

Alexander Peal

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EDUCATION

Virginia Tech

Bachelor of Science, Computer Science

Blacksburg, VA

Expected Graduation: May 2026

EXPERIENCE

Undergraduate Teaching Assistant

Virginia Tech

Blacksburg, VA

January 2024 – Present

- Assisted class sections of 250+ students with programming assignments written in **Python**, **C** and **RISC-V** assembly.
- Hosted 30+ interactive coding sessions, helping students understand concepts such as memory safety and data structures.

Software Engineer Intern

Appian

McLean, VA

June 2024 - August 2024

- Created a design for adding metrics to a **Nginx**-based web redirect service serving 100% of Appian's government customers.
- Extended design by researching the use of **KEDA** for autoscaling and **Grafana** and **AlertManager** for system observability.
- Updated **Helm** charts for existing **Kubernetes** clusters with exporter containers, making over 20 **Prometheus** metrics available.
- Tested updates to network policies and port configurations using **ArgoCD** and **Gitlab CI**, maintaining a service uptime of 100%.
- Updated **AWS Global Accelerator** association **Python** scripts to find valid **AWS ALBs**, lowering incident resolution time by 95%.

Software Engineer Intern

General Dynamics Mission Systems

Manassas, VA

May 2023 – August 2023

- Wrote a user interface using **Python** for an RF block downconverter, lowering avg. testing duration from 5 minutes to 1 minute.
- Built a **Node.js** diagnostic app in **Oracle Virtualbox** for an embedded system, enabling real-time monitoring for over 15 sensors.
- Led a critical presentation to Department of Defense contractors, contributing to a successful bid for a \$50M+ contract.

Software Team Lead

VTHacks

Blacksburg, VA

January 2023 – Present

- Led software development for VTHacks, the third largest hackathon on the East Coast, managing a 4000+ line codebase.
- Designed a centralized infrastructure for hacker registration, accommodating a 183% increase to over 2200 registrants.
- Streamlined development process by implementing detailed **Trello**-based sprint maps, leading to the successful deployment of a new check-in system, hacker web app, and event website 30 days ahead of schedule.

PROJECTS

[Proximity](#) | *Node.js, Express, React/Next.js, MongoDB*

October 2024

- Developed a project-based learning platform featuring an AI-powered web IDE to teach full-stack development.
- Designed and maintained **NoSQL** schemas for managing project and user data, supporting over 50 user accounts.
- Integrated database operations with GitHub authentication and a **React**-based front-end for a seamless user experience.
- Demonstrated the platform at VT Entrepreneurship Club's Startup Sprint, earning "Best AI Startup" out of 50 contestants.

[Quest](#) | *Firebase, React Native, Google Cloud*

April 2024

- Created a fully functional social media application allowing users to complete different daily quests with friends.
- Utilized **Firebase Cloud Functions**, **Authentication**, and **Cloud Firestore** to manage backend logic.
- Built a responsive mobile-first front-end for the application in **React Native**, supporting user login/signup, photo uploads, the ability to see and like other user's posts, and activity streaks, among other features.

[Medilive](#) | *Python, TensorFlow, Express, GPT-4*

March 2024

- Developed a virtual nurse that uses computer vision and speech recognition to monitor and converse with elderly patients.
- Configured **TensorFlow.js** computer vision models to detect patients in crisis, triggering a conversation with the LLM-based virtual nurse agent that gathers and summarizes details for first responders.
- Implemented asynchronous event handling and caching for LLM responses in **Express**, reducing response latency.

[Enfocate](#) | *Node.js, Express, React/Next.js, MongoDB, Tailwind CSS, Mocha/Chai*

Jan 2024

- Developed an agile project tracker that can create, read, and update tasks using **MongoDB**, **Node.js**, and **Express**.
- Wrote 20+ unit tests using **Mocha**, **Chai**, and **StrykerJS**, and utilized **JSDoc** for documentation, ensuring project stability.

SKILLS

Programming Languages: Python, Java, JavaScript, TypeScript, C, Rust

Libraries/Frameworks: Kubernetes, Helm, Node.js, Express.js, React, Tailwind CSS, Keras, TensorFlow, FastAPI

Developer Tools: Git, Github, Gitlab, AWS, Docker, Linux, MongoDB, ArgoCD, Prometheus, Grafana