As construction begins on the new multimillion-pound National Robotarium building, we are launching the first issue of a monthly newsletter to keep our partners, policymakers, industry and the public up to date and involved in our news and activities. Over the coming months, we will use this platform to share regular updates on our research and highlight how you can get involved - from research collaboration to family-friendly activities on robotics. To sign up to the newsletter, please email us at nationalrobotarium@hw.ac.uk.

March Focus: Trust in Robots

Construction work has begun on the National Robotarium building, a centre of excellence for pioneering research in robotics and AI.

Based at Heriot-Watt University’s Edinburgh campus, the £22.4M research facility will be the largest and most advanced of its type in the UK. High-tech and sustainable design means the centre will be as innovative as the research taking place. The 40,000ft² building will house three distinct research and development areas, providing bespoke facilities for Robotics & Autonomous Systems (RAS), Human & Robotics Interaction (HRI) and High Precision Manufacturing. Specialist equipment available will include dedicated laser labs, an autonomous systems lab and an assisted living lab for trialling innovative technologies in a realistic home setting.

Bringing together academic research and global companies, the facility will provide a catalyst for entrepreneurship and knowledge exchange to create innovative solutions to global challenges.

Read more about the world-class facilities due to open in 2022.
OpenAAL is teaming up with ProductForge to run a hackathon in April. Find out how you can get involved.

How do you build a strong, trusting relationship between humans and robots?

Professor Helen Hastie discusses the solutions with Tech Monitor.

Professor Helen Hastie and Professor Yvan Petillot have been appointed as joint academic leads of the National Robotarium. Read about their vision.

The Open Ambient Assisted Living Lab (OpenAAL) has partnered with multiple organisations to co-create solutions to assisted living needs. Working with the SMART Centre at Astley Ainslie Hospital, Function Control Ltd, Mencap and Edinburgh Health and Social Care Partnership, the OpenAAL held a focus group to explore challenges for health and social care service users in February.

Did you know drones can swim as well as fly? Dr Sen Wang of EPSRC ORCA Hub explained to Tech Monitor why underwater and flying drones designed to inspect and repair offshore energy infrastructure will reduce risks to humans.
Projects led by Heriot-Watt University, University of Edinburgh and the National Robotarium have launched as part of the UKRI Trustworthy Autonomous Systems (TAS) programme.

TAS brings together research communities and key stakeholders to drive forward cross-disciplinary fundamental research to ensure that autonomous systems are safe, reliable, resilient, ethical and trusted. TAS is comprised of a Hub and several distinct research Nodes: trust, resilience, security, functionality, verifiability and governance and regulation. Its purpose is to develop world-leading design, regulation and operation of autonomous systems. The central aim of the programme is to ensure that the autonomous systems are ‘socially beneficial’, protect people’s personal freedoms, and safeguard physical and mental wellbeing.

Based at Heriot-Watt University, the Node on Trust is led by Professor Helen Hastie, joint academic lead of the National Robotarium, and will explore solutions to manage trust in autonomous systems, covering scenarios that require interaction with humans. Examples include self-driving cars, autonomous wheelchairs or ‘cobots’ in the workforce. The consortium includes the University of Manchester and Imperial College London. Work on the Node will help design the autonomous systems of the future, ensuring they are widely used and accepted in a variety of environments. The Node will adopt a multidisciplinary approach, bringing together experts in psychology, cognitive science and robotics.

Based at University of Edinburgh, the Node on Governance and Regulation will be led by Professor Subramanian Ramamoorthy and will develop a novel framework for the certification, assurance and legality of autonomous systems. As these systems become more capable and incorporate more automated decision-making mechanisms, issues of liability, accountability and responsibility become harder to manage. For example, AI-based decisions in healthcare must embody values of fairness, lack of bias and justice. As part of a multidisciplinary approach, the Node will bring together experts in computer science and AI, law, AI ethics, social studies of information technology and design ethnography.

Read more about the trust in robots project.
What are you researching?

My work explores the conditions that allow people to trust robots (and vice versa). We are trying to create models for the human mind and the robot ‘mind’. How do they represent their realities to each other, and how can this be used to build trust? In a way, it is a classic question of psychology: to what extent is behaviour (in this case trust) the result of situational factors and to what extent is it the result of individual factors like personal traits (so in this particular research, an individual’s propensity to trust)?

How do you expect your research will impact society?

Helping people to trust robots and other autonomous systems is key to their adoption in society. If we’re going to allow them to make decisions for themselves, then breaking the psychological barriers that enable humans to trust - and, therefore, showing the utility of robots - will go a long way to making them universal in our lives.
What's the biggest challenge you face in your research?

The biggest challenge is also the most exciting part: we are doing this research whilst simultaneously creating the research methods we need. It’s hugely innovative, so we are really pioneering this work and leaving behind important learnings for future researchers.

How did you become interested in robotics?

My career has tracked major changes in technology from text chat to touchscreens, to virtual environments and graphical characters – and now robots. In some ways it seems like my research career has followed the progression of technology without a destination, in other ways it feels as if I was always heading here because robots are a special category of technology for humans. We just can't help treating them as if they have minds of their own. We know they don’t have agency and minds like us, but we can't stop treating them as if they do.

What do you hope to achieve through your robotics research?

Three things. First, through robotics research, I hope to understand what makes us human. It might sound counterintuitive, but working in this field tells us a lot about ourselves e.g. how our thoughts and feelings develop. Second, I hope to create technologies that will really benefit people. Third, I hope to inspire the younger generation to want to be a part of this; for them to be creators of technologies and not just users of technologies.

What is the biggest challenge robots and humans will need to overcome in the coming years?

Finding their place in our world: striking a balance between what we need as humans (the pandemic has taught us how much we need other people) and what robots can help us with (for example, doing dangerous work that we would rather not ask humans to do).

Bitesize

This month our resident psychologist Professor Thusha Rajendran talked to The Moon, a newspaper for children about why young people should consider a career in robotics.

He will also be giving a talk to three classes from James Gillespie’s High School on Thursday 11th March. He will discuss the work of the National Robotarium, as well as asking questions like 'What is AI?', 'What is a robot?', and 'What is machine learning?'. Would your school like to get involved in the work of the National Robotarium? Contact nationalrobotarium@hw.ac.uk to find out more.
Your Chance to Get Involved

Prof. Lemon gives keynote at the Lifelong Learning and Personalization in Long-Term Human-Robot Interaction (LEAP-HRI) Conference

Snippets from the HRI conference will be shared on our social media channels following the event @NRobotarium

Video presentation on Towards Visual Dialogue for Human-Robot Interaction

Watch the presentation from Part et al. here

Late-breaking report on Transparency in HRI: Trust and Decision Making in the Face of Robot Errors

Read the full paper by Nesset et al. here

Video presentation on Self-Explainable Robots in Remote Environments

The full presentation hosted by Garcia et al. can be found here

Spreading the word

We have started posting on our social channels. If you are able to support our engagement and grow our following, please visit @NRobotarium on Twitter or @The National Robotarium on LinkedIn and tag us in relevant news and content.