

# Andrew Lepetri

Software Engineer



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## Professional Experience

### Senior Software Engineer

Joby Aviation | June 2024 - Current | Santa Cruz, CA (Remote Employee)

- Authored flight computer drivers to communicate with avionics sensors, actuators, and transponders
- Fortified and expanded foundational flight code framework
- Improved and maintained a Bazel monorepo, limiting dependency tree size, creating custom rules and aspects, linking flight code, simulation, analysis, and ground control software
- Integrated a Systems Engineering tool/ database with our software stack leveraging Rest API hooks, linking software unit and integration tests to automatically report status to the tool

### Senior Software Engineer

Xwing (Acquired by Joby Aviation) | April 2022 - May 2024 | San Francisco, CA (Remote Employee)

- Simulated avionics boxes and their hardware interface protocols to provide varying levels of integration test capabilities, from Software, to Hardware, to Aircraft-in-the-loop
- Performed trade studies on hardware acquisition for a Hardware-In-the-Loop (HIL) lab
- Authored a comprehensive ARINC 429 driver utility library in C
- Developed and maintained a C++ XPlane12 plugin that positioned the camera, injected objects, and calculated bounding boxes for a rendered scenario generating datasets for landing and takeoff vision based Machine Learning models
- Helped craft a middleware framework to sit between an ARINC 653 compliant OS and user applications that could be assigned to a partition, scheduled, managed, and perform Inter/Intra Partition Communication
- Designed a web application that allowed engineers to pull, visualize, edit, and push updates to a requirements management tool. Written in Typescript, leveraging PNPM for package management, Next.JS as a front and backend framework, a

## Skills

### Programming Languages

C++, Python, Rust, C, TypeScript, MATLAB, C#

### Technical Tools

Bazel, Cmake, Git, Ubuntu, Vscode, Next.js, Django, Docker, PostgreSQL

## Education

### Master of Science in Computer Science

Georgia Institute of Technology | 2023 | Atlanta, GA | 3.7 GPA

- Specialization in Computational Perception and Robotics

### Bachelor of Science in Mechanical Engineering with a Minor in Computer Science

San Diego State University | 2018 | San Diego, CA | 3.54 GPA

- Awarded Dean's List Honors (2014-2018)

PostgreSQL instance for persistent storage, and prisma for the database Object Relational Mapping (ORM)

- Bridged Systems and Software by conforming and linking code to requirements and test cases
- Maintained consistency with Simulink and C flight code through bi-directional automated exports and checks

## Systems Engineer

Northrop Grumman | March 2019 - March 2022 | Rancho Bernardo, CA

- Conducted Modeling, Simulation, and Analysis in support of future capabilities of an Unmanned Aircraft System (UAS)
- Performed Risk Reduction by modeling Sense-And-Avoid functionality onto a UAS, flying the emulated UAS in various airspace environments to collect and analyze critical safety metrics, characterizing the benefits and challenges potential additions would have on the system
- Practiced requirement generation from industry standards
- Integrated physical LRUs into a Hardware in the Loop (HIL) simulation
- Created Command and Control Graphical User Interfaces in C#
- Emulated hardware interfaces in C++: encoding, piping, and handling messages between subsystems
- Developed a Data Analysis framework in Python using Django, Postgres, and Docker with real-time simulation monitoring capabilities
- Executed trade studies using Monte Carlo runs to generate statistics to aid decision making
- Worked with an Agile team of engineers to develop and improve software using Git configuration control
- Created process automation tools in Python to increase operational efficiency

## Vision Engineer (Internship)

Cohu Inc | March 2017 - May 2018 | Poway, CA

- Contributed within a cross-disciplinary team to research, design, develop, test, and present vision related solutions in processing and sorting thousands of microchips per hour
- Worked on an array of projects including camera and lighting assemblies, micron precision alignment, device shuttle trays, OCR and 2DID recognition, and vision software applications

## Projects

### NGC Von Kármán Competition (2020)

- Performed 3D target tracking using sensor fusion of camera and thermal data to update positional belief within an Extended Kalman Filter.

### SDSU Mechatronics (2015-2018)

- Project manager for a team of Mechanical Engineers researching and designing an Autonomous Underwater Vehicle to compete in the AUVSI Robo Sub competition.
- Developed leadership and interpersonal skills through a simulated work environment.

### SDSU IEEE's Aztec Air

#### (2016-2017)

- Leader of a team of Electrical and Computer Engineers in constructing and programming a Semi-Autonomous Aerial Vehicle that utilizes inflight sensory interpolation to adjust flight path.

## **Instructional Assistant**

San Diego State University | August 2016 - December 2017 | San Diego, CA

- Taught and tutored for SDSU's MATLAB Computer Applications course
- Developed mathematics based assignments to be solved in MATLAB
- Honed teaching abilities through delivering weekly recitations sessions to students
- Unpacked complex engineering and programming topics into understandable lessons

## **Biomechanical Researcher**

San Diego State University | January 2016 - April 2016 | San Diego, CA

- Performed fiber-based cell migration simulations in MATLAB
- Modeled key mechanical properties of cells, analyzing their chosen paths through a randomly generated Extracellular Matrix
- Sourced simulation parameters from scientific journals

## **Interests**

 Birding, Hiking, Traveling

 Crocheting, Knitting

 3D Printing, Tinkering, Laser Cutting

 Board Games, Chess, Game Dev