# JUSTIN LIANG

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## EDUCATION

**Carnegie Mellon University**, Pittsburgh, PA — August 2025 – December 2026
Master of Science, *Artificial Intelligence – Electrical and Computer Engineering*, GPA: N/A

**Virginia Polytechnic Institute and State University**, Blacksburg, VA — Graduated May 2025
Bachelor of Science, *Computer Engineering (Machine Learning),* GPA: 3.85
Minor: *Computer Science*

**Awards/Recognition:** Graduated Summa Cum Laude, Dean's List (2021-2025), AFCEA Merit Scholar (2021), VT Alumni Scholar
*Relevant Coursework:* Computer Vision, Intro to Machine Learning, Intro to AI, OS Systems, Embedded Systems, Comp Arch

## WORK EXPERIENCE

**Software Engineer Intern, Google,** Sunnyvale, CA — May 2025 – August 2025
- Developer on the GPU Pod Software Team under the Machine Learning Systems, Cloud AI organization in Google Cloud.
- Building a software package to efficiently log various telemetry datapoints regarding GPU health status and store them in a database to assist with diagnosing failing machines. Utilizing internal logging, database, and container orchestration systems.

**Software Engineer Intern, Woodsong Technologies LLC**, Annapolis Junction, MD — June 2024 – August 2024
- Led the embedded systems development of a VR motion racing rig that will be used in competitive VR racing (IRacing).
- Utilized a TI C2000 board to read in-game data from a computer via UART, translate the data into a readable format and transmit the packages to the motors. Handled the math conversions and utilized soft limits to ensure driver safety.

**Software Engineer Intern, Tesla**, Austin, TX — September 2023 – December 2023
- Developed testing scripts using Pytest to validate communication with hardware during cell manufacturing process.
- Analyzed traces of data gathered using CAN to debug faults in a hardware system's state machine due to a power cycle.
- Spearheaded efforts in designing new software packages in C and Python to test hardware functionality and reliability on the cell production line and deployed these packages in California and Malaysia. Accurately diagnosed ~30 broken test boards.

**Digital Technologies Engineer Intern, Northrop Grumman**, Linthicum, MD — June 2023 – August 2023
- Designed an Android app to interface a human controller with a LoRa gateway via Bluetooth Low Energy which successfully was able to connect to an HM10 module and send and receive constant commands via a custom parser and message API.
- Created a color filter in Python that can take an image and filter out different colors via a dot product filter, convolved the image with a Gaussian blurred kernel and applied threshold filters to extract the edges for further image processing.
- The resulting means and standard deviations of the colors were used to provide insight on vegetation health and diversity.

**Software Engineer Intern, Northrop Grumman**, Linthicum, MD — June 2022 – August 2022
- Backend developer on Project Midnight Run, a 5-million-dollar contract to design a common backend radar architecture.
- Utilized a C++ and a Linux environment to develop translation functions between various data fields and test them with UTs.
- Created template files for a capability development kit, created CMake files to index repos, redesigned several functions to calculate projectile trajectories in 3D, and ensured code is up to a professional standard regarding comments and formatting.

## ENGINEERING PROJECTS AND EXPERIENCES

**RAG for Codebases,** VT/Parsons, Blacksburg, VA — October 2024– May 2025
- Technical Lead on a project to deliver a RAG system tailored to codebases, the goal was to be able to prompt a query with an NLP input, accurately retrieve relevant information from the code database, and use it to improve the LLM accuracy.
- Utilized Kaggle datasets and MongoDB to build the code database. Code chunking is based off docstrings and comments to improve the translation between the NLP input and the code embeddings. Passing retrieval results into Google Gemma API.
- Evaluated metrics such as BERT Score, ROUGE, and Human-Eval to determine the effectiveness of the RAG model.

**Game Development Project,** Personal, Blacksburg, VA — December 2023 – April 2024
- Lead game designer and game mechanics developer of a 2D stealth personal project video game utilizing the Godot Engine.
- Designed an infestation mechanic that will allow players to take control of NPCs and created a 'struggle' mechanic involving keeping a game piece within the bounds of a moving object controlled by cascaded sine functions with random constants.
- Created agile scripts in the GD Script language for various classes and scenes (objects) to improve robustness and ease of replication which allows the development team to rapidly place game pieces by only changing minimal amounts of code.

## SKILLS

- **Coding Languages:** Python, Java, C++, GDScript, C, MatLab, Kotlin
- **Technical Skills:** Kubernetes, QT, CCS, MongoDB, PCAN, Arduino, Godot, Android Studio, Ubuntu, Git, Pytest

## ADDITIONAL INFORMATION

**Second Degree Blackbelt,** Budo Taijutsu, Ellicott City, MD — March 2021
**Interests:** American Civil War and WWII history, longboarding, personal fitness, film analysis, Elden Ring, Mixed Martial Arts