

## SUMMARY

I am a recent graduate with a Master's degree in Robotics and Autonomous Systems from Arizona State University, equipped with a strong portfolio of projects in this domain. I am actively seeking full-time and co-op opportunities in design and development. My areas of interest include robotics engineering, software engineering, machine learning, path planning, and computer vision.

## EDUCATION

### M.S Robotics and Autonomous Systems

May 2024

Arizona State University, Tempe, AZ

GPA-3.77/4

Relevant Coursework: Human Robot collaboration, Artificial Intelligence, Perception in Robotics, Multi-Robot Systems, Embedded Machine Learning.

### Bachelor of Technology in Electronics and Communication Engineering, Specialization in Robotics

Mar 2022

K L Deemed to Be University, India

GPA-8.66/10

Relevant Coursework: Introduction to Robotics, Advance Robotics

## TECHNICAL SKILLS

**Tools, Frameworks, and OS:** Git, JIRA, Mission Planner, ArduPilot, TensorFlow, MATLAB, ROS, RSLogix Emulate, RTOS, Multi-Threading, CLI, FUSION360, 3D, NI Vision Builder, KiCad, OpenCV, Raspberry Pi, Docker, Linux, LabVIEW Real-Time, Microsoft suite

**Programming:** Python, C, C++, LabVIEW, PLC, HTML, CSS, JavaScript, SQL, C#

**Certifications:** NI Certified LabVIEW Developer (CLD), NI Certified Associate LabVIEW Developer (CLAD)

## PROFESSIONAL EXPERIENCE

### Hylio Inc, USA | R&D UAV Engineer Intern:

May 2023-Aug 2023

- **Developed a Comprehensive Parameter Management Tool:** Designed and implemented a software tool to efficiently manage **2,000+** parameters across multiple drone models, streamlining engineering **workflows** and resulting in improved **drone performance**.
- **Optimized Ground Control Station (GCS):** Resolved **critical** issues within the Ground Control Station (GCS), including custom command functionality, leading to a **20% increase** in production efficiency and a reduction in drone flight incidents.
- **Enhanced Drone Navigation:** Collaborated on drone firmware to enhance the **path planning** algorithm using the **Dijkstra Path-Planner**, achieving a **95%** optimization rate. This improvement significantly increased drone navigation efficiency, especially in complex terrains, reducing mission times by 30%.

## PROJECTS

### Adaptive Ball Strike System Development:

Jan 2024 - Apr 2024

- Developed a robust **HSV ball detection** system using computer vision techniques to dynamically identify and track ball for adaptive strike applications.
- Implemented sophisticated **pose estimation** algorithms to ascertain the position of objects, crucial for enhancing interaction in adaptive ball striking systems.
- Engineered **trajectory prediction** solutions with an **Extended Kalman Filter (EKF)** to enhance the accuracy and efficiency of **ball trajectory** forecasting in real-time scenarios.
- Optimized **target location** identification processes, facilitating improved strategic planning and execution in adaptive ball strike environments.

### SwarmSync: Autonomous Robotics for Public Health Safety:

Aug 2023 - Dec 2023

- Implemented **Boids Flocking Algorithm** to optimize **Separation** tactics in **swarm robotics**, enhancing autonomous **navigation** and obstacle **avoidance**.
- Developed **Alignment** strategies within the swarm for **coordinated movement** and efficient task execution, using Python and **Robotarium** for simulation.
- Achieved **Cohesion** in multi-robot systems, ensuring effective **teamwork** for sanitation tasks, demonstrating **potential** in **public health safety**.

### Self-Driving Car Simulation:

Aug 2023 - Dec 2023

- Developed a **self-driving car** simulation project, resulting in comprehensive **driving mechanics**, defined environmental variables and simulated **sensor functionalities**.
- Implemented **collision detection algorithms** and utilized **Neural Networks** to enable **autonomous decision-making** and car control within the simulation.
- Achieved these parameters using **Genetic Algorithms** with **mutation techniques** to optimize **neural network** performance, significantly improving the simulation's **adaptability** and **efficiency**.

### Conveyor Belt Sorting System Simulation

Aug 2023 - Dec 2023

- Conveyor Belt Simulation: Designed and simulated an efficient sorting system with **Allen-Bradley RSLogix** Emulate.
- PLC Programming: Utilized **ladder logic** for automated object **sorting** based on size and type.
- System Testing: Conducted extensive **testing** and troubleshooting to assure **reliability** and efficiency.

### Visual Tracking Unmanned Vehicle:

Jan 2023 - Apr 2023

EGR 598 - Robotics Systems II (Course Project)

- Developed a high-performance, **low-level flight control algorithm** with integrated **Kalman Filter** for autonomous navigation of the Mambo Drone.
- Integrated an **advanced image processing module** for various capabilities in a real-world Mambo drone.

### CLIPort: What and Where Pathways for Robotic Manipulation:

Jan 2023 - Apr 2023

CSE 598-Perception in Robots (Course Project)

- Implemented **safe constraints** within the robotic manipulation **pathways** to avoid **hazardous** areas.
- Enhanced system safety by **identifying** and **mitigating risk** factors in **real-time**.
- Contributed to the development and **fine-tuning of algorithms** that improved the overall reliability and safety of robotic operations.

### Autonomous Mobile Robot [AMR]:

Aug 2022 - Dec 2022

- **Designed and Implemented ROS-Based Autonomous Robot:** Developed a cost-effective last-mile delivery robot for university campus tasks, incorporating ROS, SLAM, sensor fusion, ACML, Dynamic Window Approach [DWA] as the local planner, and A\* as the global planner, enabling precise navigation and efficient task execution.
- **Enhanced Perception with Real-Time Object Detection and Tracking:** Implemented real-time object detection and tracking techniques, significantly improving the robot's perception capabilities for seamless navigation.

### LabVIEW Certification Projects:

- Developed HVAC, ATM, vending machine, and automobile simulations.
- Utilized **State Machine Architecture** during National Instruments CLD certification to demonstrate **multi-domain** proficiency and advanced state machine design skills.

## ACTIVITIES AND ACHIEVEMENTS

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### Awarded for solving problem statement on pick and place with AMR:

Accomplished **first-place** wins in **state** and **regional AMR competitions** by **AP State Skill Development Corporation and National Skill Development Corporation** in 2018. Achieved **runner-up** status **nationally in 2018** and **clinched** another **state-level victory in 2021**.

### National Instruments Center of Excellence, Technical Club, at KL University

Aug 2018 – May 2019

- Conducted **tutoring sessions** for **10-15 undergraduate engineering** students weekly, focusing on **LabVIEW** programming, **LabVIEW FPGA**, and **LabVIEW Real-Time** device interfacing.
- Provided **guidance and assistance** to students in resolving issues related to their projects and assignments.