

KIRAN GANGADHARAN NAIR KRISHNAN

Espoo, Finland ✉ kiran.gangadharannairkrishnan@aalto.fi [in linkedin.com/in/kgkrishnan97](https://www.linkedin.com/in/kgkrishnan97) ☎ +358417235885

Education

Aalto University

Master of Science in Control, Robotics and Autonomous Systems

Aug 2023 - July 2025 (Expected)

Espoo, Finland

National Institute of Technology Calicut

Bachelors of Technology in Electrical and Electronics Engineering

Jul 2016 - Nov 2020

Calicut, India

Experience

Intelligent Robotics Group - Aalto University

Research Assistant, Part-time

Jan 2025 - Present

Espoo, Finland

- Migrate the Robotic Manipulation D course codes to ROS2 and Mujoco 3
- Interface Mujoco 3 with ROS2 for simulating Franka Emika robot manipulator for both teaching and research purposes.

Cyber-Physical Systems Group - Aalto University

Teaching Assistant - Digital and Optimal Control, Part-time

Sep 2024 - Dec 2024

Espoo, Finland

- Coordinated the project part of the course, which includes the testing of robots, developing MATLAB/Simulink codes, homework questions, solutions and grading
- Coordinated for laskatupa/homework sessions, to resolve the doubts related to homework/project

Intelligent Robotics Group - Aalto University

Research Assistant, Full-time

June 2024 - Aug 2024

Espoo, Finland

- Built a 1:10 scale autonomous vehicle from scratch which can be used for both teaching and research purposes
- Implemented the software stack for the autonomous navigation of the vehicle, which includes mapping, localization, lane keeping, and object detection
- Implemented general navigation models on the 11th vehicle

Cyber-Physical Systems Group - Aalto University

Research Assistant, Part-time

Jan 2024 - May 2024

Espoo, Finland

- Developed neural network architecture for a newly developed Safe Bayesian Optimization algorithm
- Assisted in the development and experimentation of the Safe Bayesian Optimization algorithm in gym environments

Swadheshy Polymers

Technical Consultant, Full-time

Nov 2021 - June 2023

Cochin, India

- Provided actionable insights for enabling the automation of manual manufacturing processes, resulting in a doubling of productivity and a 50% decrease in product failure
- Spearheaded the design and development of software systems for automated raw material testing protocols conforming to Bureau of Indian Standards, resulting in 75% faster test results
- Implemented effective digital solutions to identify potential productivity gains, resulting in a 20% improvement in operational turnover

Bosch India Limited

Technical Management Trainee, Full-time

Aug 2020 - July 2021

Bangalore, India

- Collaborated with an external supplier to validate Li-ion EV battery performance with benchmark testing and produced detailed reports demonstrating top performance abilities; Streamlined charging infrastructure plans for newly designed Li-ion battery
- Developed SoC/SoH algorithms for Li-ion battery monitoring, improving trend identification and safety
- Facilitated cross-team cooperation of 4 engineers to design and launch a cloud network system, enabling real-time battery parameter estimations resulting in an average 25% error reduction

Robotics Interest Group - NITC

Team Leader; Team Member, On-Campus

May 2017 - July 2020

Calicut, India

- Contributed to the development, resourcing, planning, testing, and completion of projects
- Coordinated the implementation of robotics workshops and exhibitions across the state; Liaised with school/community leaders and third parties such as the Kerala government and Calicut Corporation
- Co-founded Team AUV Varuna to compete in the Singapore AUV Challenge, as the representative of NIT Calicut - **Achieved top 20 listings** while engineering autonomous robot that accomplished mission planning, AUV navigation, visual identification, and robotic manipulation

Publications

- A. Tokmak, K. G. Krishnan, T. B. Schön, and D. Baumann, “Safe exploration in reproducing kernel Hilbert spaces,” in **International Conference on Artificial Intelligence and Statistics (AISTATS), 2025, accepted.**
- K. G. Krishnan, “Using Deep Reinforcement Learning For Robot Arm Control,” in Journal of Artificial Intelligence and Capsule Networks, 2022.
- H. Amar Nath, S. Umamaheswaran, S. S. Eligar, K. G. Krishnan and A. P. Sudheer, “Modeling and Analysis of a Five Degrees of Freedom Autonomous Underwater Vehicle,” in 2018 International Conference on Automation and Computational Engineering (ICACE).

Projects

Learning Event-triggered Control (Master’s Thesis)

Jan 2025 - Present

Prof. Dominik Baumann, Cyber-Physical Systems Group - Aalto University

- Developing learning-based event-triggered control mechanisms for networked multi-agent systems from pixels by using trust-region autoencoders
- Employs reinforcement learning to optimize control and communication policies in bandwidth-constrained environments

Foundation models for Pedestrian trajectory prediction

May 2024

Dr. Farzeen Munir, Mobile Robotics Group - Aalto University

- Implemented a data-driven model capable of taking multi-model input and output the trajectory information of the pedestrians
- Developed an algorithm that converts the annotations and trajectory information to the language descriptions
- Vision Language Models (LLaVA) to provide insights on the explainability of data-driven pedestrian projection model

Bosch Future Mobility Challenge Car

May 2024

Prof. Ojala Risto, Prof. Ville, Kyrki, Team Aalto - Aalto University

- This is a 1:10 scale autonomous vehicle capable of lane keeping, navigating in intersections, reacting to traffic lights, navigating based on localisation data, and reacting to other traffic participants, such as other cars or pedestrians.
- Achieved a **6th position (finalist)** out of 120 participants in the Bosch Future Mobility Challenge, Romania

Path Planning of Multi-Agent System Using Reinforcement Learning

June 2020

Prof. Jeevamma Jacob, Control Systems Lab - NITC

- Employed a method for the path planning of multi-agent systems in an unknown environment using reinforcement learning, for finding the optimal path between the specified starting/ending point for each agent
- Implemented and tested the respective algorithm in the Firebird V Robots

River Cleaning Robot

April 2019

Prof. A P Sudheer, Robotics Interest Group - NITC

- Developed a cleaning robot used to clean the surface water and underwater using 2 robotic wings and an underwater manipulator that works in both autonomous and manual modes

Miscellaneous

Robotics Interest Group - NITC

- Contributed to and completed other projects including an Autonomous Underwater Vehicle, 2 DOF ball balancer, Wearable Assist for Deaf, and Maze-Solving Robot

Achievements

- **Finland Scholarship** awarded by Aalto University funded by Ministry of Education and Culture, Finland
- **Dean’s incentive scholarship awarded** by School of Electrical Engineering, Aalto University

Technical Skills

Programming: C++, C, Python, ROS, OpenCV, Pytorch, Embedded, Git

Hardware: Nvidia Jetson TK1, Nvidia Jetson TX2, Arduino, Raspberry Pi, High Performance Computing

Software: Gazebo, MATLAB, Simulink, Proteus, Gymnasium environments

Miscellaneous: Sensor Fusion, Perception Algorithms, Autonomous Systems, Control System, Robotic Systems, 3D Models, Machine Learning, Reinforcement Learning, Deep Learning