SAMEER ARJUN SATHEESH

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SKILLS

Robotics & Autonomy: ROS/ROS2, SLAM, Path Planning (RRT*, MAPP), Sensor Fusion, OpenCV, Kollmorgen stack
Software & Control: Python, embedded C++ (firmware), MATLAB, PLC (Ladder Logic), TCP/IP, Git, XML, Linux (Ubuntu), Bash Scripting
Mechanical & Simulated: Siemens NX, ANSYS (FEA), SolidWorks, Gazebo, AnyLogic
Protocols & Diagnostics: CAN bus, XML/JSON, 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. | *Applications Engineer II*   *Jul 2024 – Present*
• **Architected and deployed 26 autonomous forklift systems** utilizing Kollmorgen NDC Solutions, specializing in AGV path planning, mission logic design, and robust 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/ERP** 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. | *Electro-Mechanical Engineering Intern*   *Jun 2023 - Aug 2023*
• **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
• **CraftsMan EV Charger pipeline** for innovation challenge, demonstrating strategic product development & market expansion

MOLEX India Business Services Pvt. Ltd. | *G E T*   *Mar 2021 - Jul 2022*
• **Designed and analyzed Power and Signal connector systems** using Siemens NX for diverse, high-performance packaging applications
• **Saved $1 million annually** by implementing FEA-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 & 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 & an Arduino Nano for low-level motor control
• **Developed a computer vision pipeline** for real-time color & image recognition to identify targets & depth estimation for tasks
• **Implemented robust sensor fusion** using IMU, ultrasonic sensors, and wheel encoders to achieve localization & closed-loop control

Swarm Robotics for Industrial Applications | *C++, ROS2 Humble, Gazebo - GitHub*
• **Architected a swarm system** implementing Multi-Agent Path Planning (MAPP) for 20 TurtleBots achieving coordinated navigation
• **Leveraged Agile methodologies** to develop communication stack & 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