KEVIN BIJU MATHEW

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ABOUT

Robotics master's student at Purdue with a Mechatronics background, specializing in path planning, hardware integration, testing, and troubleshooting. Skilled in ROS2, sensor fusion, and computer vision, with cross-disciplinary experience enabling effective design and validation of autonomous systems. Currently seeking an internship opportunity to apply technical expertise and leadership skills to real-world robotics challenges.

EDUCATION WORK EXPERIENCE

Purdue University, West Lafayette 2025 - 2027
Masters in Robotics/ Interdisciplinary Engineering | **GPA:** 3.67

Vellore Institute of Technology, Chennai, India 2020 - 2024
B.Tech Mechatronics and Automation | **CGPA:** 9.09/10

Gulf Asian English School, U.A.E 2018-2020
Higher Secondary | **Marks** = 90%

WORK EXPERIENCE

Research Intern

Center for Human Movement Analytics, VIT Chennai, India February 2025 – July 2025

- Worked on state-of-the-art exoskeleton technologies for lower-body rehabilitation.
- Proposed a remote-assisted lower-limb physiotherapy exoskeleton with Digital Twin and AR integration.
- Developed a control strategy to ensure safe and responsive motion across different therapy modes.

Intern

December 2024 – January 2025

Indian Institute of Technology, Palakkad, India

- Assisted research scholars with their thesis and funded projects, which include reconfigurable hybrid drone/quadrapet, food delivery robot, and an all-terrain vehicle.
- Developed Autonomous Navigation and Trajectory tracking algorithms on an AGV.

SKILLS

- **Autonomy & Simulations**: ROS2, Gazebo, Rviz, Simulink, IPG Carmaker HIL/SIL testing, PLC.
- **Perception & sensors**: LiDAR (SLAMTEC A1M8), depth camera, IMU, sensor fusion using extended Kalman filter.
- **Controls & Embedded Systems**: Python, C++, Java, control algorithms (PID, LQR, MPC), Open-CV, Jetson Nano, Raspbery Pi, Teensy, Arduino.
- **Communication & Integration**: Serial Interfaces, I2C, CAN, RTOS.
- **Validation & Testing**: Prototyping, Additive Manufacturing, System Debugging, Machine Vision Inspection.
- **Software:** SolidWorks, Autodesk Fusion 360, MATLAB, Edge Impulse, NTopology.

PROJECTS

Trajectory Planning & Tracking for UR3E Robotic Arm (Signature Light Painting) (link) Purdue | December 2025

- Converted a handwritten signature into a smooth, arc length-parameterized trajectory and executed it using trapezoidal velocity planning.
- Implemented forward and inverse kinematics using screw theory, validating smooth joint motion and singularity avoidance.

Autonomous Guided Vehicles (AGVs) with Modular Drive Mechanisms (link) VIT | April 2024

- Developed AGVs with interchangeable differential and mecanum drives using ROS2, enabling dynamic switching based on operational requirements for logistics operations.

Wheeled Mobile Robot with Robotic Arm (link) VIT | December 2023

- Developed a mobile robot with an integrated robotic arm using ROS2 for picking and placing objects using ROS2.

Hall Effect-Based Data Glove for Gesture Recognition VIT | December 2023

- Designed a glove with embedded sensors and machine learning to translate gestures into text commands for applications in robot control.

Machine vision-based inspection system for rear motor housings VIT | December 2023

- Industry consultation project, designed and implemented a machine vision inspection system to detect abnormalities on motor housing and other parts using ML.

Self-Balancing Bike Eyantra Robotics Competition | October 2023

- Engineered a 3D printed bike that autonomously maintains balance and follows a path while carrying a load using LQR control.

Gesture-Controlled Mecanum Robot (link) VIT | April 2023

- Built a mecanum robot controlled via hand gestures using a glove, ESP-NOW for wireless communication and custom 3D-printed components.

HONORS & AWARDS

- **Best Capstone Project Award** VIT Chennai | 2024
- **Tri NIT Hackathon Finalist** Qualcomm & BharatX, India | 2023
- **The Most Innovative Student of the Year** Gulf Asian English School, UAE | 2020
- **Best Innovative & Inventive Project on Road/Traffic Safety** Emirates Transport UAE | 2018

PATENTS

- Vellore Institute of Technology, Chennai; Murali Mohan, G.; Vinay, M.; **Kevin Biju Mathew;** Hrithik Parihar. 2024. **Modular Robot for Educational and Research Purposes**. India Patent No. 424531-001, filed July 24, 2024, and issued October 15, 2024.

RESEARCH

- **Mathew, Kevin Biju,** Naveen Venkatesh Sridharan, Anoop Prabhakaranpillai Sreelatha and Sugumaran, V. "**A Voting-Based Approach for Monitoring Nitrogen-Filled Tire Condition Using Machine Learning and Vibration Signals**." *Part D: Journal of Automobile Engineering*. Medium of Publication: Journal Article.
- Arpit Pandey, Hrithik Parihar, **Mathew, Kevin Biju**, Maazin Mohammad, Deivanathan R. "**Hall Effect-Based Data Glove for Gesture Recognition and Hand Pose Tracking**" ***Presented at****: International Mechanical Engineering Conference (iMECHCON 2025) VIT.* Medium of Publication: Conference.
- **Kevin Biju Mathew**, Aaron Melvin Remedios, Phu Pham, "**MG SLAM: A Collaborative Multi-Agent SLAM Using 3D Gaussian Splatting for Spatially Consistent 3D Mapping**." **In Progress**. Associated with Purdue University.

LEADERSHIP AND EXTRACURRICULAR ACTIVITIES

- **Founder and President of AutoVIT Club** VIT Chennai | 2021-2024
  Established and led a multi-disciplinary club focused on robotics and automation, organizing workshops, events, and seminars.
- **Program Representative (Mechatronics and Automation)** VIT Chennai | 2021-2022
  Acted as the liaison between students and faculty, organizing meetings and events to support academic and personal development.
- **Overall Coordinator for TechnoVIT 22** VIT Chennai | 2022
  Led the School of Mechanical Engineering's participation, organizing 35+ events and winning awards for "Best Debut" and "Best Marketing and Design".
- **Event Coordinator for Innovage 2022 Hackathon** VIT Chennai and Raptee Energy | 2022
  Collaborated with industry partners to organize a 3-day hackathon on electric vehicle innovations.
- **Founder and President of Innovation Club** Gulf Asian English School | 2019 -2020
  Established and managed a school club promoting innovation and creativity, organizing events and workshops for students