

Aditya Sengupta

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EDUCATION

University of Maryland, College Park

Expected Graduation: May 2027

B.S. Computer Science and B.S. Mathematics

GPA: 3.9/4.0

Coursework: Data Structures, Algorithms, Computer Systems, Databases, Discrete Math, Linear Algebra, Differential Equations

EXPERIENCE

Full Stack Developer

Jan 2025 – Present

University of Maryland Fellows Programs

College Park, MD

- Lead development of a multi-portal website with role-based authentication, student tracking, CMS & analytics dashboards
- Refactor 3 legacy portals from **PHP** to **Next.js** & **Node.js** for the Fellows Program Website, serving **2,500+** monthly users
- Cut deployment time by **43%** (approx. **7**→**4 min**) by implementing automated **CI/CD** with **GitHub Actions** & **Vercel**
- Deployed scalable **RESTful APIs** on **AWS Lightsail** using **Prisma** and **MySQL**, with load balancing & query optimization

Software Engineering Intern

Jun 2025 – Aug 2025

Solverminds

Remote

- Implemented **reinforcement learning** models using **PPO** to optimize container stowage and operational loading efficiency
- Built **ML pipelines** with **PyTorch** and **NumPy** to train, evaluate, and deploy models for real-time stowage optimization
- Designed **neural networks** and **reward functions** for multi-objective maritime optimization and operational efficiency

Quantum Machine Learning Researcher

Jan 2025 – Present

Do Quantum

College Park, MD

- Selected as **finalist** in Global Industry Challenge (Quantum Chemistry) sponsored by JPMorgan Chase, Wells Fargo, MITRE
- Implemented **VQE** & **ADAPT-VQE** algorithms to simulate dibenzothiophene molecular properties for asphalt aging analysis
- Achieved ground state energies of **-864.69 Ha** using **k-UpCCGSD** ansatz, demonstrating quantum advantage

Software & Web Developer

Jun 2024 – May 2025

Robotics @ Maryland

College Park, MD

- Developed responsive club website with **WebGL**-based 3D robot visualizations, custom animations & intuitive onboarding
- Designed **SONAR** system achieving **98.1%** accuracy in signal detection within **10-meter** range and **3-meters** of depth
- Collaborated with controls team to develop **PID/LQR real-time control systems** for navigation with **sub 1 ms** latency

PROJECTS

Posematic - A 3D Pose Editor | React, Tauri, Three.js, PyTorch, Optuna, Cython, NumPy



- Developed a 3D pose editor for real-time sketch-to-pose conversion using **PyTorch**, optimized with **Cython** & **Optuna**
- Implement 3D kinematic features including forward/inverse kinematics, gizmo rendering, and scene graph management
- Design modular front-end architecture supporting multiple viewports, undo/redo operations, and state management

GeoEstate | React Native, Expo, Three.js Express.js, GCP, Google 3D Maps & Places API, Firebase, PostgreSQL



- Built a cross-platform real estate platform utilizing **Google's 3D Maps API** for property visualization & geospatial analysis
- Implemented secure authentication & property features via REST APIs with **Firebase** & a normalized **PostgreSQL** schema
- Engineered scalable backend infrastructure on **GCP** capable of handling **100,000+** monthly requests with **99.9%** reliability

Toy Programming Language | Rust, LLVM, Logos, Inkwell



- Implemented a **statically typed compiler front-end** with AST construction, semantic analysis & **LLVM IR** code generation
- Developed a **deterministic lexer** in Rust using **Logos**, producing zero-copy tokens with minimal backtracking overhead
- Extended the language with lexical scoping, first-class functions, arithmetic, and branching to validate parsing & typing

SKILLS

Languages: Python, Java, JavaScript, TypeScript, OCaml, Rust, SQL, NoSQL, Bash, Zsh, R, LaTeX, MATLAB

Technologies: React, Next.js, Express.js, FastAPI, Spring, Three.js, Node.js, MySQL, PostgreSQL, MongoDB, Redis

DevOps & Infrastructure: AWS, GCP, Docker, Kubernetes, Nginx, Firebase, Vercel, Cloudflare Workers, Git, Linux, Postman

Certifications: AWS Certified Cloud Practitioner (CLF-C02, 2025), Oracle Cloud Infrastructure Architect Associate (in progress)