



## **KUKA LBR 14, with 2 and 3 finger gripper**

### **Available Kit**

- KUKA LBR 14
  - 7 axis manipulator
  - 14kg payload
  - 820mm reach
  - Human robot collaboration safe
- Robotiq 2 finger gripper
- Robotiq 3 finger gripper

## **Required Skills and Qualifications**

- Experience with manipulators
- Experience programming in Java

## **Additional considerations**

- Further training and support can be provided upon request

The world's first series produced sensitive and so Human Robot Collaboration safe manipulator. Manipulator senses even a light touch so is safe to use around people.

## **Cost**

Dependant on duration of hire, support required & options selected





## Required Skills and Qualifications

- Experience programming (ROS/Matlab/Python/C++)
- Experience with manipulators

## Additional considerations

- Further training and support can be provided upon request

## Kinova Gen3 x2

### Available Kit

- 2 Kinova gen3 7 dof manipulators
- Lightweight (8.2kg) with no separate control box
- Built in RGB-D sensor on wrist
- Robotiq 2 finger gripper
- Integrated torque sensors
- ROS, Matlab, C++, Python support
- Continuous rotation on all joints

Lightweight compliant manipulator, with no separate control box, small enough to fit through the entry port of a glove box, with built in RGBD camera on the wrist.

## Cost

Dependant on duration of hire, support required & options selected





## Haption Virtuose 6D

### Available Kit

- Haptic control device
- Force feedback in 6 degrees of freedom
- Interfaces for
  - KUKA LBR
  - Universal UR5e
  - Kinova
- Allows teleoperation with haptic feedback

## Required Skills and Qualifications

- N/A

## Additional considerations

- Needs a manipulator to work with for teleoperation
- Further training and support can be provided upon request

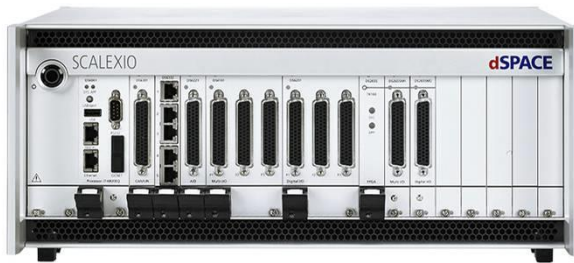
Allows intuitive teleoperation of a robot manipulator with haptic feedback

## Cost

Dependant on duration of hire, support required & options selected



## **dSpace real time controller**



### **Available Kit**

- dSpace SCALEXIO LabBox

## **Required Skills and Qualifications**

N/A

For hardware in the loop testing and rapid control prototyping

## **Additional considerations**

- Further training and support can be provided upon request

## **Cost**

Dependant on duration of hire, support required & options selected





## Blueprint labs alpha 5

### Available Kit

- Underwater manipulator
- With master slave controller
- 0.4m reach, 2.5kg load at reach
- 5 degrees of freedom
- BlueROV 2 also available

## Required Skills and Qualification

- ROV piloting

Master slave controller and underwater electric manipulator, small enough to integrate onto a BlueROV or similar sized ROV

## Additional considerations

- Further training and support can be provided upon request

## Cost

Dependant on duration of hire, support required & options selected





## ROV – BlueROV2

### Available kit

- BlueROV2
- 100m tether
- Heavy lift kit
- Hydromea Luma 500 optical modem for wireless communication
- Ping 360 sonar

## Required Skills and Qualifications

- System integration
- ROV piloting

## Additional considerations

- Further training and support can be provided upon request

BlueROV2 is an underwater ROV with built in camera and lighting and capability to carry other payloads.

## Cost

Dependant on duration of hire, support required & options selected



## **Hydromea Luma 500**



### **Required Skills and Qualifications**

- Systems Integration

### **Additional considerations**

- Further training and support can be provided upon request

#### **Available Kit**

- Underwater optical modem
- Allows wireless underwater communication
- Up to 50m range
- Up to 500 kb/s

Small optical wireless communication system for use underwater, allows tether less ROV operation and some video transmission. Acts as a serial connection between devices.

### **Cost**

Dependant on duration of hire, support required & options selected





## Waterlinked DVL



### Available Kit

- Doppler velocity log
- Estimates velocity relative to seabed
- Very small for easy mounting onto ROVs

## Required Skills and Qualifications

- Systems integration

## Additional considerations

- Further training and support can be provided upon request

## Cost

Dependant on duration of hire, support required & options selected







## Deeptrekker dtg3

### Available Kit

- Small ROV
- Highly manoeuvrable
- 4k camera
- Camera has 270 degrees rotation
- 1000 Lumen lights

## Required Skills and Qualifications

- ROV piloting

## Additional considerations

- Further training and support can be provided upon request

Small highly maneuverable ROV with high quality camera

## Cost

Dependant on duration of hire, support required & options selected



## **DJI Matrice 300**

### **Available Kit**

- Large commercial drone
- 55min flight time
- 6 direction sensing and positioning
- With 2 smart controllers
- Zenmuse H20T camera
  - 12MP wide camera
  - 20MP zoom camera, 23x optical zoom
  - Radiometric thermal camera
  - Laser range finder

## **Required Skills and Qualifications**

- Permission for Commercial Operations (PfCO) for multirotor wing UAV
- Demonstrable experience with similar sized/weight multirotor drone – recent flight log and description of flight
- Hull liability insurance and aviation liability cover

## **Additional considerations**

- Further training and support can be provided upon request

## **Cost**

Dependant on duration of hire, support required & options selected





## Yuneec H520

### Available Kit

- Hexacopter
- American company
- Take off weight below 2kg
- 25min flight
- E50 camera
  - 12MP 1/2.3" sensor, 40mm equivalent lens
- E90 camera
  - 20MP 1" sensor, 23mm equivalent lens

## Required Skills and Qualifications

- Permission for Commercial Operations (PfCO) for multirotor wing UAV
- Hull liability insurance and aviation liability cover

## Additional considerations

- Further training and support can be provided upon request

## Cost

Dependant on duration of hire, support required & options selected



## Agile X Scout



### Available Kit

- 4 wheel drive UGV
- Independent suspension so good for rough terrain
- Aluminium profile on top for easy mounting of sensors etc.
- ROS compatible
- 0.9m long 0.7m wide
- Can carry up to 50kg

## Required Skills and Qualifications

- Systems integration
- Experience with UGV
- Experience with ROS

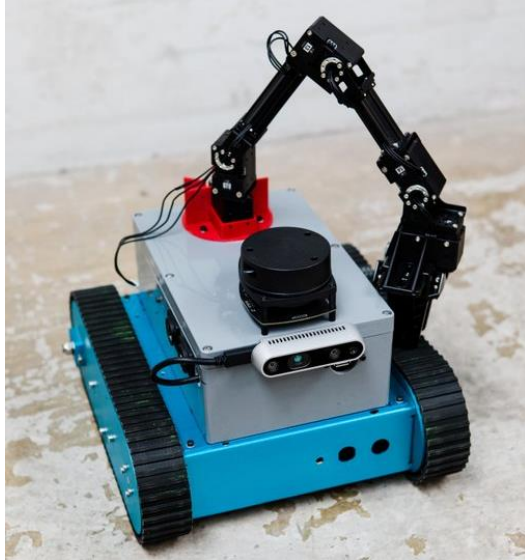
## Additional considerations

- Further training and support can be provided upon request

## Cost

Dependant on duration of hire, support required & options selected





## **VEGA UGV**

### **Available Kit**

- Small tracked platform developed by UoM robotics group
- Has 2d LiDAR, RGB-D camera and optional manipulator
- ROS controlled

## **Required Skills and Qualifications**

- Experience with ROS
- Experience with UGV operation

## **Additional considerations**

- Further training and support can be provided upon request

## **Cost**

Dependant on duration of hire, support required & options selected



## Husarion Rosbot 2.0 Pro

### Available Kit

- Small 4 wheeled robot
- RPLidar A3 lidar and Orbbec Astra RGBD camera
- Autonomous open source platform
- Gazebo simulation model
- Good for prototyping and development or learning ROS



## Required Skills and Qualifications

- Experience with ROS

## Additional considerations

- Further training and support can be provided upon request

## Cost

Dependant on duration of hire, support required & options selected







## Required Skills and Qualifications

- Experience with ROS
- Experience with similar UGVs

## Additional considerations

- User will require Ubuntu laptop with ROS, one can be included in the loan
- Further training and support can be provided upon request

## Unitree A1 explorer package

### Available Kit

- A1 quadruped, with Lidar, Intel Realsense RGBD camera and force sensors in the feet
- 2 batteries and charger
- Remote control

Highly dexterous quadruped platform, with 2D Lidar and Intel Realsense camera allowing real time HD video transmission and obstacle avoidance. ROS compatible for rapid R&D tasks.

Max speed 3.3m/s (11.8km/h)

Payload 5kg

Multiple interfaces, 2xEthernet 2xHDMI 4xUSB

5, 12 and 19v power supply for adding extra equipment

## Cost

Dependant on duration of hire, support required & options selected







## Ouster OS0-128

### Available Kit

- 3D LiDAR with IMU
- 128 scan lines
- 90° vertical field of view
- 50m range
- Similar physical size to Velodyne Puck
- IP rating IP68
- Output: range, intensity, reflectivity, ambient NIR, azimuth angle, time stamp

## Required Skills and Qualifications

- System integration

## Additional considerations

- Further training and support can be provided upon request

## Cost

Dependant on duration of hire, support required & options selected





## Ouster OS1-64

### Available Kit

- 3D LiDAR with IMU
- 64 scan lines
- 45° vertical field of view
- 120m range
- Similar physical size to Velodyne Puck
- IP rating IP68
- Output: range, intensity, reflectivity, ambient NIR, azimuth angle, time stamp

## Required Skills and Qualifications

- System integration

## Additional considerations

- Further training and support can be provided upon request

## Cost

Dependant on duration of hire, support required & options selected

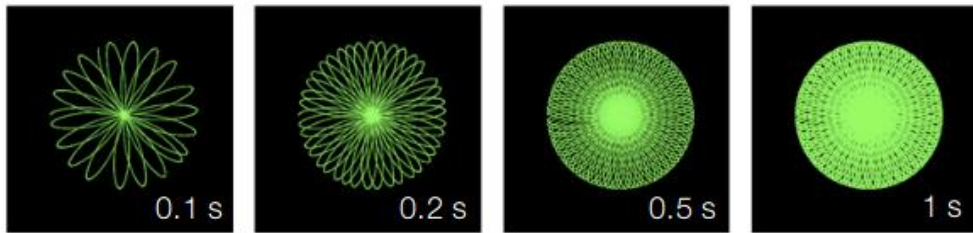




## Livox Mid-40

### Available Kit

- LiDAR with non repeating scan pattern, the longer it looks at something the more detail it gets
- 250m range, 38° circular field of view



.1 Point cloud patterns of the Livox Mid-40 accumulated over an extended period

## Required Skills and Qualifications

- System integration

## Additional considerations

- Further training and support can be provided upon request

## Cost

Dependant on duration of hire, support required & options selected





## Intel Realsense L-515

### Available Kit

- LiDAR camera
- 9m range
- Low power, 3.5W
- 2MP RGB camera

## Required Skills and Qualifications

- System integration

## Additional considerations

- Further training and support can be provided upon request

## Cost

Dependant on duration of hire, support required & options selected



## **Flir A35c thermal camera**



### **Available Kit**

- Small radiometric thermal camera
- 80,000 pixels each giving a temperature measurement

## **Required Skills and Qualifications**

- System integration

## **Additional considerations**

- Further training and support can be provided upon request

## **Cost**

Dependant on duration of hire, support required & options selected





## **STS Safe-miniSource and modified Radeye G10**

### **Available Kit**

- 2 sets available
- 2 sources and one Radeye unit
- Simulated radiation source using radio signals
- Work with slightly modified Radeye G10
- Radeye output is same as real one detecting radiation

## **Required Skills and Qualifications**

- N/A

## **Additional considerations**

- Further training and support can be provided upon request

## **Cost**

Dependant on duration of hire, support required & options selected





## Modified DP6 sensor and radiation simulant

### Available Kit

- DP6 paddle, modified to detect simulated radiation
- Connects to a real Radeye SX
- Have liquid and powder radiation simulant

## Required Skills and Qualifications

- N/A

## Additional considerations

- Further training and support can be provided upon request

## Cost

Dependant on duration of hire, support required & options selected





## Olympus Vanta XRF

### Available Kit

- Handheld XRF (x-ray fluorescence) device
- Used to determine elemental composition of materials
- Provides lab quality results in the field

## Required Skills and Qualifications

- Need written approval from your Radiation Safety Officer
- Need evidence of having received radiation safety training

## Additional considerations

- Only to be used by person/people named in hire agreement
- Needs secure storage when not in use
- Further training and support can be provided upon request

## Cost

Dependant on duration of hire, support required & options selected



## **Varjo XR-3**

### **Available Kit**

- Mixed reality headset with photorealistic visuals
- Industry's highest resolution display
- Can do mixed reality, Virtual reality and Augmented reality
- Integrated hand and eye tracking
- Built in LiDAR and RGB fusion

## **Required Skills and Qualifications**

- N/A

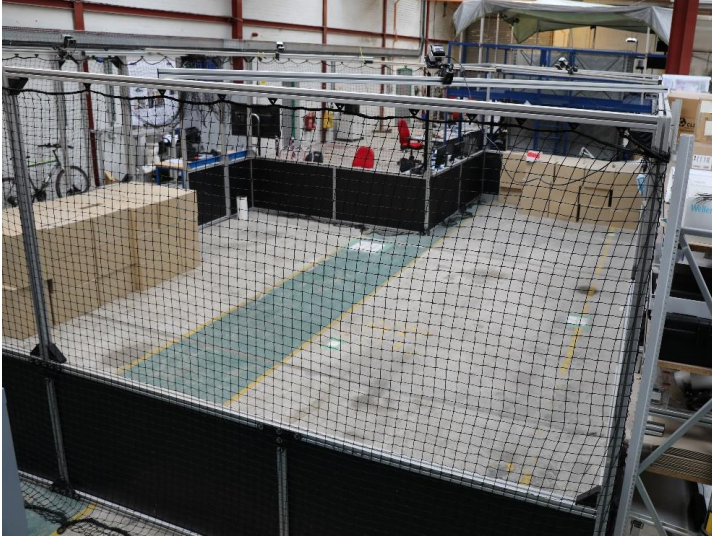
## **Additional considerations**

- Further training and support can be provided upon request

## **Cost**

Dependant on duration of hire, support required & options selected





## **Required Skills and Qualifications**

- N/A

## **Additional considerations**

- Further training and support can be provided upon request

## **Test Facility – Arena – with Vicon cameras and netting for aerial vehicles**

### **Available Kit**

- 6 x 6m arena with concrete floor
- Surrounded by Vicon motion tracking system
- Reconfigurable space, for testing different scenarios

Large arena for testing robot platforms, space can be set up in different ways with different objects to allow a range of scenarios.

This space is to be upgraded during 2021 to include things such as different floor surfaces and nuclear industry relevant objects such as barrels and storage tanks

## **Cost**

Dependant on duration of hire, support required & options selected





## **Test Facility – Water tank/pond – Underwater tracking cameras**

### **Available Kit**

- 2.4 x 3.6m, 2m deep Water tank
- 6x Qualisys Miquis cameras
- 6x Vicon Vero cameras
- 500kg scissor lift
- BlueROV2
- Deeptrekker DTG3

## **Required Skills and Qualifications**

- N/A

## **Additional considerations**

- Further training and support can be provided upon request

A Qualisys Miquis underwater camera tracking system, plus a Vicon Vero camera system for above water tracking. These systems provide positional accuracy of less than 1mm above and below the water.

Walkway all the way round for easy access, and scissor lift to get equipment to top of the tank.

## **Cost**

Dependant on duration of hire, support required & options selected

