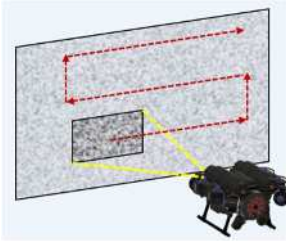
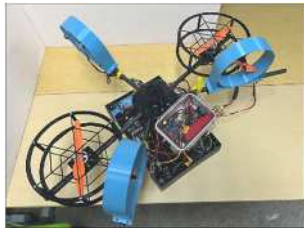


Name	Job Title	Area of Expertise
MORINAGA Akihiro	Assistant Professor	Robotics
1. Main Research Topics ① Development of Marine Robots This study develops underwater robotic platforms for station-keeping and target tracking without relying on costly navigation sensors. For ROVs (Remotely Operated Vehicles), usually teleoperated, image-based feedback control was introduced to enable autonomous station-keeping and target following. These methods allow efficient data collection and quantitative evaluation of area and volume in subsea infrastructure inspection and seagrass/coral reef monitoring. Marine environmental monitoring is further enhanced through cooperative control with Autonomous Surface Vehicles (ASVs) and optical wireless communication.  Fig.1 Semi-auto ROV  Fig.2 Seagrass survey  Fig.3 ROV–ASV cooperation ② Robots for Infrastructure Maintenance This study focuses on the development of robotic systems to support infrastructure inspection and maintenance. For waterway tunnel inspection, we are developing a vessel-type robot capable of autonomous navigation along tunnel walls using LiDAR and other range sensors. For pedestrian space inspection, images acquired by a vehicle-type robot are analyzed to evaluate steps and obstacles. Furthermore, a window-cleaning robot combining a parallel wire mechanism with a multirotor system is being developed to achieve safe and efficient façade maintenance.  Fig. 4 Waterway inspection robot  Fig. 5 Pedestrian space inspection  Fig. 6 Window-cleaning robot ③ Development of Rehabilitation Devices A device is being developed for quantitative assessment of spasticity, a condition of excessive muscle tension after stroke or spinal cord injury. The wrist joint is passively moved, and resistance force is measured to construct a spasticity model. Model parameters are estimated using machine learning, enabling objective evaluation.		
2. Keywords Robotics, Autonomous Control, Image Sensing and Recognition, Machine Learning Medical–Engineering Collaboration		
3. Remarks and Websites Based on autonomous control technologies utilizing image sensing and machine learning, our research extends to underwater exploration, infrastructure inspection, and rehabilitation support. Moving forward, we aim to advance social implementation of practical robotic technologies through field demonstrations and collaboration with industry. researchmap: https://researchmap.jp/a_morinaga Laboratory: https://robotics-mech-nagasaki-univ.conohawing.com/		