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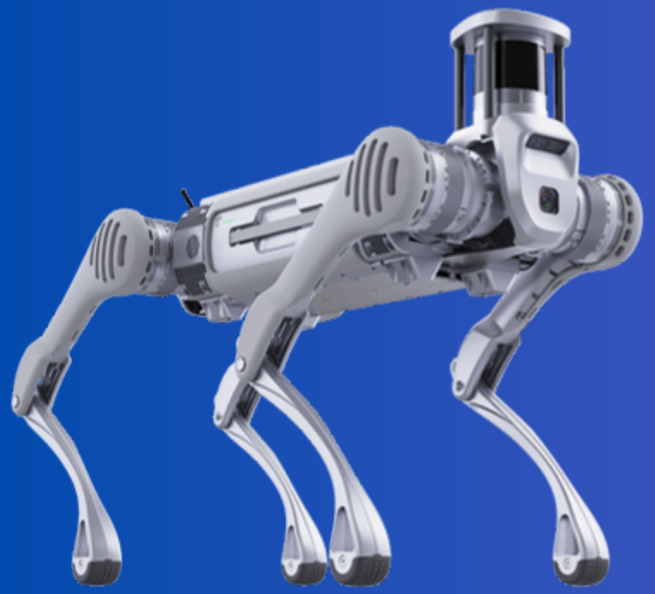
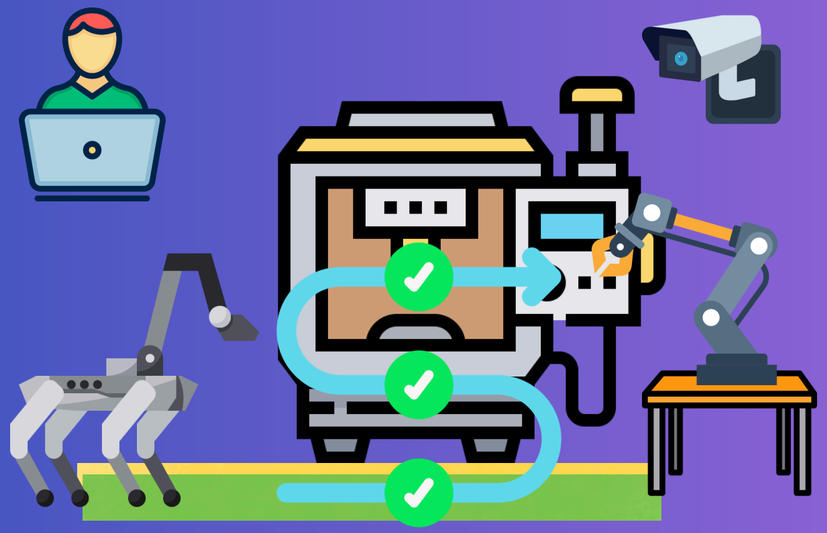
REAL-TIME AUTONOMOUS NAVIGATION AND INTEROPERABLE CONTROL SYSTEMS FOR FACTORY-DEPLOYED LEGGED AND WHEELED ROBOTS

AI Vision

Edge Devices





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ROBOT AS SUPERVISOR – INDOOR/OUTDOOR FACTORY ENVIRONMENT

AUTONOMOUS MAPPING, LOCALIZATION & NAVIGATION

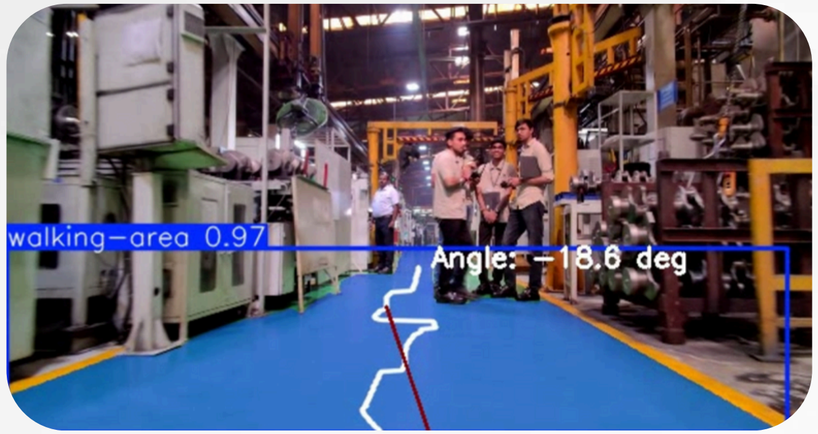

Fig. 1. Angle Calculation on Segmented Walking Path

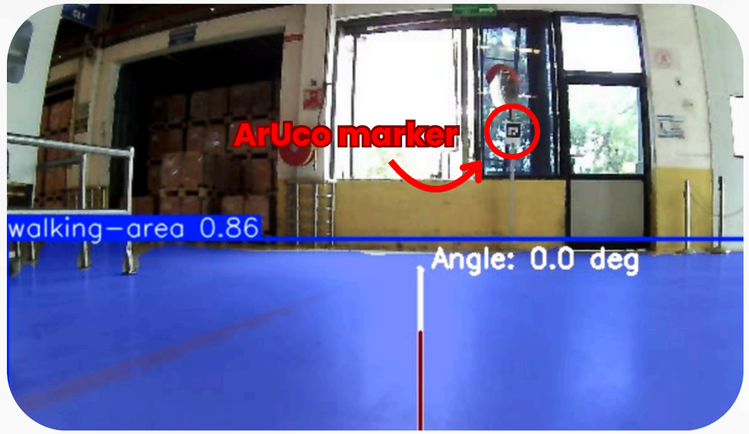

Fig. 3. ArUco Marker
3D Pose Estimation for navigation

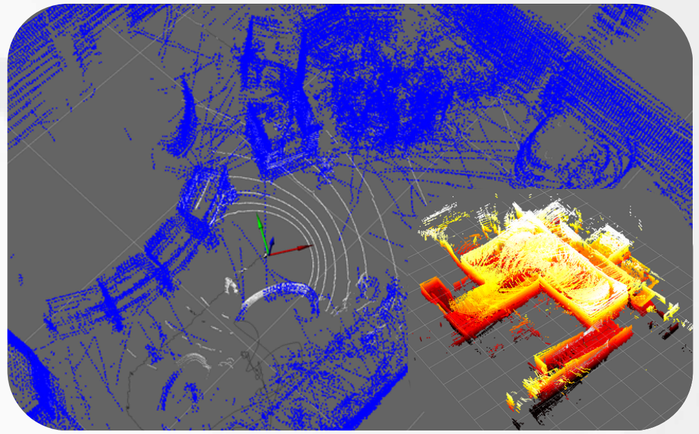

Fig. 5. 3D Mapping and Localization using LiDAR Inertial Odometry

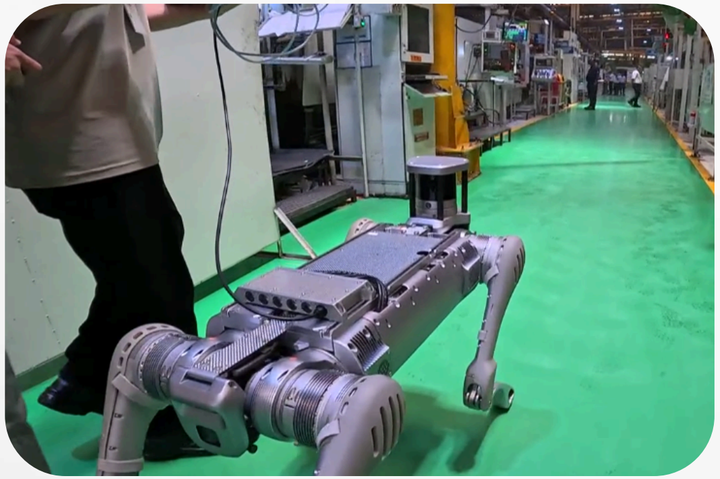

Fig. 2. Testing with Unitree B2 on Factory Shop Floor

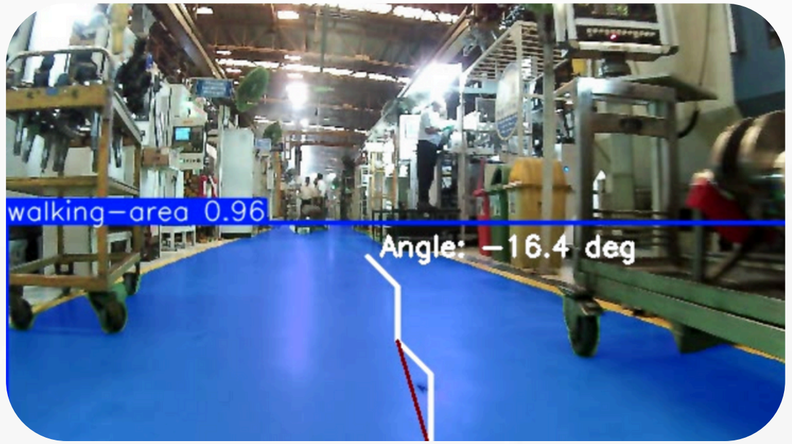

Fig. 4. Variable inflation based on depth infused with obstacle avoidance navigation

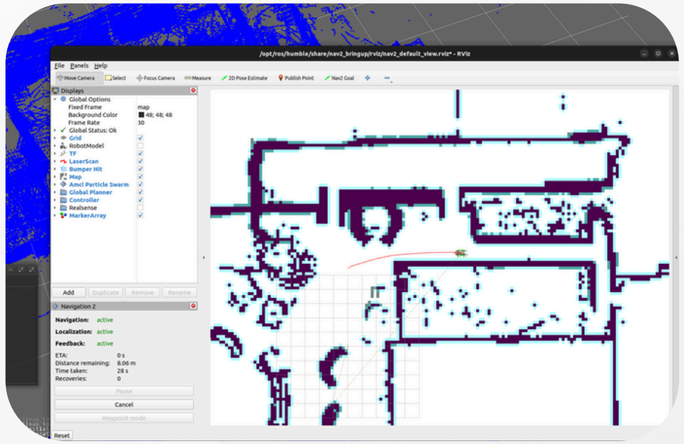

Fig. 6. Nav2 integration with 3D localization for global/local planner usage in navigation

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ROBOT FLEET MANAGEMENT SOFTWARE AND COMMUNICATION