

Advanced Robot Arm Manipulation

Safe Infrastructure Interaction in Hazardous Areas



Autonomous robotic manipulation in an offshore environment could enable certain tasks to be carried out more safely. For example, the placement of sensors or the turning of valves using robotic arms in dangerous or hazardous areas could negate the need for people to enter this type of environment to carry out these tasks. However, the interaction between robotic manipulator arms and objects designed for humans remains a challenge.

The ORCA Hub is carrying out research in advanced manipulation that will enable the safe autonomous interaction between robotic arms and objects found offshore, whether in a subsea or topside environment. Techniques being researched include machine learning for manipulation, intelligent object detection, reinforcement learning and teaching of robotic arms by demonstration, autonomous manipulator arm force control and robotic object grasping.

Benefits

- Enable the use of robots to carry out light intervention and repair tasks, thereby reducing manpower requirements
- Reduce the requirement for people to enter dangerous and hazardous environments

Possible Applications

- Place sensors for asset integrity monitoring in dangerous and hazardous locations
- Autonomous opening and closing of valves in both subsea and topside environments
- Autonomous asset integrity repairs in both subsea and topside environments





ORCA HUB
Offshore Robotics for Certification of Assets

Remote Safety and Integrity

Prof. David M Lane, CBE FREng FRSE
Heriot-Watt University
ORCA Hub Director

Prof. Sethu Vijayakumar, FRSE
University of Edinburgh
ORCA Hub Deputy Director

Dr. Lindsay Wilson
ORCA Hub Manager
E: Lindsay.Wilson@hw.ac.uk
T: +44 (0)131 451 8253
M: +44 (0)7779 982 134

David Wavell
ORCA Hub Business Development
E: D.Wavell@hw.ac.uk
T: +44 (0)131 451 8200
M: +44 (0)7717 779 417

ORCAHub.org
ORCAHub@hw.ac.uk

 @ORCA_Hub
 ORCA Hub