KAUSTUBH KRISHNA

Factory floors don't care about theory. I build what survives.

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WHERE THEORY MEETS REALITY

RLx-Core

Redefining factory automation: multi-phase RL built for industrial automation.

🗓 Feb 2025 – Ongoing

- Architecting RLx-Core: an industrial grade RL-pipeline, built to target the tiny fraction of industrial automation problems where classical control fails -which demands learning, adaptation and real-time recovery.
- The mission: Benchmarking RL not against the toy problems, but against industry-hardened controls, only in scenarios where RL's flexibility actually wins.
- Roadmap: Building a diverse 19-phase pipeline covering model-based RL, world models, meta-RL, hierarchical, multi-agent, offline, robust, transformer-based RL and many more -each type are mapped to a real factory pain point.
- Expected results: Factory validated, open-source, well documented where RL is worth it and where traditional methods remain supreme.
- Stack: Isaac Sim, Isaac Lab, ROS2, JAX/FLAX/Optax, ONNX, C++, Docker, Hydra, W&B, PyTorch (Only for Phase 1-5). Modular and deployable -engineered for the real world.

RoboRacer Sim Racing League @ ICRA 2025

AutoDRIVE

🗓 Feb 2025 – May 2025

- Qualified for ICRA RoboRacer finals; ranked 3rd globally in Phase 1, Team Ctrl+Drift.
- Developed a reinforcement learning based driving policy for autonomous racing; built for fast, robust, and sustained zero crashes over 100+ laps, beats some of the traditional control algorithm like (pure pursuit, Stanley) in terms of speed and accuracy.

Self-Driving car

Full-scale golf cart autonomy: now integrating with Autoware & RL in Carla simulator.

🗓 July 2025 - Ongoing

- Building full-scale golf cart autonomy with Autoware for real-world navigation/control; ongoing under Centre of Electric Mobility (CEM). Hardware: Jetson AGX Orin, 3D & 2D LiDAR, Intel RealSense camera.
- Developed RL policy for autonomous driving tasks in Carla simulator; used behavior cloning as a baseline for the SAC agent.

WHAT I'M BUILDING NEXT

Not a roadmap: an execution queue.(target: November 2025)

- Expanding RLx-Core: multi-phase pipeline, building custom tasks with OpenUSD and IsaacSim.
- Full autonomy stack for real vehicle (Golf Cart, Autoware, Centre of Electric Mobility).
- Real-time multi-sensor fusion pipeline (RGB, LiDAR, IMU, GNSS, etc) with ROS2; plug-and-play design.
- Unified classical control stack (ROS2/C++): Frequency-domain, state-space, optimal/robust, MPC, nonlinear/adaptive control.

PRODUCTION READY TOOL-CHAIN

Simulation & Robotics

IsaacSim, IsaacLab, Autoware, CARLA, ROS2 (Humble, RViz2, URDF/Xacro), OpenUSD

Development Stack

JAX, Flax, Optax, Hydra, Weights & Biases, ONNX

Programming & Tooling

C++, Python, Bash, CMake, Linux, Docker

Hardware Platforms & Integration

NVIDIA Jetson, RealSense Depth Camera, 3D/2D LiDAR, Arduino

EDUCATION

B.Tech in Computer Science with Specialization in Artificial Intelligence and Machine Learning

SRM University

🗓 July 2023 – June 2027

CGPA: 9.44