




KEVIN PAULOSE

 kevinpaulose05.github.io  linkedin.com/in/kevinpaulose  github.com/Kevinpaulose05

Education

University of Pennsylvania

exp. May 2025

Master of Science in Engineering, Mechanical Engineering (Mechatronics & Robotics Systems specialization)

Philadelphia, PA

- Relevant Coursework: Introduction to Robotics, Design of Mechatronics Systems, Machine Perception

Indian Institute of Technology, Bhubaneswar

May 2023

Bachelor of Technology, Mechanical Engineering, GPA: 8.42/10.0 ~ 3.62/4.0

Bhubaneswar, India

Technical Experience

MITACS Globalink Research

May – August 2022

Research Intern at Université du Québec en Outaouais

Quebec, Canada

- Research guide: Dr. Soulaïmane Berkane
- Demonstrated precise indoor obstacle avoidance algorithm for an autonomous 6-DOF quadcopter drone in an unknown environment using Nagumo's invariance theorem and Bouligand tangent cones
- Orchestrated seamless integration of this deadlock-free algorithmic approach on a quadcopter drone by employing 3D LiDAR & depth camera, with PixHawk and GPS
- Lab worked at: LaRSA (Laboratoire de Robotique et Systèmes Autonomes), Gatineau, Quebec, Canada

Bhabha Atomic Research Centre

May – July 2021

Research Intern at Design and Manufacturing Section, Control Systems Development Division

Mumbai, Maharashtra

- Research guides: Dr. R. Balasubramaniam, Dr. Prabhat Ranjan
- Utilized Topology Optimization in 3D printing by achieving enhancements in flexure-strength, weight and fatigue resistance for wind turbine rotor blades and compliant trabecular bone implant design
- Projected a novel idea for cost-effective small-scale earth-to-space and space-to-space "Extra-Terrestrial" manufacturing using additive manufacturing methods

Crio.Do

November 2020 – February 2021

Software Engineer Intern (Product Development team)

Bangalore, Karnataka

- Devised Crio Projects Hub, Crio.Do's flagship product by building a framework for the website using React, MongoDB, GitHub API, GitHub actions, Jenkins and Postman API
- Catalogued 50 unique projects by directly publishing and co-authoring with developer contributors spanning topics like Machine Learning, Web & App Development, Python, C++, etc.

Projects

Augmented Reality using AprilTags | Python, Procrustes problem, trimesh, imageio

September - October 2023

- Developed an Augmented Reality application that enables the placement of virtual objects at specified pixel locations within a real-world scene via AprilTags, by solving the Perspective-Three-Point (P3P) and Procrustes problem

Adaptive Control in UAVs & High Performance Aircrafts | MATLAB, Simulink, Control Systems

July 2022 - May 2023

- Designed a guidance algorithm with state estimation for reactive collision avoidance for a 6-DOF non-linear model of a Flying Wing UAV using L1 adaptive control with 92% accuracy (PX4 benchmark) in MATLAB simulations
- Streamlined an LQR-based safe landing approach with the guidance algorithm inside a Simulink 3D Animation arena with Gazebo (ROS Melodic) and Robotics Systems Toolbox

Obstacle Avoidance Algorithms for Unmanned Aerial Vehicles | PX4, ROS Melodic, LiDAR

May - August 2022

- Engineered a Holybro drone X500 V2 mounted with RPLiDAR A1m8 & Occipital Structure Core camera, CUAV V5+ Autopilot running PX4 and Neo V3 Pro GPS for real-time flight tests
- Optimized a robust obstacle avoidance algorithm for the 6-DOF quadcopter drone achieving 86% success rate, primarily by tuning the formulated Bouligand tangent cones (Safety Velocity Cones)

Steering Mechanism of SAE BAJA Vehicle (Buggy) | SolidWorks, Ansys, Mechanics

July - November 2021

- Developed a working model of the steering mechanism using rack and pinion mechanism for SAE BAJA's four-wheeled buggy per given dimensional regulations in SolidWorks.

Technical Skills

Languages: Python, C, C++, MATLAB, JavaScript

Softwares: ROS, Gazebo, Simulink, PX4, RViz, SolidWorks, ANSYS, COMSOL Multiphysics, QGroundControl

Technologies/Frameworks: Linux, Windows, Arduino, ATmega32u4, ESP32, Jetson, LiDAR, Intel Realsense D435i, UAV toolbox, Robotics System toolbox, GitHub, AWS

Leadership / Extracurricular

- Supervising 3D printing (PRUSA printers), laser cutting, laser engraving and 3D modelling jobs as Graduate Assistant at Educations Commons and Makerspace at the University of Pennsylvania [September 2023-current]
- Spearheaded IIT Bhubaneswar's Aquatics team for two major competition wins as Aquatics Secretary [April 2021-22]
- Achieved Grade 5 in Piano (TCL Graded Examination in Music) from Trinity College, London [March 2014]
- Accomplished Black Belt (diploma of Sho Dan) in Karate [Kokino Shito-Ryu Karate school (Japanese affiliation)] [October 2013]