

ALEXANDER PEAL

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EDUCATION

Virginia Tech

B.S. Computer Science

Thomas Jefferson High School for Science and Technology

Advanced Studies Diploma

Blacksburg, VA

Expected: May 2026

Alexandria, VA

May 2022

EXPERIENCE

Software Engineer Intern

Appian Corporation

McLean, VA

May 2024 - Present

- Added metrics/autoscaling to the [Appian Cloud Web Layer](#) web redirect service, increasing availability for over 500 customers.
- Upgraded service to handle over 10,000 requests per hour through event-driven autoscaling based on **Nginx** metrics.
- Used **Kubernetes**, **Helm**, **Prometheus**, **Docker**, **AWS EC2**, and **ArgoCD** for service development and verification.
- Improved monitoring and alerting by creating a **Grafana** dashboard and adding **Prometheus AlertManager** alerts using **PromQL**.
- Updated **AWS Global Accelerator** association **Python** scripts to find valid **AWS ALBs**, lowering incident resolution time by 95%.

Teaching Assistant

Virginia Tech Department of Computer Science

Blacksburg, VA

January 2024 - Present

- Led recitation sections and lectures on **algorithms**, **networking (TCP/IP)**, and **Python machine learning libraries**.
- Managed assignment design and feedback, supporting student learning and improvement for over 300 students.

Software Engineer & Team Lead

VTHacks

Blacksburg, VA

January 2023 - Present

- Directed a team of student developers in updating and maintaining the VTHacks website and check-in system.
- Leveraged **Node.js**, **React**, and **Python** to manage a 3000-line codebase for a top 20 hackathon nationwide.
- Used **Jest** and deployment tools **Cloudflare** and **Netlify** to ensure website stability for over 1000 registrants.

Research Intern

Virginia Tech Hume Center for National Security and Technology

Blacksburg, VA

January 2024 - April 2024

- Researched how HCI principles/AI can aid student instruction through the creation of "VizPI" under Dr. Yan Chen.
- Spearheaded implementation of rich messaging using **React** and **MaterialUI** to enhance student conversations.
- Achieved a 60% rise in chat interaction through the addition of rich message chips and frontend improvements.

Software Engineer Intern

General Dynamics Mission Systems

Manassas, VA

May 2023 - August 2023

- Independently developed a user interface for an RF block downconverter from scratch using **Python** and **C**.
- Integrated the application with an existing test framework using a **REST API**, improving RF test efficiency by 83%.
- Presented software to Department of Defense contractors for a chance to win a multi-million dollar contract.
- Created a diagnostic app using **Node.js**, **HTML**, and **Oracle Virtualbox** for an embedded system with 20+ sensors.

Programming Instructor

Fairfax Collegiate

McLean, VA

May 2021 - August 2022

- Instructed groups of up to 20 students in classes covering **Python** programming and robotics.
- Enhanced the existing course curriculum by creating custom instruction videos reinforcing relevant topics.

PROJECTS

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

April 2024

- Created a fully functional social media application allowing users to complete daily quests with friends.
- Utilized **Firebase Cloud Functions**, **Authentication**, and **Cloud Firestore** to neatly manage back-end logic.
- Built a responsive 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](#) | [OpenAI](#), [TensorFlow](#), [React](#), [Express](#), [Tailwind CSS](#)

March 2024

- Designed project during TreeHacks 2024, Stanford University's hackathon accepting less than 10% of applicants.
- Trained computer vision models using **TensorFlow.js** to detect elderly patients in distress.
- Developed an animated AI Agent using OpenAI's **GPT-4** that collects medical data through natural conversation.
- Created a front-end using **React** and **Tailwind CSS** to display the agent and real-time face tracking as well as a hardware integration using **Arduino** that monitors abnormal breathing and heart rate activity.

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

Jan 2024

- Implemented a robust **REST API** for data operations, using **mongoose** to customize **MongoDB** models.
- Added documentation using **JSDoc** and **apiDoc**. Used **Mocha**, **Chai**, and **StrykerJS** for mutation and unit testing.

TECHNICAL SKILLS

Programming Languages: Python, Java, C, C++, Rust, JavaScript, TypeScript, HTML, CSS

Libraries/Frameworks: Kubernetes, Node.js, Express, Prometheus, React, Next.js, TensorFlow, PyTorch, FastAPI

Developer Tools: Git, Linux, Bash, Shell Scripting, MongoDB, PostgreSQL, Oracle Virtualbox, Visual Studio