DINESH SAI RALLAPALLI

LinkedIn | GitHub | dineshsai.rallapalli@nyu.edu | 718-820-3744 | New York, NY

SUMMARY

Robotics Engineer with around 3 years of Experience delivering innovative solutions through advanced algorithmic development and intelligent system design. Proficient at optimizing autonomous navigation, implementing sophisticated control systems, and reducing development cycles through cutting-edge simulation techniques and cross-functional collaboration.

SKILLS

Programming: Python, C++, C, MATLAB
Libraries & Frameworks: Eigen, Pinocchio, PyTorch, TensorFlow, OpenCV, Robot Operating System (ROS, ROS2)
Core Robotics: Kinematics, Robot Control (PID, MPC, LQR), Trajectory Optimization, State Estimation (Kalman Filters, UKF, EKF, Particle Filter), SLAM, Perception, Motion Planning, Multi-Body Dynamic Systems, Mobile Robotics
AI/Machine Learning: Deep Learning, Reinforcement Learning, Convolutional and Recurrent Neural Networks (CNNs, RNNs)
Hardware Integration: Sensor fusion (IMUs, Gyroscopes, Accelerometers, LiDAR, GPS, Vicon), Actuator Integration (Servos, Motors)
Embedded Systems: NVIDIA Jetson Nano, Raspberry Pi, Arduino, SPI, I2C, UART, USART, TCP/IP, RTOS
Simulation, Modelling & Design: MuJoCo, Gazebo, Rviz, Simulink, Autodesk Fusion 360, SolidWorks (CAD), Git, CI/CD

EDUCATION

M.S in Mechatronics and Robotics Engineering   **May 2025**
New York University, New York, US

Relevant Coursework: • Manipulator Kinematics & Dynamics • Robot Localization & Navigation • Mapping • Mechatronics • Computer Vision • Controls

B.E in Electronics and Communication Engineering   **Jun 2022**
Chandigarh University, Chandigarh, IN

Relevant Coursework: • Embedded Systems • Electromagnetism • Analog & Digital Circuits • Computer Networks • Digital Signal Processing • VLSI

WORK EXPERIENCE

New York University, New York, US   **Sep 2024 - May 2025**
Graduate Assistant

• Guided mechanical and mechatronics lab operations for 800+ students in robotics and circuit-design projects using SOP-driven workflows and data-driven scheduling, applying QA practices and troubleshooting integration challenges to boost efficiency by 30%.
• Streamlined lab operations by managing the maintenance and calibration of 15+ advanced Mechanical equipment (CNC machines, 3D printers, welding rigs, and laser cutters), ensuring high precision and operational efficiency for interdisciplinary engineering projects.

KPMG IN, Hyderabad, India   **Jan 2022 - Aug 2023**
Analyst

• Pioneered the creation of a Robotic Process Automation (RPA) solution using UiPath to automate multi-platform workflows (reports and presentations across PowerPoint, Excel, Word, PDF, web applications), achieving a 33% reduction in production time.
• Developed "KeVal," an enterprise-level Computer System Validation (CSV) tool for the pharmaceutical industry, generating $40K in revenue via client leasing. Enhanced operational efficiency using PowerApps, Dataverse, SharePoint, and Power BI.

PROJECTS

Applied Dynamics and Optimization of Humanoids (Python, MuJoco, Biped, MPC, PD, ZMP, Eigen, Pinnocchio - GitHub)
• Created a 20-DOF humanoid robot model in MuJoCo using Python, incorporating a Linear Inverted Pendulum Model (LIPM) and 10-step horizon Model Predictive Control algorithm, achieving stable walking performance with a 20% increase in efficiency.
• Optimized control algorithms in C++ with Eigen and Pinocchio, improving simulation accuracy by 30% through advanced inverse kinematics and manipulator control techniques.

Sensor Fusion for Localization and Motion Control (Kalman Filters, EKF, UKF, Optical Flow, RANSAC - GitHub)
• Customized EKF and UKF for localization with Vicon and onboard IMU sensors, achieving 80% accuracy in live environments.
• Applied Optical Flow and RANSAC for velocity estimation and outlier rejection, improving pose estimation accuracy by 60%.

Visual Maze Navigation System (Computer Vision: OpenCV, ORB, VLAD, BallTree, K-Means - GitHub)
• Engineered an autonomous maze navigation system in Python using OpenCV, integrating 18,000-image and 20,000 image datasets for mapping and navigation.
• Achieved under 2-minute maze completion by enhancing real-time navigation with BallTree search and Homography validation, boosting target localization accuracy.

Multi Modal Robot-Ground/Aerial (C++, PID, Raspberry Pi, IMU, Actuators - GitHub)
• Built a dual-mode robot with seamless ground-to-aerial transition, improving responsiveness by 30%.
• Integrated IMU sensors with a PID controller, boosting motion tracking precision and system efficiency by 25%.

ACHIEVEMENTS

Leadership: Co-Founder & President of Dravida Club at Chandigarh University, growing membership to 800+ members.
Competition: National Runner-Up in Smart India Hackathon-2020 (Hardware Edition) among 200+ teams.
Scholarship: Awarded a 100% Government of India scholarship for Master's at NYU, ranking in the top 0.5%.