

# CHARLIE HAYWOOD

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## SKILLS

C, C++, Python, JavaScript, React, Node.js, REST APIs, Git, PyTorch, TensorFlow, NumPy, Computer Vision, Machine/Deep Learning, Real-time Simulation, Chinese, Spanish, Cantonese.

## EXPERIENCE

Business Systems Software Engineer, **Hoover Institution** **Stanford, CA** (*Sep 2025 – Present*)

- Deployed backend automation workflows to streamline internal systems across CRM, web, financial, and content platforms.

AI Research Intern, **Safe and Intelligent Autonomy (SIA) Laboratory** **Stanford, CA** (*Sep 2025 – Present*)

- Implementing safe, vision-guided autonomy in eVTOL aircraft with Hamilton–Jacobi analysis for robust perception and control.

Software Product Intern, **Innovaccer** **San Francisco, CA** (*June 2025 – August 2025*)

- Built and deployed a React + Vercel AI SDK interface that converts natural language into structured, rule-based JSON logic.
- Designed backend data handling and validation flows to ensure reliability across healthcare workflows, reducing a 2-month to 1-year configuration cycle to real-time automation, now in production and used by internal and client teams.

Drone Technologies Intern, **Robodub Inc.** **Seattle, WA** (*June 2023 – August 2024*)

- Developed morphing technology for multi-rotor drones, enhancing efficiency, load-adaptability, and safety.
- Conducted flight simulations using SciLab/MATLAB modeling torque redistribution from movable rotors; demonstrated 2x increase in angular displacement when shortening arm, achieving forward flight with significant power draw reductions.

Drone Software Engineer Intern, **SciFly Aviation.** **Santa Clara, CA** (*June 2023 – September 2023*)

- Developed MATLAB virtual image stabilization for Unmanned Air Systems (UAS) and eVTOL, enhancing stability and safety.

AI/ML Research Intern, **Duke University** **Durham, NC** (*December 2022 – June 2023*)

- Published and presented at IEEE International Joint Conference on Neural Networks (IJCNN) 2023; conference manager/chair.
- Identified and solved the issue of blind image deblurring, proposing a lightweight deep-wiener network solution for real-time speed, achieving real-time performance (100+ FPS), outperforming state-of-the-art in speed and efficiency (2-3x faster inference) with future applications to autonomous vehicles and drones; [DOI: 10.1109/IJCNN54540.2023.10191586](https://doi.org/10.1109/IJCNN54540.2023.10191586)

Autonomous Drone Researcher, **MIT Lincoln Laboratory** **Cambridge, MA** (*July 2023 – August 2023*)

- Led MIT's Lincoln Laboratory BWSI UAS-SAR course, utilizing advanced Python skills to develop innovative solutions.
- Utilized Raspberry Pi systems, RADAR API with image processing to enhance autonomous drone navigation using Pixhawk.
- Optimized SAR backprojection algorithms, reducing runtimes from >10 min./scan to 500ms for 2 billion operations via NumPy vectorization, C++/Pythran, and multiprocessing, enabling real-time SAR image formation with a 100x accuracy improvement.

## RESEARCH

- [Real-time Blind Deblurring Based on Lightweight Deep-Wiener-Network](#) — IEEE IJCNN 2023
- [OmniLoc: Towards Leveraging Multiple Perspectives for Probabilistic Visual Geolocalization](#) — Stanford University
- [Multi-Agent Surveillance Under Compromised Communication](#) — Stanford University

## EDUCATION

**Stanford University** **Palo Alto, CA**

*B.S. Computer Science*

*September 2024 – June 2027*

Coursework: Graduate Deep Learning for Computer Vision (CS231N), Programming Abstractions (CS 106B), Mathematical Foundations of Computing (CS 103), Probability for Computer Scientists (CS109), Linear Algebra (MATH 51, MATH52).

Ongoing: Graduate Robot Autonomy (CS237A/B), Graduate Decision Making Under Uncertainty (CS238), Computer Organization & Systems (CS107), Design & Analysis of Algorithms (CS161), Technology Entrepreneurship (ENGR145).