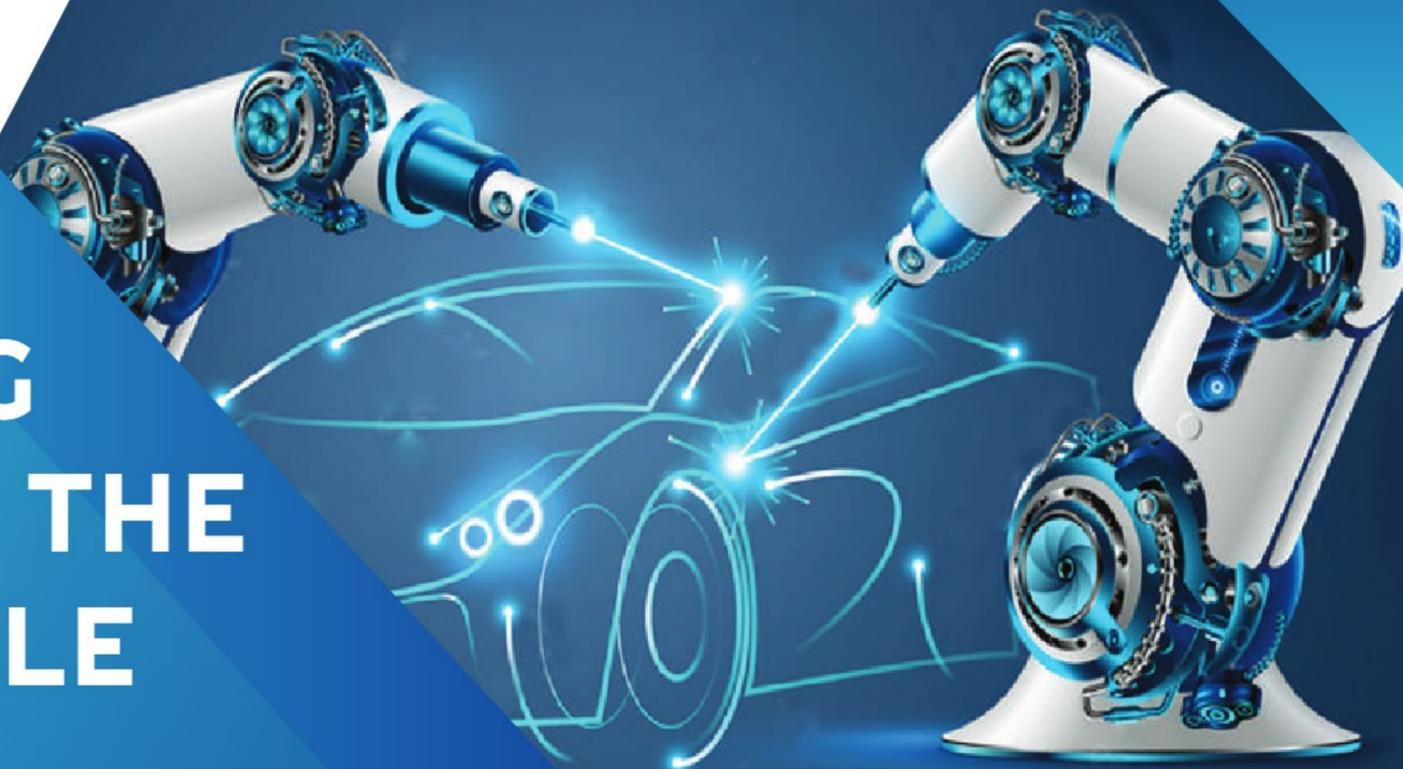# MICRO GENESIS

ROBOT OPERATING SYSTEM IN THE AUTOMOBILE INDUSTRY

Comprehensive Solution Offering for Automobile Self-Driving Cars

Perception Systems	Sensor Fusion	Localization and Mapping	Planning and Decision-Making	Connectivity and Communication

Our Potential Service Offerings in Automobile Industries Utilizing Robot Operating Systems (ROS)

ROS-based System Integration: Provide services to integrate ROS into existing automobile systems or platforms. This includes integrating ROS with onboard computers, sensors, actuators, and communication protocols, ensuring seamless interoperability and data exchange.

Autonomous Vehicle Software Development: Offer services to develop autonomous driving software using ROS. This involves designing and implementing perception, planning, and control algorithms that enable vehicles to navigate autonomously and make real-time decisions based on sensor data.

Sensor Fusion and Perception: Provide services to develop sensor fusion algorithms using ROS. This involves integrating data from multiple sensors, such as cameras, LiDAR, radar, and GPS, to create a comprehensive perception of the vehicle's environment, including object detection, tracking, and mapping.

Navigation and Path Planning: Offer services to develop navigation and path planning systems using ROS. This includes developing algorithms that enable vehicles to plan optimal routes, avoid obstacles, and adhere to traffic rules, ensuring safe and efficient navigation in various driving scenarios.

Human-Machine Interfaces (HMI): Provide services to develop user interfacesand HMI components for automobiles using ROS. This includes designing and implementing interfaces that allow users to interact with the vehicle's autonomous features, receive status updates, and provide inputs for navigation and control.

Simulation and Testing: Offer services to simulate and test autonomous vehicle systems using ROS and simulation tools like Gazebo. This involves creating virtual environments that mimic real-world driving scenarios to evaluate the performance, safety, and robustness of autonomous driving algorithms.

Data Logging and Analysis: Provide services to collect, store, and analyze data generated by autonomous vehicle systems. This includes developing data logging frameworks, implementing data analysis algorithms, and extracting insights to improve system performance and reliability.

Training and Workshops: Conduct training sessions and workshops on ROS for automotive professionals. These sessions can cover topics such as ROS basics, package development, perception algorithms, navigation, and control systems, enabling engineers to gain expertise in utilizing ROS for automotive applications.

Customization and Adaptation: Offer services to customize and adapt ROS-based solutions to meet specific requirements of automobile manufacturers or suppliers. This involves tailoring existing ROS frameworks and algorithms to address unique challenges or integrate with proprietary systems.

Consultation and Support: Provide consultation services to guide automobile industry stakeholders on the adoption, implementation, and optimization of ROS-based solutions. Offer ongoing support, troubleshooting, and maintenance services to ensure the smooth operation of ROS-based systems in the automotive industry.

Robot Operating System

is revolutionizing the automotive industry by adapting innovative and futuristic technology opportunities

Our Specialized Domain Expertise

- ROS Migration & Integration
- Custom Robotics Application Development
- Robotics System Design & Architecture
- Indoor and Outdoor Path planning Navigation

- Localization and Mapping
- Custom library for ROS system
- ROS Support, Maintenance & Consulting
- Simulation environment setup for Robotic testing

Areas of Expertise:

- Proficiency in ROS2
- Migration of Open source algorithms from ROS1 to ROS2
- Implementation of Multi-floor Path Planning algorithm in ROS2
- Development of ROS2 wrapper code for Sensor Drivers
- Outdoor Indoor localization of robots
- Designing of LiDAR based localization module which accelerate upto 40 km/hr