SOMIK DHAR

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Engineer experienced in building and deploying real-time systems under tight compute and latency constraints. Eager to grow into client-facing roles and contribute to scalable ML solutions in a partnership-driven environment.

PROFESSIONAL EXPERIENCE

AI & Perception Engineer **Feb'25 - Present**
NextLeap Aeronautics *Bengaluru, IN*

- Designed and deployed real-time vision and control pipelines for UAVs (tracking, landing, perception-guided control) under edge-compute constraints
- Built low-latency video streaming pipelines (GStreamer + RTSP/UDP), successfully maintaining 27–28 FPS output from a 30 FPS input on embedded hardware
- Implemented multi-core + multi-threaded optimizations in Python/C++ to reduce perception-to-actuation latency by 30%
- Worked across Jetson (Xavier/Orin), Raspberry Pi, and custom camera setups; involved in sensor integration, camera evaluation, and model optimization for RGB + thermal use cases.

RESEARCH EXPERIENCE

Graduate Assistant **Jan'23 - Oct'24**
Ai4CE Lab, New York University *New York, NY*

- Developed Video-based Visual Place Recognition (VPR) pipelines combining CNN encoders, NetVLAD descriptors, and sequential matching for GPS-denied navigation.
- Implemented multiple VPR algorithms (NetVLAD, SeqMatchNet) and utilized KL/Jensen-Shannon divergence-based comparisons for temporal feature aggregation.
- Designed experiments to evaluate VPR robustness; improved Recall@5 performance by tuning feature weighting strategies and temporal ordering.
- Built end-to-end evaluation pipelines using KD-Trees, sliding windows, and benchmarking frameworks.

Research Intern **Feb'22 - Jun'22**
Indian Institute of Science(IISc.), Bangalore *Bangalore, IN*

- Installed & calibrated Motion Capture System with ROS support, enabling precise localization of robots
- Deployed Turtlebot3 robots with differential and mecanum drive configurations for multi-robot experiments
- Developed a Python-based CLF motion controller with CBF-based collision avoidance for multi-robot systems
- Achieved a 30cm safety radius in a 6x5 m arena, enabling real-time collision avoidance for multi-robot systems

Research Intern **Aug'21 - Dec'21**
Robotics Innovation Labs, IISc. Bangalore *Bangalore, IN*

- Built and calibrated a differential drive 2WD robot with forklift for autonomous navigation in indoor environments.
- Integrated sensors and motors to achieve advanced collision avoidance and precise localization.
- Fine-tuned PID controller for precise positioning, achieving 95% accuracy with 0.2cm deviation

TECHNICAL SKILLS

Programming: Python, C++; **ML/ Acceleration:** PyTorch, CUDA, TensorRT; **Systems/ Deployment:** Jetson (Xavier/Orin), Raspberry Pi, MAVLink, ArduPilot **Libraries/Tools:** OpenCV, Git

EDUCATION

New York University **Sep'22 - May'24**
MS, Electrical Engineering New York, NY

IIEST, Shibpur **Jul'17 - Jun'21**
B.Tech, Electrical Engineering