

The logo for The University of Manchester, featuring the word "MANCHESTER" in a serif font above the year "1824" in a smaller serif font, all contained within a purple rectangular box.

MANCHESTER
1824

The University of Manchester
Dalton Nuclear Institute

Mobile Robots for Nuclear Decommissioning at Sellafield and Fukushima

Dalton Cumbrian Facility and
School of Electrical & Electronic Engineering
University of Manchester

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Lecturer in Robotic Systems

Research Focus

The focus of the robotics research group at Manchester is 'Robotics for Extreme Environments', with particular emphasis on nuclear decommissioning.

Research topics include:

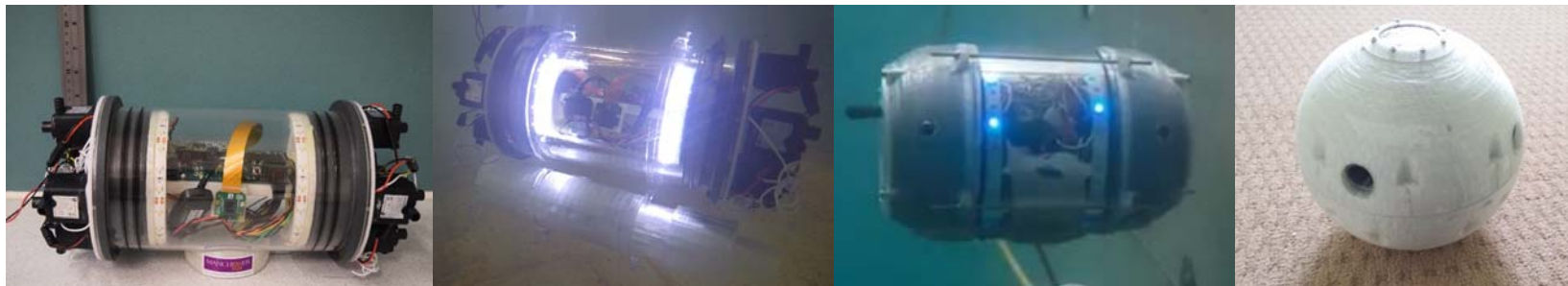
- Novel Platform Design
- Communications and Localisation
- Sensing and Navigation
- Multi-Level Control (from Fault Tolerance to Swarming)
- Effects of Radiation Damage on Electronics

AVEXIS

The Autonomous Vehicle for Exploration and In-situ Sensing (AVEXIS) has been developed in partnership with Sellafield and Forth Engineering for wet storage facility inspections

A number of versions exist:

- AVEXIS 150 and AVEXIS FE for restricted access deployment
- AVEXIS Prime for untethered monitoring



AVEXIS: Commercial Version

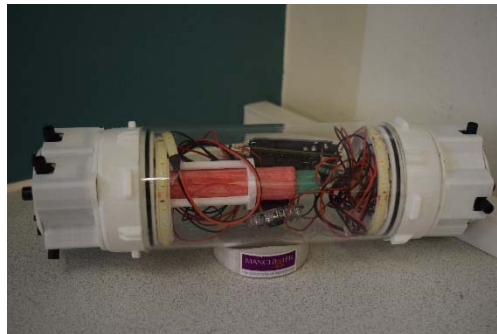


Now available through Forth Engineering Ltd.

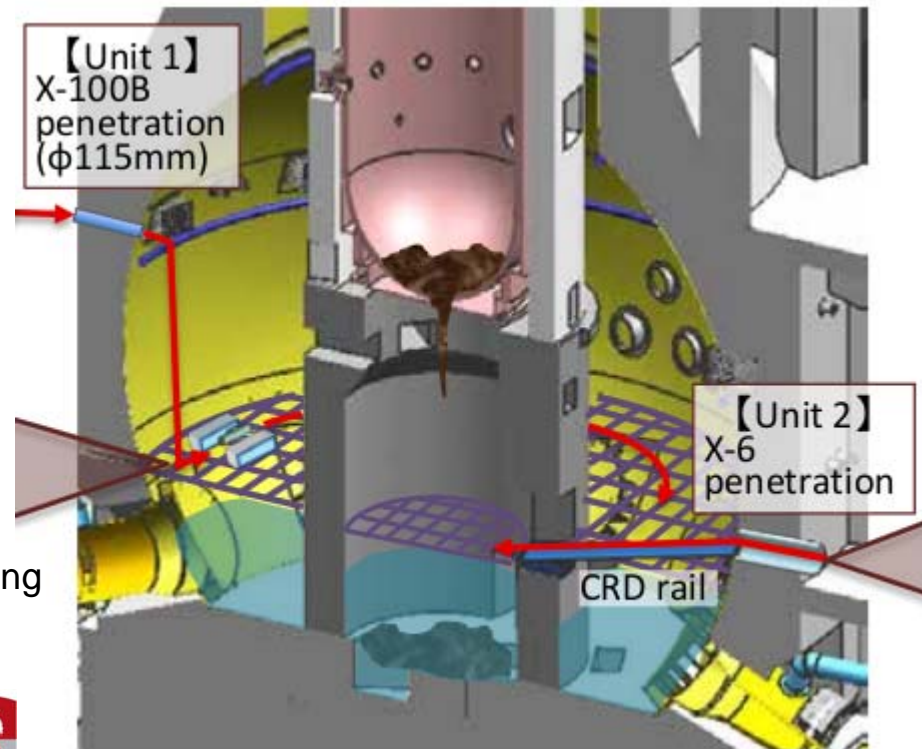
FORTH

AVEXIS for Fukushima

AVEXIS is to be equipped with neutron and gamma detectors (Lancaster) and sonar (NMRI) to help locate fuel in the Fukushima reactors.



Smaller sized AVEXIS vehicles are being considered.



FURO

FURO is being developed as a low-cost characterisation pipe crawler for able to:

- Navigate through 2” – 3” pipework
- Cope with changes in pipe diameter
- Move around 900 bends
- Turn and move down a branch

It uses ‘feelers’ to allow autonomous differential drive control round bends.

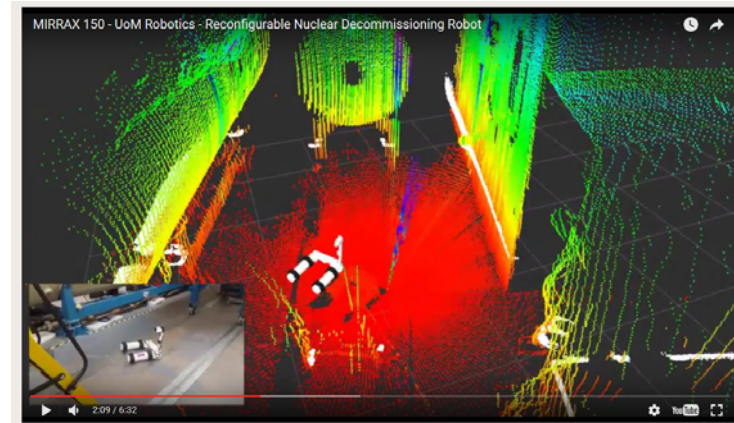


MIRRAX

MIRRAX has been designed to be deployed through 150 mm access ports.

Its 'snake' design allows the robot to curl up so that it can maneuver up / down steps.

Once deployed it will build a 3D map of an area, overlaid with radiometric information.

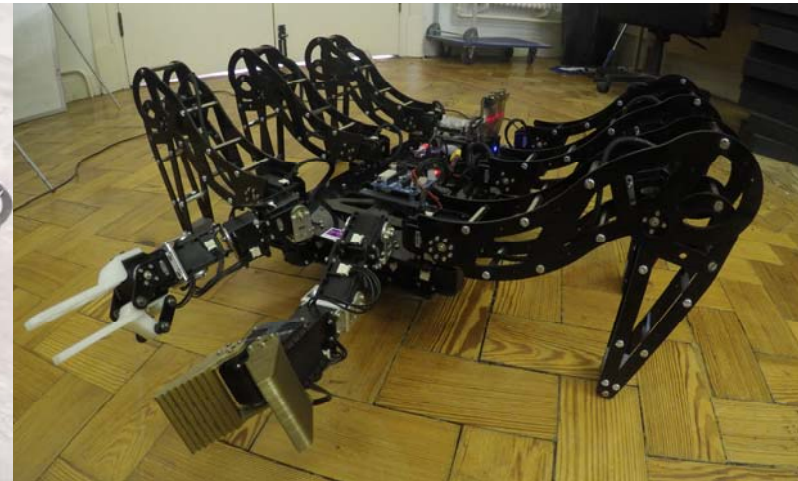
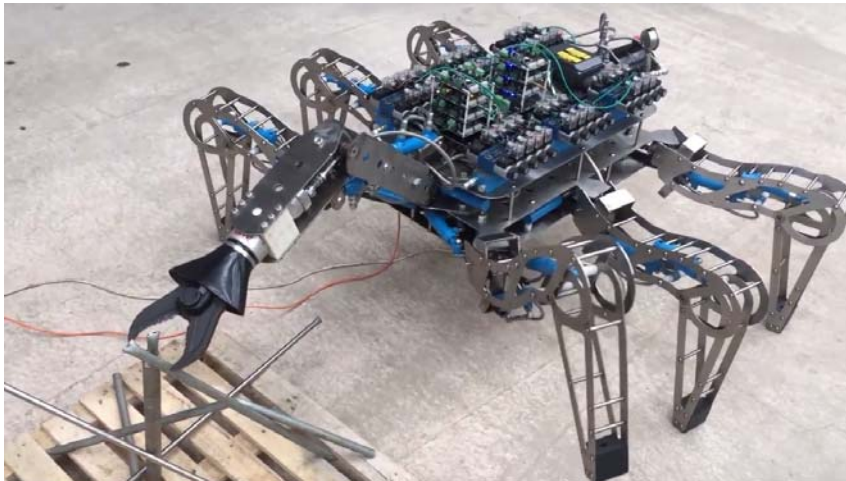


LATRO and CORIN

LATRO and CORIN are hexapod robots designed to characterise, dismantle and retrieve waste.

LATRO is hydraulically actuated and suitable for dry and submerged environments.

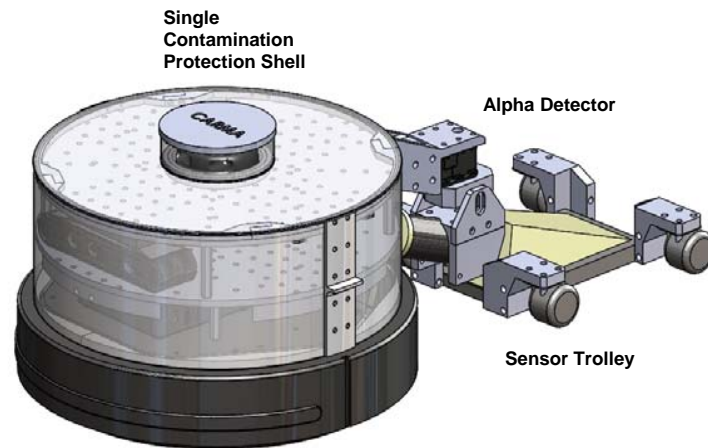
CORIN is servo driven and designed for restricted access exploration.



CARMA

The Continuous Autonomous Radiation Monitoring Assistance robot (CARMA) is being developed to monitor alpha radiation levels in storage facilities.

It uses similar technology to robot vacuum cleaners for mapping and navigation.



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Thank you...

Please visit <http://uomrobotics.com> for more details.