Brian Check

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EDUCATION

Stanford University | *Stanford, CA* *Jun 2026*
Master of Science in Aeronautics and Astronautics
Carnegie Mellon University | *Pittsburgh, PA* *May 2024*
Bachelor of Science in Mechanical Engineering, Minors in Robotics and Business Administration
GPA: 3.98 / 4.00 (Engineering Dean's List, all semesters)

RELEVANT WORK EXPERIENCE

Founder and CEO | HyperWatch Technologies, Inc | *San Francisco Bay Area* *Aug 2025 – Jan 2026*
- Raised $250k, won $80k DoD award, sole engineer building stratospheric tracking system for hypersonic defense
- Architected full hardware and ROS 2 software stack from scratch: C++/Python nodes on Jetson Nano, ESP32 motor control firmware, integrating FLIR EO/IR sensor, dual-GNSS, IMU, gimbal, and radio telemetry
- Designed custom power circuitry and PCB, including LVD and DC-DC converter circuits sized for system loads
- Ran solo desert tests (helium, tethered balloon rig, target drone), maintaining thermal track to 165 m
- Authored technical white paper with MATLAB tracking simulations demonstrating 400x SNR improvement

Structures Engineering Intern | Vast Space | *Long Beach, CA* *Jun 2025 – Aug 2025*
- Responsible Engineer for fire suppression mounts; designed for launch loads and rapid removal; built prototype
- Built test fixtures and authored validation test plans for primary structure clevises

Graduate Engineer (Raptor Foundry) | SpaceX | *Hawthorne, CA* *Jun 2024 – Sep 2024*
- Designed, built, and tested custom ratcheting tool to load 450lb crucibles into top-access-only vacuum chamber
- Eliminated 80+ daily 50lb lifts (#1 technician complaint) while reducing loading time by 80%

Undergraduate Research Assistant | Robotics Institute (CMU) | *Pittsburgh, PA* *Sep 2023 – May 2024*
- Developed low-cost 3D printable robotic hand; wrote Python control on RPi using inverse kinematics
- Integrated embedded force sensors at fingertips for real-time closed-loop tactile manipulation

Space Systems Engineering Intern | FTS International | *Washington, D.C.* *May 2023 – Aug 2023*
- Developed TDOA geolocation algorithm and Monte Carlo simulation in MATLAB, achieving <10km accuracy
- Designed 6U CubeSat bus integrating 10 subsystems; conducted orbital trade studies in STK/MATLAB

ENGINEERING LEADERSHIP AND PROJECTS

Pickleball Robot (Senior Design Capstone, CMU) [Team of 5]
- Built autonomous training robot; led software/electrical using ROS/Python/RPi for drive, launch, and collection
- Won Best Overall at CMU design expo

Team Captain, Aerodynamics & Composites, Carnegie Mellon Racing
- Top US team at FSAE Michigan (2nd overall of 69); led 6-person team to design, mfg, and validate aero package
- Led Ansys Fluent CFD, 20+ carbon fiber layups, testing; +10% downforce, -30% mass, first-ever DRS system

DragonDock | Spacecraft Rendezvous Simulation | GitHub
- Built MATLAB GNC simulation for Dragon ISS docking, achieving rendezvous in 12 h and robust to 5% burn error
- Implemented J2 perturbed propagation, reachable set guidance, UKF navigation, and Lyapunov control

Jenga Tower Robot (Robot Kinematics & Dynamics Final Project) | GitHub
- Programmed 5-DOF arm to autonomously stack 18-block Jenga tower; tuned per-joint PID for stable placement
- Derived closed-form inverse kinematics with kinematic decoupling; implemented trapezoidal/spline trajectories

Bare-Metal Embedded Operating System (CS 140E Project)
- Building OS from scratch on Raspberry Pi in C/Assembly: bootloader, interrupts, threads, virtual memory, FAT32

SKILLS

Software/Electrical: Python, C/C++, ROS, MATLAB, Git, Linux/Bash, PCB Design, Jetson, Raspberry Pi, ESP32, Arduino
Mechanical: CAD (SolidWorks/NX/Fusion), Ansys Fluent/Mechanical, CNC, sheet metal, 3D printing, mill/lathe