ALEXANDER PEAL

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EDUCATION

Virginia Tech   Blacksburg, VA
Bachelor of Science in Computer Science   *May 2025*
- **Relevant Coursework:** Software Design and Data Structures, Data Structures and Algorithms, Computer Organization, Data and Algorithm Analysis, Operating Systems, Discrete Mathematics, Applied Combinatorics

Thomas Jefferson High School for Science and Technology   Alexandria, VA
Advanced Studies Diploma   *May 2022*

TECHNICAL SKILLS

Programming Languages: Python, Java, JavaScript, TypeScript, C, C++, HTML, CSS
Libraries/Frameworks: Node.js, Express, React, Next.js, Tailwind CSS, TensorFlow, scikit-learn, FastAPI
Developer Tools: Git, Linux, Bash, Shell Scripting, MongoDB, PostgreSQL, Oracle Virtualbox, Visual Studio

EXPERIENCE

Software Engineer Intern   Blacksburg, VA
PRIME Lab   *Jan 2024 – Present*
- Contributed to the VizPi project, a web-based platform designed to revolutionize peer instruction in programming education through technologies like **React**, **Node.js**, and **PostgreSQL**, under the guidance of Professor Yan Chen.
- Spearheaded the development of a dynamic FAQ system integrated via **React**, enabling real-time student inquiries and responses, significantly enhancing engagement and support within the educational tool.
- Achieved a 60% rise in student participation and efficiency in query resolution through the feature integration.

Teaching Assistant   Blacksburg, VA
Virginia Tech Department of Computer Science   *Jan 2024 – Present*
- Facilitated learning in "Problem Solving in Computer Science" by leading three discussion sections per week, covering topics such as **Python**, **algorithmic analysis**, **networking (TCP/IP)**, and **artificial intelligence**.
- Provided timely, constructive feedback to support student learning and improvement for over 300 students.

Lead Software Engineer   Blacksburg, VA
VTHacks   *Jan 2023 – Present*
- Directed a team of student developers in enhancing the VTHacks website and managing various software tools, leveraging **Node.js**, **React**, and **Python** to manage over 3000 lines of code for a top 20 hackathon nationwide.
- Developed over twenty unique components using **React** in order to enable over 1000 students to register for the event. Conducted code reviews for website updates and managed deployment using **Cloudflare** and **Netlify**.

Software Engineer Intern   Manassas, VA
General Dynamics Mission Systems   *May 2023 – Aug 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%.
- Demonstrated software to Department of Defense contractors for a chance to win a multi-million dollar contract.
- Created a diagnostic tool built using **Node.js** and **HTML** and tested in **Oracle Virtualbox** for an on-board **embedded system**, which displayed crucial data for over twenty different sensors.

PROJECTS

MediLive | *OpenAI, TensorFlow, React, Express, Tailwind CSS*
- Developed project during TreeHacks 2024, Stanford University's hackathon accepting less than 10% of hackers.
- Trained computer vision models using **TensorFlow** to detect patients in distress. Developed an animated AI Agent using OpenAI's **GPT-4** that communicates with elderly patients when crisis is detected.
- Created a front-end using **React** and **Tailwind CSS** to display the agent and real-time face tracking as well as a hardware integration that monitors abnormal breathing and heart rate activity.

Enfocate | *Node.js, Express, React/Next.js, MongoDB, Tailwind CSS, Mocha/Chai*
- Developed a task management web application employing **Node.js** and **Express** for backend services and **React/Next.js** for a responsive UI. Used **Tailwind CSS** to create an intuitive and responsive interface for users.
- Implemented a robust **REST API** for data operations, integrating **mongoose** to customize **MongoDB** models.
- Added comprehensive documentation and testing using **JSDoc**, **apiDoc**, **Mocha**, and **Chai**.