Phani Kiran V

Actively looking for a summer 2025 internship in Robotics, Control, and Machine Learning

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EDUCATION

2024 - Present	MS in Mechanical - Robotics Specialization	Northwestern University	4.0/4.0
2014 - 2019	Bachelor's and Master's in Aerospace Engineering	Indian Institute of Technology, Kharagpur	3.83/4.0

Relevant Coursework : Robotic Manipulation, Robot Design, ML, DL, Gen AI, DSA, Adaptive Control

SKILLS

Programming: C | C++ | Python | Assembly | PASCAL | CMake
Libraries: ROS | Numpy | Pytorch | HPP | PyGazebo | NetworkX
Tools: Matlab | Git | Solidworks | VS Studio
Others: Linux | LaTeX| Docker

WORK EXPERIENCE

Centre of Robotics and Biosystems | Northwestern University **Oct'24 – Present**

- Currently working on integrating Drake simulator with ROS2 for the Northwestern DexNex V0 robot

Robotics and Automation Engineer | Airbus (Bangalore, India) **Oct'22 – Aug'24**

Reactive Path Planning using Humanoid Path Planner (HPP) Framework

- Resolved an intermittent communication issue between controller and state machine, contributing to 4 opensource libraries
- Developed an Inverse Kinematics (IK) planner for a surface inspection application and demonstrated it on a UR10e robot
- Optimized IK planner, curtailing robot unsafe movements and cable entanglement, cutting down development time by 60%
- Led Path Planning team of 7 people within Robotics and published whitepaper "Motion Planning for Industrial Robots"

Avionics Software Engineer | Airbus (Bangalore, India) **July'19 – Sep'22**

Flight Warning Computer (FWC) operational margin enhancement for A321 XLR type certification

- Optimized timer frequency of FWC, increasing operational margins of acquisition and BITE components by 8.7% and 32%
- Extended FWC's lifespan to support 4-5 additional critical developments; received award for outstanding contribution

Part Number (PN) dissymmetry monitoring for A330 and A340-500/600

- Introduced an FWS feature to detect identical units with mismatched PNs, reducing in-flight false alerts
- Designed a custom fault logging mechanism in BITE memory to improve troubleshooting and lower maintenance downtime

Drone navigation in dynamic obstacle environment | Boeing (Bangalore, India) | Intern **May'18 – Jul'18**

- Created hybrid path planning algorithm combining A* for global planning and Potential Field for local obstacle avoidance
- Executed SITL simulations integrating Dronekit-Python, NetworkX, and Pygazebo for telemetry, mapping, and feedback

Control of high altitude vehicles | Indian Institute of Science | Intern **May'17 – Jul'17**

- Developed a neuro adaptive attitude controller, adhering to constraints of Divert and Attitude Control System
- Formulated a Jacobian-learning rule, enabling controller to track modeling uncertainties with fewer transients
- Evaluated controller robustness in simulation, achieving 98% efficacy with up to 50% random variations in parameters

RELEVANT PROJECTS

Planning and control of youBot 13DOF mobile manipulator **Nov'24 – Dec'24**

- Simulated a pick-and-place operation in CoppeliaSim using a task-space planner combined with feedback PD controller
- Incorporated singularity avoidance by enforcing joint limits and dynamically constraining the manipulator jacobian

Obstacle Avoidance in 3D using Dubins and RRT* **Jul'18 – May'19**

- Integrated RRT* planner with Dubins steering method, resulting in curvature-constrained collision-free trajectories
- Devised a novel approach to combine two 2D planar Dubins maneuvers generating optimal path between two points in 3D

Navigation in unknown 2D obstacle environment **Jul'17 – May'18**

- Implemented Fuzzy logic controller (FLC), local path planner to generate a collision-free path, using FL toolbox, MATLAB
- Tabulated set of intuitive IF-THEN rules for FLC, steering robot towards goal while avoiding moving obstacles

ACHIEVEMENTS/EXTRACURRICULARS

- Received quarterly and spot awards for significant contribution to projects and adhering to Airbus values
- Built an RC propeller plane, capable of gliding and performing a set of maneuvers with thrust to weight ratio less than 0.75
- Recipient of 9th and 10th Boeing - IIT Kharagpur university relations scholarship, awarded by Boeing