

# Jack H. Golden

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Seeking a full time software engineering position.

## Education

### B.S. in Computer Science: Virginia Polytechnic Institute and State University

Expected Graduation:

Minors in Mathematics and Cybersecurity

GPA: 3.2

May 2024

- Coursework includes Machine Learning, Linear Algebra, Differential Equations, Systems Programming, Cryptography, Algorithm Analysis
- Member of the Linux Club (VTLUUG) and VTHacks. Tutored peers in Computer Science and Mathematics. ICPC competitor.

## Experience

### Software Engineer Intern - Northrop Grumman: Space Systems

May 2023 – Jul. 2023

Full time developer on Space Systems team

Aurora, CO

- Successfully prototyped a tool that supports situational awareness and operational efficiency in the Intelligence Community.
- Improved design of a temporal visualization system for a data pipeline with over 50 million records of ingested data per day.
- Employed knowledge of datastructures and algorithms to streamline the data-intensive application by an order of magnitude.
- Developed, built, and debugged extensive codebase in a Windows environment using Ant, Eclipse, Visual Studio, and JProfiler.

### Software Engineer Intern – Northrop Grumman: Mission Systems

June 2022 – Aug. 2022

Full time developer on Mission Systems team

Linthicum, MD

- Created the object-oriented design of an automated internal metric collection system, which is now in regular use.
- Excelled in Agile development methodologies (CI/ CD, Sprint, Atlassian Tools) and optimized delivery timeline.
- Used docker virtualization for deployment of the end product resulting in a more reliable and portable final solution.
- Automated testing and deployment of team's code through coding a Jenkins job. Implemented via Jenkinsfile.

### Front End Engineer – null.black Inc.

Feb. 2021 – Aug. 2021

Part time developer at a local VPN company.

Fairfax, VA

- Built React.js components in JavaScript for company's website redesign. Enabled static rendering to save resources.
- Collaborated with small team to solve design challenges; Contributed to the startup's UX design and mission.
- Gained proficiency in version control systems (VCS) infrastructure, utilizing Git for testing, development, and code deployment.

## Projects

### MIDI Visualizer

Jan. 2019 – Current

An EGB-esque web app designed to display meaningful visualizations of musical harmony.

- Implemented an Euler Tonnetz via Three.js. Learned vertex and fragment shaders to project the Tonnetz grid onto a Torus.
- Supports piano, guitar, ukulele, banjo, and many more instrument visualizations. I use this personally to practice scales.
- Built a MIDI-stream parser in Typescript as a back-end for the music player. Designed site with Figma.
- Eager to keep developing into a fully featured educational product assisted with machine learning

### Portfolio Website

June 2018 – Current

Showcases projects and serves as a means for me to practice web development and devops.

- Nginx, react, typescript based webapp that uses GitHub actions to automatically redeploy when I make commits.
- Deployed on DigitalOcean droplet and Cloudflare reverse proxy. The droplet serves content via NGINX and Node.js.
- Showcases creative coding projects inspired by Educational YouTube channels like Numberphile and Nature of Code.
- Main purpose of these projects is to find visual intuitions in various algorithms and concepts (eg. BFS versus DFS).

### Shark Classification Machine Learning Model

Jan. 2023 – May 2023

Vision Transformer based model identifies sharks at the species level

- Collaborated with a researcher in the school of Fish and Wildlife to improve their CNN-based solution.
- Implemented data pipeline in python which aggregates and validates online images from various social media sites.
- The Vision Transformer based model improved the existing model by 6% for an overall species identification accuracy of 73%.

## Skills

- **OS:** Windows, MacOS, Arch-Linux, Ubuntu, CentOS
- **Programming Languages:** C, C++, C#, Java, Python, JavaScript, HTML, CSS, Shell Scripting, SQL, batch
- **Libraries:** React.js, P5.js, Node.js, Three.js
- **Devops:** Git, Atlassian Suite, Jenkins
- **Writing:**  $\LaTeX$ , Office, Vim
- **Languages:** English (fluent), Spanish (proficient)
- **Interests:** Music, Rowing, Outdoors, Golf