LAWRENCE ONYANGO

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EDUCATION

Carnegie Mellon University   **Pittsburgh, PA**
Bachelor of Science in Mechanical Engineering; Additional Major in Robotics   *Class of 2024*

- GPA: 3.77 / 4.00; CIT Dean List
- **Relevant Coursework:** Robot Kinematics & Dynamics, Computer Vision, Optimal Control & Reinforcement Learning*, Robotic Planning*, Principles of Imperative Computation, Feedback Control Systems, Mechanical Systems Experimentation*, Dynamic Systems & Controls, Robotic Systems Engineering, Electromechanical Systems Design, Engineering Design, Numerical Methods, Dynamics, Stress Analysis, Heat Transfer, Fluid Mechanics, and Thermodynamics   ***** *Spring 2024*

SKILLS

Programming Languages: Python, Kotlin, MATLAB, Julia, C, C++, Bash, JavaScript, HTML, and CSS
Technologies: NumPy, OpenCV, PyTorch, Beautiful Soup, Pandas, SQL, and Spring
Robotics: Kinematics and Dynamics, Computer Vision, Machine Learning, Systems Design, Localization, and SolidWorks
Controls: Convex MPC, LQR, Feedback Controller & Compensator Design, LTI System Analysis, and PID Design

PROFESSIONAL EXPERIENCE

Atlassian   **New York, NY**
Software Engineering Intern (Backend)   *May 2023 – Aug 2023*

- Consolidated and deployed two critical tier microservices utilizing Spring and Kotlin, streamlining sequence number generation and eliminating redundant code across multiple services. This unified approach removed the need for duplicated logic, resulting in a more efficient and maintainable system architecture.
- Designed customized dashboards using Splunk and Terraform, empowering individual service teams with dedicated monitoring tools for service performance.

Google (Cloud TI Platforms)   **Sunnyvale, CA**
Software Engineering Intern (SWE)   *May 2022 – Aug 2022*

- Developed a diagnostic tool capable of remotely accessing each SSD via SSH, automatically extracting core logs and conducting detailed analysis. Analysis was performed at the individual core level within the SSDs, contributing to the identification and isolation of malfunctioning cores.
- Achieved a noteworthy 30% reduction in debugging time for SSD developers, streamlining issue resolution processes and notably enhancing the overall debugging experience.

PROJECTS

Autonomous Garden Robot   *Fall 2023 – Now*

- Spearheading the development of an autonomous garden maintenance robot as the Project Manager, overseeing the integration of movement, water and nutrient dispensing, plant monitoring, and navigation subsystems for precise plant care around a garden environment.
- Overseeing the project's design, build, integration, and testing phases, ensuring rigorous testing and refinement of subsystems utilizing system engineering principles, culminating in the delivery of an autonomous system for plant-care.
- Developing and implementing the navigation and plant monitoring subsystem, utilizing Visual/LiDAR SLAM for navigation and stereo-cameras for plant monitoring.

Safeguard Against Pests Robot   *Fall 2023*

- Led a multidisciplinary team in conceptualizing, designing, and delivering an autonomous sentry robot to identify and eliminate common pests, completing the project within a 3-month timeframe.
- Spearheaded the design and integration of the computer vision system using the YOLO architecture for precise object detection and segmentation, optimizing the entire pipeline for real-time operation with a response time of <0.5 seconds.
- Developed and implemented a scoring mechanism within the computer vision system to ensure safety and accuracy, preventing the release of pesticides when specific obstacles are within a target area, thereby enhancing the system's reliability and safety protocols.

5-DOF Jenga Building Arm   *Fall 2023*

- Manually extracted the DH parameters for a 5-DOF Robotic Arm, enabling precise control of the robotic arm via forward and inverse kinematics of the system.
- Employed spline trajectories to ensure precise control in creating a six-layered Jenga tower, minimizing abrupt movements in the robot's motion, allowing for optimized position and velocity control.