions.

Matroid Algorithm Optimization (C++)

- Designed a modular C++ framework to represent and manipulate matroids—algebraic structures in combinatorial optimization.
- Implemented matroid greedy algorithms to solve problems in graph theory, linear algebra, and set systems.

High Performance Linear Algebra Library (C++)

- Created a Linear Algebra Library that supports custom type matrix creation and standard matrix operations.
- Implemented parallelized dot products using **TBB**, **OpenMP**, and **std::threads**, with a focus on optimizing cache efficiency and memory access patterns.
- Benchmarked parallel algorithms against serial versions to measure performance gains.

Nova Website (Linux) @ Nova.org

- Developing and deploying an internal website for Nova.org to host services and documentation.
- Aimed to provide secure, open-source alternatives to centralized ISP solutions.

YouTube Judicial Comment Scraper (Python) @ DisinfoLab W&M

- Collaborated on a project analyzing public sentiment on Mexican judicial reforms using YouTube comment data.
- Built Python tools for scraping and preprocessing data; co-authored a [research report](#) published in *The Diplomatic Courier*.

Modular Arithmetic Calculator (C++)

- Developed a modular arithmetic tool with support for operations like modulo, GCD, and LCM.
- Ensured efficient handling of large integers through optimized number-theoretic functions.

PDF Scraping Program (Python) @ Compliancy

- Developed a concurrent web-scraping program to monitor changes in roofing permit PDFs on Florida municipality websites.
- Implemented a recursive algorithm with parallelized requests for efficient crawling, in an effort to enable Compliancy to provide updated permits to roofers more effectively.