Sameer Arjun Satheesh

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Technical Skills

Robotics & Autonomy: ROS, ROS2, SLAM, Path Planning (RRT*, MAPP), Sensor Fusion, OpenCV, Kollmorgen NDC
Software & Control: Python, C++, Embedded C++ (Firmware), MATLAB, PLC (Ladder Logic), Git, JIRA, Docker, Linux (Ubuntu/Bash), TwinCAT3
Mechanical & Simulation: Siemens NX, CATIA, ANSYS (FEA), SolidWorks, Gazebo, AnyLogic, GD & T, DfM
Protocols & Diagnostics: CAN Bus, XML/JSON, TCP/IP, Wireshark, API Integration, Toyota DataCollector, Elasticsearch

Education

University of Maryland, College Park Aug 2022 - May 2024
Master of Engineering in Robotics; CGPA: 3.78/4.00

Visvesvaraya Technological University, India Aug 2016 – Aug 2020
Bachelor of Engineering in Mechanical Engineering; CGPA: 8/10

Work Experience

Toyota Material Handling / The RAYMOND Corp. Jul 2024 – Present
Applications Engineer II

- Architected and deployed 26 autonomous forklift systems using Kollmorgen NDC Solutions, specializing in AGV path planning, mission logic design, and system architecture
- Developed localization and routing models for site layouts, ensuring scalable navigation for AGV fleets interacting with AMRs
- Resolved system failures via Wireshark and CAN diagnostics, improving control logic and fleet reliability
- Integrated AGV platforms with WMS (Warehouse Management System) and ERP (Enterprise Resource Planning) via APIs for automated task execution and real-time tracking
- Standardized technical documentation and led training to streamline internal and customer onboarding

Stanley Black and Decker Inc. Jun 2023 - Aug 2023
Electro-Mechanical Engineering Intern

- Engineered SBS (Single Board Solutions) trigger modules for universal power tool architectures using CATIA, optimizing mechanical design and assembly
- Resolved DeWalt impact drill failures and co-introduced polymer-based capacitors to SBS architectures to enhance module reliability and electrical performance
- Contributed to CraftsMan EV (Electric Vehicle) Charger pipeline for innovation challenge, demonstrating strategic product development and market expansion

MOLEX India Business Services Pvt. Ltd. Mar 2021 - Jul 2022
Graduate Engineering Trainee

- Designed and analyzed Power and Signal connector systems using Siemens NX for diverse, high-performance packaging applications
- Saved $1 million annually by implementing FEA (Finite Element Analysis) based mechanical drop test simulations, which significantly improved connector robustness and accelerated time-to-market
- Increased current carrying capacity by 120% by validating liquid cooling technologies for data center high power and signal connectors
- Presented technical results at the 2022 Open Compute Project Global Conference

Projects

Autonomous 4-Wheeled Mobile Manipulator | *Python, Raspberry Pi, Arduino, OpenCV* - YouTube

- Architected a differential drive robot with a parallel-jaw gripper, utilizing a Raspberry Pi 4 for high-level decision-making and an Arduino Nano for low-level motor control
- Developed a computer vision pipeline for real-time color and image recognition to identify targets and depth estimation for tasks
- Implemented robust sensor fusion using IMU (Inertial Measurement Unit), ultrasonic sensors, and wheel encoders to achieve localization and closed-loop control

Swarm Robotics for Industrial Applications | *C++, ROS2 Humble, Gazebo* - GitHub

- Architected a swarm system implementing MAPP (Multi-Agent Path Planning) for 20 TurtleBots achieving coordinated navigation
- Leveraged Agile methodologies to develop communication stack and obstacle avoidance logic within the ROS2 ecosystem

Improved Path Planning via RRT*N Algorithm | *Python* - GitHub

- Developed a "Normalized" RRT* variant using a probability distribution function to bias node generation toward the goal, significantly reducing computational overhead
- Optimized path length and convergence rates by integrating steering and backtracking functions, outperforming standard RRT* in complex occupancy grids

Time-Varying Ankle Impedance Analysis | *MATLAB* - GitHub

- Quantified ankle joint inversion-eversion and modeled bio-mechanical control strategies to estimate impedance parameters (stiffness and damping), enabling the development of adaptive robotic assistance for gait rehabilitation

Achievements

Best Research Paper Award | Make in India, Research Paper Contest, Project Council, Government of India
Winner at Super Float Idea Challenge | MOLEX India Business Services Pvt. Ltd.
Certificate of Appreciation | Emergency Response Team at MOLEX-KOCH Industries for COVID-19 pandemic volunteer work