Jack London

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EDUCATION

B.S. in Computer Science & Robotics 08/2024 – 05/2027
Carnegie Mellon University, School of Computer Science Pittsburgh, PA
GPA: **4.0/4.0**
Activities/Societies: **Carnegie Mellon Racing (Formula SAE), CMU Running (President)**
Selected Coursework: Intelligent Robot Systems, Introduction to Computer Systems (C and x86 Assembly), Distributed Systems (Java & Golang), Robot Building Practices, Computer Vision, Deep Learning, AI/ML, Natural Language Processing, Generative AI

PROFESSIONAL EXPERIENCE

MIT Lincoln Laboratory Group 39 (Active DoD Security Clearance) 05/2025 – 08/2025
Distributed Software Intern Lexington, MA

- Modernized a distributed **network localization and navigation** system for real-time cooperative localization in mobile environments using an **extended Kalman Filter** in **Python**. Deployed on **UWB** Radio Modules.
- **Refactored 1000+ lines of legacy Julia code** to interface with newly developed **C modules**, improving system stability, performance, and long-term maintainability.
- Deployed and tested containerized **Linux environments on Raspberry Pi systems**, ensuring consistent builds and runtime behavior across embedded nodes. Used **GitLab CI/CD** for test automation.
- Rebuilt a 3D **JavaScript**-based visualization interface, cutting latency by **40%** and enhancing real-time node tracking.
- Collaborated in a **team-based Agile development environment**, participating in code reviews, debugging sessions (**GDB)**, and system-level design discussions.
- Deployed improvements adopted in real-world distributed navigation applications **(US Naval Academy)**.

PROJECTS

Fully Autonomous TurtleBot3 08/2025 – Present

- Built a fully **autonomous ROS2**-based TurtleBot3 robot implementing end-to-end robotics software stack: **odometry**, **occupancy grid mapping**, Monte Carlo **localization**, scan matching (**ICP**), **SLAM**. Implemented in **C++**
- Validated navigation and control pipelines using **Gazebo physics-based simulation**, modeling vehicle dynamics and environmental interactions prior to deployment.
- Achieved **90–95% autonomous waypoint success** in cluttered indoor tests.
- Implemented a **deep learning** based **computer vision** module, enabling intuitive **human–robot interaction** with a **>90%** recognition accuracy for **3+** distinct hand signals using camera processing using **PyTorch, AWS,** and **OpenCV.**

CornholeBot - Fully Integrated Mechatronic Launch System 08/2025 – Present

- Designed, **CAD**ed, and manufactured a fully autonomous **four-bar intake and flywheel launching system** mounted to a drive-base capable of accurately firing 15 beanbags in under **240 seconds** using **microcontrollers**
- Engineered a **precision shooting mechanism**, achieving **≥ 90% scoring accuracy** at a fixed distance through trajectory testing and iterative tuning.

SKILLS

Proficiency in Julia, C, C++, JavaScript, Python, Java, NodeJS, ROS2, Git, Sensor Fusion, Backend Development, API Development, React-Native, Computer Vision, Embedded systems, Microcontrollers, DevSecOps, Agile Development