

MANCHESTER
1824

The University of Manchester

27TH TAROS CONFERENCE 2026

Towards Autonomous Robotic Systems
University of Manchester, 7-9 September

|TAROS 2026

SPONSORED BY:



DOBOT



UNITREE



**UK-RAS
NETWORK**
ROBOTICS & AUTONOMOUS SYSTEMS

TECHNICAL SPONSOR:



The IEEE Robotics and Automation Society is committed to advancing diversity in Robotics and Automation, and to promoting an inclusive and equitable culture that welcomes, engages, and rewards all who contribute to the field, without regard to ethnicity, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression.

Monday, 7 September

Time	Session	Room
08:30-09:00	Registration	Nancy Rothwell North Entrance
09:00-09:10	Welcome	2B.020
09:10-10:10	<u>Keynote 1: Dr. Alessandra Sciutti</u> Chair: Prof. Angelo Cangelosi	2B.020
10:10-11:10	Session 1: Soft, Compliant & Bio-inspired Robot Morphology (3 Papers) Chair: Prof. Barry Lennox	2B.020
11:10-11:40	Coffee Break, Posters & Industry Exhibition	Circulation Space 2A.013 2A.014
11:40-12:40	Session 2: Robot Dynamics, Manipulation & Physical Interaction (3 Papers) Chair: Dr. Pawel Ladosz	2B.020
12:40-14:20	Lunch, Posters & Industry Exhibition	Circulation Space 2A.013 2A.014
14:20-15:00	Session 3: Medical, Rehabilitation & Assistive Robotics (2 Papers) Chair: Dr. Gabriella Pizzuto	2B.020
15:00-16:00	Session 4: Poster Spotlight Chair: Dr. Bruno Adorno	2B.020

Monday, 7 September

Time	Session	Room
16:00-17:00	Coffee Break, Posters & Industry Exhibition	Circulation Space 2A.013 2A.014
17:00-18:00	<u>Keynote 2: Prof. Shervanthi Homer-Vanniasinkam</u> Chair: Prof. Andy Weightman	2B.020
19:30-22:00	Conference Dinner	Manchester Museum

CONFERENCE DINNER

MONDAY, 7 SEPTEMBER

If you have registered for the conference dinner, we are delighted to invite you to join us for an evening at **The Living Worlds Gallery** within the **Manchester Museum**.

Guests are invited to arrive at **19:30 for a drinks reception**, with **dinner starting at 20:00**.

Please use **The Coupland Street Entrance**, which is located underneath the arch on Oxford Road.

What3words: degree.stale.turns.

Address: Manchester Museum, Oxford Road, M13 9PL



Tuesday, 8 September

Time	Session	Room
08:30-09:00	Registration	Nancy Rothwell North Entrance
09:00-10:00	<u>Keynote 3: Prof. Alessandro Vinciarelli</u> Chair: Prof. Ana Cavalcanti	2B.020
10:00-11:00	Session 5: Robot Perception, Vision & Multimodal Understanding (3 Papers) Chair: Dr. Mingfei Sun	2B.020
11:00-11:30	Coffee Break, Posters & Industry Exhibition	Circulation Space 2A.013 2A.014
11:30-12:50	Session 6: Navigation, Planning & Mobile Robot Autonomy (4 Papers) Chair: Amber Drinkwater	2B.020
12:50-13:50	Lunch, Posters & Industry Exhibition	Circulation Space 2A.013 2A.014
13:50-14:50	Session 7: Safety, Verification & Applied Robotic Systems (3 Papers) Chair: Prof. Hongmei He	2B.020
14:50-16:30	Coffee Break, Posters & Industry Exhibition	Circulation Space 2A.013 2A.014
16:30-17:00	Session 8: Awards Ceremony Chair: Prof. Ana Cavalcanti	2B.020
17:00-18:00	<u>Keynote 4: Dr. Ketao Zhang</u> Chair: Dr. Emily C. Collins	2B.020

Wednesday, 9 September

ECR Day & Workshops

Time	Session	Room
08:30-09:00	Registration	Nancy Rothwell North Entrance
09:00-10:30	Workshop 1: Towards Effective Human–Robot Teamwork Dr. Hazel M. Taylor, Dr. Marie Farrel, Dr. Yasmeen Rafiq	2A.012
09:00-10:30	Workshop 2: Human-Robot Alignment and Reliable Trustworthiness (HART) Dr. Samuele Vinanzi, Muhammad Aitsam, Majory Da Costa-Abreu, Imene Tarakli, Federico Tavella	2A.011
09:00-09:10	Welcome	2B.020
09:10-10:30	ECR Session 1: Career Development	2B.020
09:10-09:35	Neil Buchanan Loadstar Space	2B.020
09:35-10:00	Dr. Micol Spitale Politecnico di Milano	2B.020
10:00-10:30	Panel Discussion	2B.020
10:30-10:45	Coffee Break	Circulation Space
10:45-12:00	Workshop 1: Towards Effective Human–Robot Teamwork [Continues] Dr. Hazel M. Taylor, Dr. Marie Farrel, Dr. Yasmeen Rafiq	2A.012

Wednesday, 9 September

ECR Day & Workshops

Time	Session	Room
10:45-12:00	Workshop 2: Human-Robot Alignment and Reliable Trustworthiness (HART) [Continues] Dr. Samuele Vinanzi, Muhammad Aitsam, Majory Da Costa-Abreu, Imene Tarakli, Federico Tavella	2A.011
10:45-12:00	ECR Session 2: PhD Strategies & Pathways	2B.020
10:45-11:15	Prof. Gavin Brown University of Manchester	2B.020
11:15-11:30	Andrew Todman DiveIn CDT	2B.020
11:30-11:45	Prof. Simon Watson RAINZ CDT	2B.020
11:45-12:00	Prof. Alessandro Vinciarelli University of Glasgow	2B.020
12:00-13:15	Lunch, Posters, CDT Showcase & Industry Exhibition	Circulation Space 2A.011 2A.012
13:15-14:30	ECR Session 3: Lightning Talks	2B.020

Wednesday, 9 September

ECR Day & Workshops

Time	Session	Room
13:15-14:30	Workshop 3: AI:CogDev @ TAROS: Designing Intelligent Minds Letícia Mara Berto, Marco Gabriele Fedozzi, Renan Lima Baima	2A.011
14:30 - 14:45	Coffee Break	Circulation Space
14:45 - 16:15	Workshop 3: AI:CogDev @ TAROS: Designing Intelligent Minds [Continues] Letícia Mara Berto, Marco Gabriele Fedozzi, Renan Lima Baima	2A.011
14:45-15:50	ECR Session 4: Robotics & AI for Sciences	2B.020
14:45-15:05	Dr. Gabriella Pizzuto University of Liverpool	2B.020
15:05-15:25	Prof. Marc Hanheide University of Lincoln	2B.020
15:25-15:50	Prof. Erica Baffelli University of Manchester	2B.020
15:50 - 16:15	ECR Session 5: Awards Ceremony	2B.020
16:15 - 16:40	<u>ECR Session 6: Lab Tour*</u> <u>Prior registration required</u>	2A.014

TAROS 2026: Oral Presentations

Monday, 7 September

Session 1: Soft, Compliant & Bio-inspired Robot Morphology

Chair: Prof. Barry Lennox

Time	Title
10:10 - 10:30	Soft Electroadhesive Feet for Micro Aerial Robots Perching on Smooth and Curved Surfaces
10:30 - 10:50	Intrinsic Stiffness Coupling Enables Phase-Coordinated Motions for Highly Dynamic Manipulation
10:50 - 11:10	PenduMorph: Development and Motion Analysis of Pendulum-Actuated Rolling Reconfigurable Spherical Robot with Magnetic-Coupling

Session 2: Robot Dynamics, Manipulation & Physical Interaction (3 Papers)

Chair: Dr. Pawel Ladosz

Time	Title
11:40 - 12:00	Learning-Based Object Center Adjustment for 3D Reconstruction Using an Eye-In-Hand Robotic Manipulator
12:00 - 12:20	Predicting Haptic Consequences via Air-Perturbed Optical Flow
12:20 - 12:40	Full Nonlinear Nonholonomic Dynamics and Motion Analysis of a 3-DoF Underactuated Spherical Rolling Robot

TAROS 2026: Oral Presentations

Monday, 7 September

Session 3: Medical, Rehabilitation & Assistive Robotics (3 Papers)

Chair: Dr. Gabriella Pizzuto

Time	Title
14:20 - 14:40	Breast Palpation Simulator with Independent Breast Size and Stiffness Control Using a Tri-Layer Pneumatic Nodule
14:40 - 15:00	Explainable Locomotion Mode Analysis through Latent Budget Trees for Assistive Robotics

TAROS 2026: Oral Presentations

Tuesday, 8 September

Session 5: Robot Perception, Vision & Multimodal Understanding

Chair: Dr. Mingfei Sun

Time	Title
10:00 - 10:20	Depth Edge Alignment Loss: DEALing with Depth in Weakly Supervised Semantic Segmentation
10:20 - 10:40	Multi-Scale Prediction Network for Real-Time Semantic Segmentation of Driving Scenes in Autonomous Vehicle Navigation
10:40 - 11:00	Fake or Real, Can Robots Tell? Evaluating VLM Robustness to Domain Shift in Single-View Robotic Scene Captioning

Session 6: Navigation, Planning & Mobile Robot Autonomy

Chair: Amber Drinkwater

Time	Title
11:30 - 11:50	Depth-Aware Gating for Improved Termination Control in Object-Goal Navigation Via Reinforcement Learning
11:50 - 12:10	Constrained Torque-Level Formation Control of Differential-Drive Wheeled Mobile Robots Via Consensus-Based Feedback Linearised MPC
12:10 - 12:30	Damage-Aware Coverage Path Planning As a Generalised Travelling Salesperson
12:30 - 12:50	PAMPR: Predictability-Aware Motion Planning for Robots

TAROS 2026: Oral Presentations

Tuesday, 8 September

Session 7: Safety, Verification & Applied Robotic Systems

Chair: Prof. Hongmei He

Time	Title
13:50 - 14:10	Predictive Varanus: Combining CSP Conformance Monitoring with Predictive LTL Runtime Verification
14:10 - 14:30	Droneulator: A Portable UAV Simulator for Agricultural Workflows with RotorPy and Godot 4
14:30 - 14:50	Developing Safety-Critical Autonomous Robotics: A Nuclear Inspection Case Study

TAROS 2026: ECR Lightning Talks

Wednesday, 9 September

ECR Session 3: Lightning Talks

Time	Title
13:15-13:30	Towards Kinematic Framework for Terrestrial-To-Climbing Transition in Gastropod-Inspired Robots
13:30-13:45	RAVEN: A Latency-Aware Predictive Digital Twin Framework for Humanoid Robotic Cinematography in Virtual Production
13:45-14:00	Automated Measurement System for Emergency-Stop Performance of Mobile Service Robots
14:00-14:15	Actuated Sensing for Nuclear Site Characterisation

TAROS 2026: ECR Posters

Wednesday, 9 September

Title
Hybrid Motion–Force Control Assisted with Visual Servoing for Bilateral Teleoperation
Global Path Planning for Multi-trailer Towing Robots for Automatic Logistics
Henri: An IoT-Enabled Assistive Robot for Medication Dispensing
Comparison of Planning and Control Action Spaces for Reinforcement Learning-Based Online Coverage
When Machines Learn to Understand: A Theory-of-Mind Framework for Communication, Breakdown and Repair Across the Social Mind Spectrum
TriSAR: Task Coordination and Collision Avoidance for Aerial Robot Teams in Disaster Response
POLY: Intelligent and Connected Mobile Robotic Ecosystem for Hospital Care Logistics Streamlining and Healthcare Support

VENUE: NANCY ROTHWELL BUILDING

TAROS 2026 will be held in the Nancy Rothwell Building.
Please **arrive using the North Entrance, located on Grosvenor Street.**

Registration: Nancy Rothwell North Entrance

Plenary: 2B.020

Workshops: 2A.011 / 2A.012

Posters: 2A.014

Industry Exhibition: 2A.013

Lunch / Coffee Breaks: Circulation Space

There is **Wi-Fi** available throughout the building:

- UOM_Guest
- Eduroam

The venue has step-free access; however, if you have any concerns, please do not hesitate to speak to a member of staff or email TAROS2026@Manchester.ac.uk. Further access information can be found here.

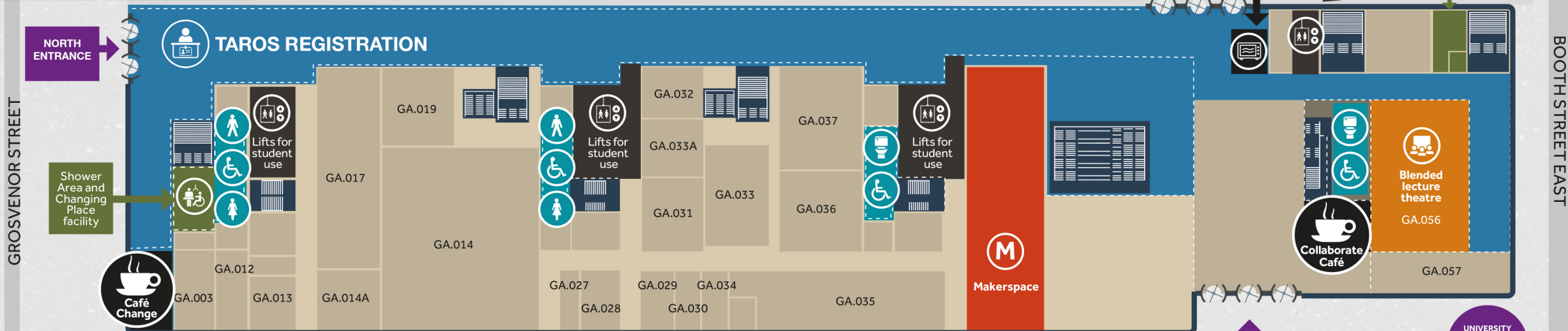
The venue has a dedicated multi-faith prayer space with ablution facilities, located on the ground floor (GA.051).

G

GROUND FLOOR



NANCY ROTHWELL BUILDING, GROUND FLOOR



SPOT SOMETHING – WE’LL SORT IT

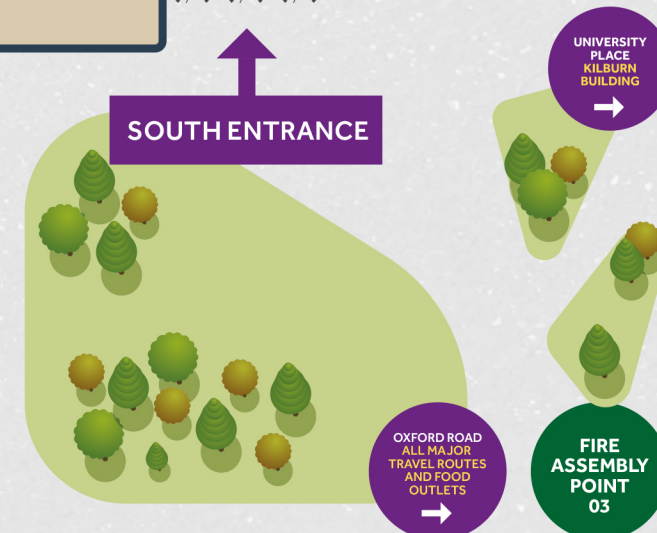
If you see anything that's not right, or needs attention we want to hear from you.

Email – TEAM@manchester.ac.uk

YORK STREET BUILDING

FIRE ASSEMBLY POINT ACROSS THE ROAD 04

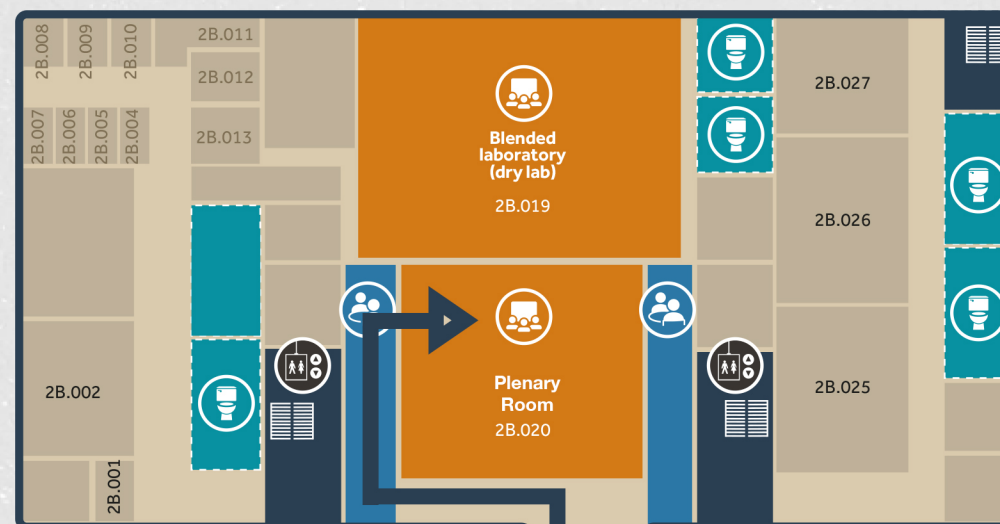
AQUATICS CENTRE



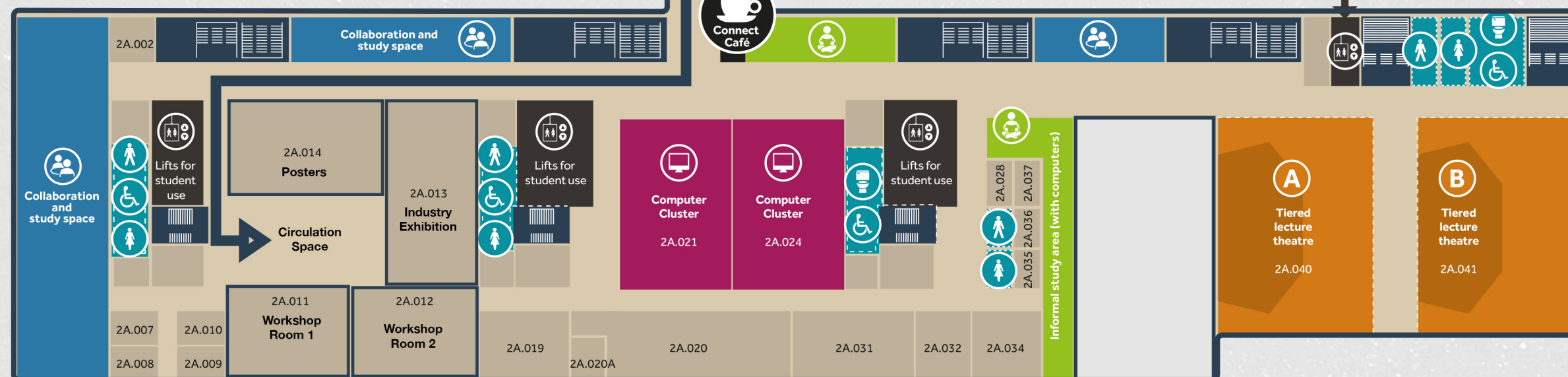
2

SECOND FLOOR

ENGINEERING BUILDING B, SECOND FLOOR



NANCY ROTHWELL BUILDING, SECOND FLOOR



- | | | | | | | | |
|--|-------------------|--|---------------------|--|--------------------------|--|-------------------------------|
| | Female Toilet | | Lift | | Computer Cluster | | Workspace |
| | Male Toilet | | Café | | Blended Lecture Theatre | | Collaboration and Study Space |
| | Accessible Toilet | | Student Support Hub | | Tiered Lecture Theatre A | | Informal Study Space |
| | All Gender Toilet | | Makerspace | | Tiered Lecture Theatre B | | Swipe card access |