

# Nathaniel Xu

📧 nathanielxu.com   in nathanielxu   ✉ nathanielxu159@gmail.com   📍 Pimmit Hills, VA

## Experience

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**Software Engineer, Co-Creator, Mayfly (mayfly.dev)** [🔗](#) Aug 2023 - Jan 2024

- Created an open-source orchestration tool that automates the deployment of high-compute, high-memory apps to the browser to AWS EC2 using short-lived containers (session backends)
- Established secure WebSocket connections between users and their session backends running on cloud servers through a proxy by setting up a custom DNS server to dynamically generate A records
- Architected a REST API to connect to a controller and drones through a NATS pub-sub message bus by using a JS client library, allowing the user to spawn session backends on-demand through an API call
- Built a UI with React and Tailwind CSS to allow users to perform and monitor their deployments using a developer dashboard, view example applications, and test their applications for production
- Automated 50+ AWS steps down to a single command, by writing Terraform and Packer code to create and deploy custom AMIs containing Docker-Compose configurations to AWS EC2 auto-scaling groups
- Designed and implemented a relational database schema and index selection using PostgreSQL RDS
- Authored a case study [🔗](#) on Mayfly's problem domain, architecture, challenges, and design tradeoffs.
- Collaborated remotely with a small international team of engineers across three time zones, including daily stand-ups, pair programming, and code reviews

**Software Engineer, Self-Employed** 2021 - 2023

- Inspector Bin - a Request Bin clone for pooling and debugging webhooks built using MongoDB, Node.js, Express, and React and deployed on a DO Droplet using Nginx configured with a custom domain
- Basket Case - a simple CRUD shopping application built using Node, Express, MongoDB, and React.
- Open Homestead - a home/land plot pairing application built with React, Express, Node, and PostgreSQL

## Skills

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### Languages & Frameworks

TypeScript, Ruby, Go, Express, React, Jest, SQL

### Other Technologies

Node.js, PostgreSQL, MongoDB, Docker, Docker Compose, Nginx

### Cloud

Terraform, Packer, AWS EC2, ECS, DNS

## Certificates

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- Mathematics for Machine Learning and Data Science [🔗](#)
- Machine Learning Specialization [🔗](#)
- Introduction to Data Science in Python [🔗](#)

## Education

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**Launch School** 2021 - 2023

Multi-year, mastery-based software engineering curriculum. Read more at [launchschool.com/employers](https://launchschool.com/employers) [🔗](#)

**College of William and Mary, Computer Science** 2019 - 2021

**George C. Marshall Highschool, IB Diploma** 2015 - 2019  
GPA: 4.18, SAT: 1500/1600