6th UK Manipulation Workshop

7th-8th January 2025

King's College London

Sponsored by

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Edward Johns - Imperial College London
Perla Maiolino - University of Oxford
Ingmar Posner - University of Oxford
Nathan Lepora - University of Bristol
Jeremy Wyatt - Amazon

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Programme

Day 1 – Tuesday the 7th of January 2025

08:45	Registration / Coffee & Tea	BH Arcade
09:30	Welcome and Introduction	BH Auditorium
09:45-11:15	**Session 1 Robot Gripper and Manipulator Design** - Chair: Matthew Howard	BH Auditorium

09:45: **Ketao Zhang – Queen Mary University of London**

Title*: Engineering Intelligent End-effectors for Robotic Manipulation*

Abstract*: The extensive studies of natural systems provide an extensive source of inspiration for developing artificial systems in the way of adopting concepts and principles in nature to solve engineering challenges. The key promise of this bio-inspired approach is that the materials, the collective interaction methods and the environmental manipulation mechanisms are integrated and co-developed, leading to high system performance. This talk will give insights on incorporating engineering principles and concepts abstracted from the biological systems in nature to design intelligent mechanisms for robotic systems, especially dexterous end-effectors capable of complex functionalities and adapting to various tasks and environments. We will explore the enhanced adaptability of robotic hands with reconfigurable palms and soft grippers with variable stiffness hinges in handling various objects with different shapes. Additionally, we will discuss aerial manipulation in a much broader view of manipulation from our recent work published in Nature.*

10:00: **Barbara Webb – The University of Edinburgh**

Title*: Inspiration from insects for robot manipulation*

Abstract: *Many approaches to robot manipulation have been inspired by biology, but the focus most often falls on imitating the human hand. However, many animals are capable of complex interaction and control of objects in their environment with very different forms of end effectors, such as the two-jaw angular gripper of ants. We have developed systems for close-up, high-speed, filming and tracking of ants as they grasp food to transport it back to their nest, and have applied some initial observations and principles to improve the stability of grasping of everyday objects for a 2-dof parallel plate gripper. In ongoing work we are examining how movement of antennae and forelimbs of the ant are interactively involved in both sensing and positioning objects before grasping, and how this might be translated to robotics.*

10:15: **Edward Johns – Imperial College London**

Title*: Imitation Learning Beyond Behavioural Cloning*

Abstract: *There is significant investment today going into scaling up behavioural cloning for robot manipulation. However, whilst behavioural cloning does work well with sufficient data, a general-purpose robot is going to need a vast number of human demonstrations to cover all the tasks and objects in the world. In this talk, I will present an alternative perspective for achieving those same goals as behavioural cloning, but with significantly less data. This will include several of our developments from the past few months, which now enable real-world everyday tasks to be learned from just one or a few demonstrations.*

10:30: **Nathan Lepora – University of Bristol**

Title*: Tactile Robot Dexterity*

Abstract*: In this talk I summarize some goals for robot dexterity and their critical dependence on an artificial sense of touch. I cover recent progress from the University of Bristol/Bristol Robotics Laboratory on 3d-printed high-resolution tactile sensing based on the human sense of touch, the integration into robot hands of various types such as industrial grippers and anthropomorphic hands, and the control of robots using tactile sensing.*

10:45: **Poster Spotlights Session 1**

11:15	Coffee Break	BH 8th Floor & Café Area

11:45-12:45	**Keynote – Robert D. Howe** – Harvard School of Engineering (Chair: Letizia Gionfrida) ***Title**: Reliable Manipulation* ***Abstract**: Robots in unstructured environments like homes and workplaces must safely handle a vast range of objects. While recent robotics research has demonstrated increasing grasping success rates, it is not clear that current methods can approach the requirements of real-world applications. We begin by quantifying tolerable failure rates in unstructured settings, with the conclusion that dropped object rates must be less than 1 in 1,000 to 1 in 10,000 for many applications. To achieve this reliability, we are developing error detection mechanisms that can operate in parallel with robot grasping control systems. These systems can alert the controller when an object may be dropped, which allows the system to prevent or correct the error. One example is a collision detection algorithm that uses tactile signals from the robot fingers to estimate the location and force of a collision between a grasped object and a surface in the environment. This information can enable the controller to replan the task to avoid the collision, or it can be used to control contact during manipulation tasks. Another approach uses signals from the sensors in the robot hand to estimate whether a grasp will be stable under the anticipated forces in executing a task; if the fingers are projected to slip, then the controller can regrasp the object to guarantee stability. This system uses a hybrid of physical models (grasp analysis) and machine learning methods to maximize effectiveness. We conclude with a discussion of other potential error detection and correction mechanisms and the sensors needed to implement them.*	BH Auditorium
12:45	**Poster Session 1**	BH Arcade & BH 8th Floor
13:45-15:00	*Optional* **Lab Tour**	Robotics Labs (Macadam Building Floor -4)
15:00	Coffee Break	BH Arcade & BH 8th Floor
15:30-17:00	**Session 2 - Robot Learning and Control for Manipulation** - Chair: Shan Luo 15:30: **Luis Figueredo - University of Nottingham** ***Title**: Getting Comfortable around Humans: A Path for Close and Physical Human-Robot Collaboration* ***Abstract**: Recent advances in robotics technologies have significantly narrowed the gap between humans and robots. However, the integration of robots into environments that require close physical interaction with humans remains largely underdeveloped. Achieving a human-like level of human-robot collaboration (HRC) is still a primary challenge within the field of robotics. In human interactions, effective collaboration and teamwork are built on mutual understanding, communication, and trust in each other's ability to complete tasks safely. For effective HRC, it is crucial for robots to not only communicate efficiently but also to develop a nuanced understanding of human physical capabilities, safety, ergonomics, and a shared sense of embodiment. This entails integrating layers of responsive, reactive, and safety-certified functionalities. In this talk, I will outline the key features of this multi-layered approach to pHRC, from safety measures to natural language communication and the biomechanical embodiment understanding. Moreover, I will showcase pioneering tools that enhance robot decision-making, emphasizing human safety and comfort considerations.* 15:45: **Joao Bimbo - University of Lisbon** ***Title**: Soft isn't hard - experiments in compliant manipulation* ***Abstract**: Soft elements in robotic manipulation systems offer compelling advantages in adaptation, robustness, safety, and tolerance to position errors. However, these benefits have traditionally come at the cost of reduced predictability and increased complexity in modeling and control compared to rigid systems. In this talk, I present four experimental observations where compliance and softness not only simplify robot manipulation tasks but also unlock capabilities that were infeasible with rigid systems. Through compliant contacts, mechanical adaptation, and natural object conformity, these soft systems enable enhanced sensing, improved control, and increased dexterity in manipulation tasks.*	

16:00: **Nicola Bailey – King's College London**

Title: *Flexure Coupling Mechanisms for High Performance Robotics and Automated Processes*

Abstract: *Mechanical systems typically used in automated processes, including manufacturing and robotic applications, comprise of rigid components connected by traditional revolute bearing joints. The bearing joint performance is limited due to complex and uncertain tribological effects, including friction, stiction and backlash. Additionally, these joints can suffer from wear, causing degradation in the system's performance over time. If multiple joints are placed within a system, the joint effects will compound, leading to a higher level of uncertain tribological effects, and thus reducing the achievable accuracy of the overall system. In turn, this will limit the system's ability to accurately track desired trajectories and thus, its use for high precision applications. Negating these uncertain tribological effects through active control is difficult, however, the source of them can be eliminated through using flexure-based compliant mechanisms (FCMs) as pseudo-joints. By providing relative movement between rigid components, through the elastic deformation of the FCM, wear- and lubrication-free motion can be achieved, producing potentially significant improvements in the achievable precision. Furthermore, the FCM can have a relatively simple design at lower cost than a standard revolute joint. Although FCMs have many advantages, they have complex nonlinear mechanical behavior, due to their additional degrees of freedom. When undergoing small deflections, modelling approaches have been developed for serial and parallel FCM designs, and their performance analysed. However, for many applications, large deflections of the FCM will be necessary. Therefore, the characteristics of different FCM designs under large deformations are investigated, together with the ability of a multibody system with FCM to track a desired trajectory. Results show that by implementing FCMs into automated systems, high precision and high-value applications can be achieved.*

16:15: **Jenny Read – Advanced Research and Invention Agency (ARIA)**

Title*: ARIA's Robot Dexterity Programme - Update and story so far*

Abstract*: Attendees at last year's UK Manipulation Workshop in Oxford provided hugely valuable guidance and feedback on ARIA's planned Robot Dexterity programme. The programme is now up and running, with the first projects already underway and a programme-wide kick-off meeting planned for March. The programme focuses on hardware for achieving the next level of dexterity, given that hardware is both fundamental and under-served relative to advances in control. In this talk, I will update attendees on our Robot Dexterity programme and other ARIA initiatives in robotics. This will include details about our project selection and the portfolio of projects in the programme.*

16:30: **Fumiya Iida - University of Cambridge**

Title*: TBC*

Abstract: *TBC*

16:45: **Mohan Sridharan – University of Edinburgh**

Title*: Robust Robot Manipulation with Decision Heuristics in the Era of Deep Networks*

Abstract*: Deep networks and "data-driven" models increasingly represent the state of the art for many problems in robot manipulation. These methods and models are resource-hungry and opaque, and they are known to provide arbitrary decisions in previously unseen situations, whereas practical robot manipulation applications often require transparent, multi-step, multi-level decision-making under resource constraints and open world uncertainty. In this talk, I argue that to solve the open problems in robot manipulation, we need to revisit principles that can be traced back to the early pioneers of AI, and embed these principles in the architectures we develop for robots, with modern data-driven methods being just another tool in our toolbox. I will illustrate the benefits of this approach and outline a methodology for the design of such architectures.*

17:00-18:00	**End of Day 1** Speakers and sponsors are given an hour's break before the evening reception.	N/A
18:00-21:00	**Evening Reception** (For speakers, committee members, and sponsors)	BH 8th Floor South Wing

Day 2 – Wednesday the 8th of January 2025

08:45	Registration / Coffee & Tea	BH Arcade
09:15–10:45	**Session 3 – Dexterous Manipulation and Human-Robot Collaboration –** Chair: Ildar Farkhatdinov 09:15: **Dandan Zhang - Imperial College** ***Title**: Robotic Dexterous Micromanipulation for Biomedical Applications* ***Abstract**: Robotic dexterous micromanipulation plays a crucial role in biomedical applications by enabling precision-driven tasks such as diagnostics, automation of fundamental biomedical research, targeted therapeutic delivery, and minimally invasive interventions. By applying robotics at micro- and nano-scales, researchers aim to overcome the limitations of traditional techniques in handling delicate structures and biological objects within confined and dynamic biomedical environments. This presentation showcases recent research from our group, focusing on dexterous micromanipulation techniques powered by multi-physical fields. We will present a novel optical microrobot-assisted dexterous manipulation platform designed for six degrees of freedom (DoFs) micromanipulation. This platform combines advanced perception, interaction, and control systems, enabling precise manipulation of micro-objects in complex and dynamic biomedical settings, such as lab-on-a-chip and organ-on-a-chip systems. Additionally, we will explore how advanced AI and digital technologies facilitate seamless human-robot interaction, improving the efficiency and reliability of micromanipulation. We envision that advancements in robotic dexterous manipulation will make significant contributions to future biomedical applications.* 09:30: **Lorenzo Jamone - University College London** ***Title**: The Intelligence of the Hand* ***Abstract**: Human dexterity remains unmatched by modern robots, yet developing more dexterous robotic systems is crucial for tackling tasks in semi-structured, unstructured, and hazardous environments. My team is dedicated to studying "the intelligence of the hand" to bridge this gap and enhance the functionality and intelligence of robotic hands. In this talk, I will share highlights from our recent work in tactile perception, haptic exploration, grasping, and manipulation, showcasing how these advancements are bringing us closer to creating truly dexterous robots.* 09:45: **Mehmet Dogar - University of Leeds** ***Title**: Object Manipulation with Physics-Based Models* ***Abstract**: I will talk about robotic planners, controllers, and perception systems that use physics-based predictions about the motion of contacted objects. In my group at the University of Leeds, we are interested in developing such systems for cluttered scenes, where multiple objects might simultaneously move as a result of robot contact. We currently have an EPSRC project (2022-2026) on "picking and packing with physical reasoning", which aims to develop robotic systems that can pick from and pack in shelves/boxes with multiple objects. I will present some results from this project.* 10:00: **Efi Psomopoulou – University of Bristol** ***Title**: Control engineering for dexterous robots* ***Abstract**: For robot manipulators to move out of industrial settings and into human environments, they will need physical intelligence for their interactions with the environment and humans and they will also need the dexterous capabilities of the human hand. This raises many unsolved problems, from designing the mechanisms and actuator technologies for such dexterous manipulators to their fine motor control with force and tactile sensing capabilities. These problems are interlinked: the mechanism for a manipulator is interdependent with its control which is interdependent with its sensing capabilities. This talk will present my past and recent work towards solving these problems.* 10:15: **Poster Spotlights Session 2**	BH Auditorium
10:45	Coffee Break	BH 8th Floor & Café Area

11:15–12:15	**Tutorial** **Speaker 1: Takiyah Williams** ***Title**: Unlocking the Mystery - Standards Development* ***Abstract**: This session will give you insight into BSI, UK's National Standards Body specifically focusing on UK's National robotics committee and its standards. This session will also provide examples of the standards making process and explain how/why you should engage with standards making at BSI.* **Speaker 2: Dominic Keen** ***Title**: Turning brilliant end-effector inventions into commercial success stories* ***Abstract**: Based on Britbots' experience of backing more than 50 UK-based robotics companies, many of which have spun-out from universities, Domenic will be telling the story of three manipulation inventions within the food and farming sector that now have been turned into worldwide robotics business propositions.*	BH Auditorium
12:15-12:45	**Panel: Advancing and translating innovation across robotics sectors and the leaky talent pipeline** Chair: Edith-Clare Hall *Professor Perla Maiolino, Dr Milette Gillow, Dr Isabel Van De Keere, and Dr Radhika Gudipati will be exploring how Inclusion, Diversity, Equity, and Accessibility (IDEA) principles drive research translation, foster innovation across technology sectors, and create sustainable talent pipelines in robotics and related fields.*	BH Auditorium
12:45–13:45	Lunch / Inclusive Futures Forum facilitated by Women in Robotics (Lunch incl) *Women in Robotics is a global community supporting women who work in robotics and women who are interested in working in robotics, as entrepreneurs, industry, and academia.*	BH Arcade & BH 8th Floor
13:45-15:15	*Optional* **Lab Tour**	Robotics Labs (Macadam Building Floor -4)
15:15	Coffee Break	BH Arcade & BH 8th Floor
15:45-17:00	**Session 4 – Industrial Manipulation –** Chair: Nicola Bailey 15:45: **Rich Walker – Shadow Robot** ***Title**: Designing robots for real world learning.* ***Abstract:** Learning is hard. Learning with robots is harder because they break while you're trying to get them to do it. Learning in simulation is unsatisfying. How would we build robots for learning in the real world?* 16:00: **Jelizaveta Konstantinova – Ocado Technology** ***Title**: Innovating Robotics Manipulation for Grocery Automation* ***Abstract**: Robotic manipulation in grocery automation presents unique challenges, particularly when handling delicate and irregularly shaped fresh produce. This talk explores Ocado's research and innovation to address these challenges. We emphasise human-inspired grasping strategies and their application to robotic manipulation challenges. We discuss advancements in gripper design, AI-driven learning, and adaptive manipulation techniques, drawing on insights from collaborative projects, such as IntelliMan and SoMa. A key focus is placed on benchmarking methodology to evaluate robotic performance, comparing picking strategies in dynamic and semi-structured environments. This talk highlights the intersection of research and industrial needs for advancing robotic manipulation for real-live applications.*	BH Auditorium

16:15: **Rustam Stolkin – A.R.M. Robotics**

***Title**: TBC*

***Abstract:** TBC*

16:30: **Tom Erez – DeepMind**

***Title**: Simulation for manipulation with MuJoCo*

***Abstract**: The field of legged locomotion is now dominated by "sim-to-real": training policies in simulation and deploying them on real robots. In this talk, I will discuss what is required to bring such success to manipulation and showcase the different innovations we are introducing to the MuJoCo open-source ecosystem to enable this research. I will further discuss how the changing landscape of AI may further facilitate this line of research.*

16:45: **Hyung Jin Chang – University of Birmingham**

***Title**: Towards Human-Centric Robot Manipulation: Vision-Based Hand-Object Interaction and Beyond*

***Abstract**: Robotic manipulation has made significant strides with the integration of vision-based learning, yet the challenge remains in enabling robots to learn complex skills in a manner that is intuitive and adaptable to human-like interaction. In this talk, we present recent advancements in vision-based hand-object interaction learning, expanding to multimodal learning approaches that combine vision and language, to enable more robust and dynamic manipulation capabilities. We also explore the incorporation of generative models and rendering techniques to simulate and predict realistic object manipulations. These approaches aim to bring robots closer to human-level manipulation skills by enhancing their ability to learn from visual cues and interact naturally with humans. We believe that these developments will contribute to creating robots that can better adapt to human environments, offering intuitive and practical solutions for future human-robot collaboration. The talk will also provide an overview of our lab's latest research in this domain, highlighting the potential of these methodologies to shape the future of robotic manipulation.*

17:00	**End of Day 2 & End of Workshop**	N/A

Posters Schedule

Day 1

#1	**A Proxy-Tactile Reactive Control for Robots Moving in Clutter** Giammarco Caroleo, *University of Oxford*
#2	**NeuralTouch: Leveraging Implicit Neural Descriptor for Precise Sim-to-Real Tactile Robot Control** Yijiong Lin*, University of Bristol*
#3	**Online state vector reduction during model predictive control with gradient-based trajectory optimisation** David Russell, *University of Leeds*
#4	**RoTipBot: Robotic Handling of Thin and Flexible Objects using Rotatable Tactile Sensors** Jiaqi Jiang, *King's College London*
#5	**One-shot Dual-arm Imitation Learning** Yilong Wang, *Imperial College London*
#6	**Adaptive Power-Shaping-Signal Variable Impedance Control of Articulated-Soft Robots for Compliant Interaction** Emmanouil Spyrakos, *King's College London*
#7	**FOTS: A Fast Optical Tactile Simulator for Sim2Real Learning of Tactile-Motor Robot Manipulation Skills** Yongqiang Zhao, King's College London
#8	**Soft Robot Employing a Series of Pneumatic Actuators and Distributed Balloons: Modeling, Evaluation, and Applications** Tuan Nguyen, *Japan Advanced Institute of Science and Technology (JAIST)*
#9	**Tactile SoftHand-A: 3D-Printed, Tactile, Highly-underactuated, Anthropomorphic Robot Hand with an Antagonistic Tendon Mechanism** Haoran Li, *University of Bristol*
#10	**ConViTac: Aligning Visual-Tactile Fusion with Contrastive Representations** Zhiyuan Wu, *King's College London*
#11	**Comprehensive Evaluation of Grasp Planners: Addressing the Sim-to-Real Gap in Robotic Manipulation** Jose Alex Chandy, U*niversity of Nottingham*
#12	**Sample-efficient intrinsically motivated manipulation learning using novelty and visual attention** Maciej Przybylski, *Politechnika Warszawska*
#13	**Developing a Robotic Surgery Training System for Wide Accessibility and Research** Walid Shaker, *Heriot Watt University*
#14	**MILES: Making Imitation Learning Easy with Self-Supervision** Georgios Papagiannis, *Imperial College London*
#15	**Electrical Impedance Tomography Based Finger-shaped Soft Artificial Skin** Yunqi Huang, *University College London*

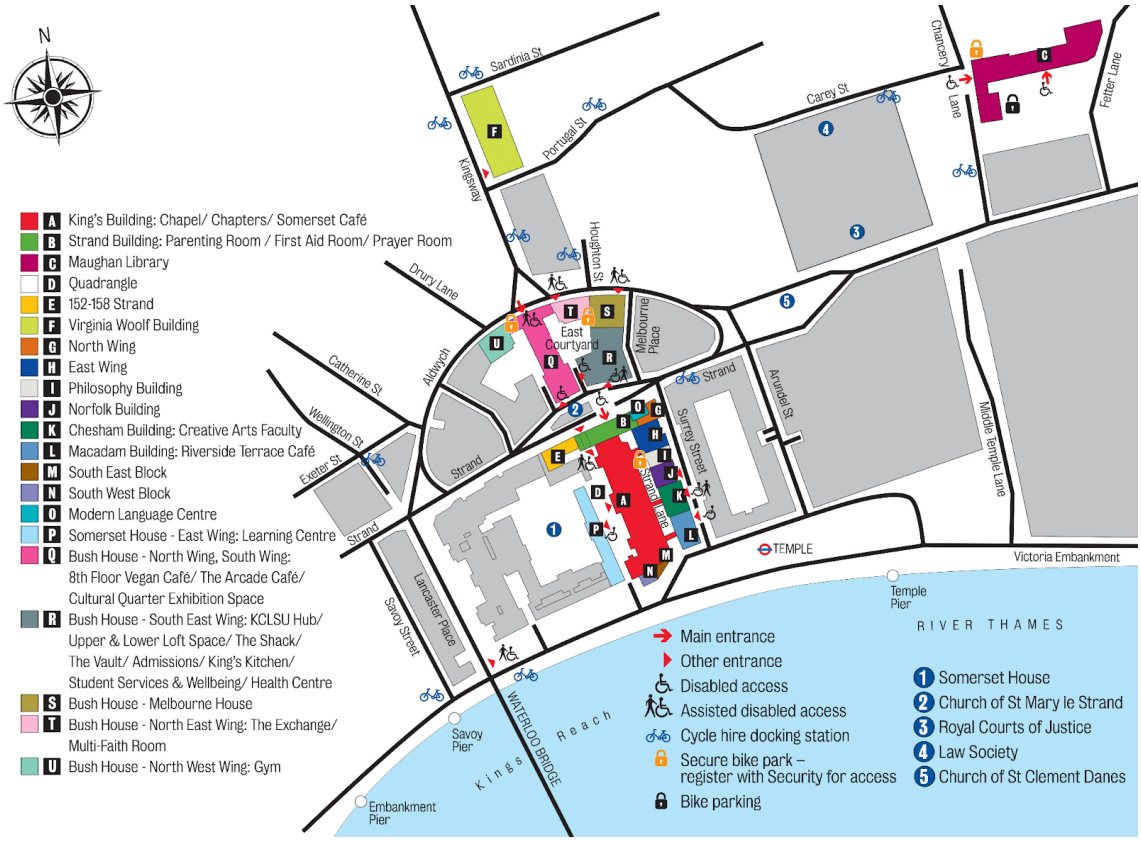
#16	**D-CUBED: Latent Diffusion Trajectory Optimisation for Dexterous Deformable Manipulation** Jun Yamada, *University of Oxford*
#17	**Few-shot Learning From Observation in Robotic Manipulation: A Preliminary Investigation** Adrian Vecina Tercero, *University of Nottingham*
#18	**Continuous Mobile Manipulator Performance Measurement Data** Omar Aboul-Enein, *National Institute of Standards and Technology*
#19	**Tracking and Control of Multiple Objects during Non-Prehensile Manipulation in Clutter** Zisong Xu, *University of Leeds*
#20	**Task and Joint Space Dual-Arm Compliant Control** Alexander Mitchell, *University of Oxford*
#21	**Bilateral Teleoperation through Haptic Exoskeletal Glove and Magnetic Tactile Sensors** Gabriele Giudici, *Queen Mary University of London*
#22	**Differentiable Physics-based System Identification for Robotic Manipulation of Elastoplastic Materials** Xintong Yang, *Cardiff University*
#23	**A Two-Fingered, Dexterous Robotic Hand for In-Hand Manipulation of Long, Thin Objects** Abdullah Nazir, *Hong Kong University of Science and Technology*
#24	**Polycube objects for robotic grasping research** Miles Hansard, *Queen Mary University of London*
#25	**Optimal Shared Autonomy for Contact-rich Robotic Manipulation** Joao Moura, *The University of Edinburgh*
#26	**Single-Layer Multimodal Skins using High-Density Electrical Impedance Tomography** David Hardman, *University of Cambridge*
#27	**3D Localization of Objects Buried within Granular Material Using a Distributed 3-Axis Tactile Sensor** Zhengqi Chen, *Queen Mary University of London*
#28	**Robot-assisted Dressing System based on Bimanual Arm and Machine Vision** Xu Ran, *University of Essex*
#29	**Haptic Localization with a Soft Whisker from Moment Readings at the Base** Mohammad Sheikh Sofla, *University of Lincoln*

Day 2

#30	**Risk-Aware Reinforcement Learning for Mobile Manipulation** Michael Groom, *University of Oxford*
#31	**Robotic Teleoperation Workload Assessment: Performance Metrics Outperform Physiological Indicators** Gift Odoh, *University of Nottingham*
#32	**EleTac: Pneumatic Elephant Trunk-Inspired Soft Gripper with Vision-Based Tactile Sensing** Tuan Nguyen, *Japan Advanced Institute of Science and Technology (JAIST)*
#33	**Using Machine Teaching to Boost Novices' Robot Teaching Skill** Yuqing Zhu, *King's College London*
#34	**Needle Tracking with Single Smartphone Magnetometer and Compliant Mechanism Needle Holder** Hongguang Li, *Queen Mary University of London*
#35	**Manipulability Transfer and Tracking Control: Bridging Domain Adaptation with Predictive Feasibility** Yuhe Gong, *University of Nottingham*
#36	**CoBT 2.0: Collaborative Programming of Spatially Conditioned Semantic Behavior Trees** Aayush Jain, *Technological University Dublin*
#37	**Head-worn Haptics and User Experience: Use on an Eye-Gaze Controlled Robotic Arm** Wyatt Howe, *University of Bristol*
#38	**Few-Shot Peduncle Detection Using Vision Transformers for Precision Manipulation in Grapes Harvesting** Shijia Liu, *Queen Mary University of London*
#39	**Design of FMRI-Compatible Wearable Haptic End-Effectors for Human Sensorimotor Research** Ildar Farkhatdinov, *King's College London*
#40	**TransForce: Transferable Force Prediction for Vision-based Tactile Sensors with Sequential Image Translation** Shan Luo, *King's College London*
#41	**The Teenager's Problem: Efficient Garment Decluttering as Probabilistic Set Cover** Yulei Qiu, *University of Leeds*
#42	**Learning 1000 Tasks in a Day** Pietro Vitiello, *Imperial College London*
#43	**InteLiPlan: Interactive Lightweight LLM-Based Planner for Domestic Robot Autonomy** Kim Tien Ly, *Imperial College London*
#44	**Screw Theory-Based Motion Analysis & Stable Jacobian-Switching Control for a Novel Reconfigurable Design Driven by Prismatic Joints** Lingxing Kong, *King's College London*

#45	**AI-Augmented Anomaly Detection in Robotic Manipulators with Blockchain-Verified Logs** Rasoul Sadeghian, *Royal College of Art*
#46	**Classifying Soil Types Through Robotic Interaction: A Preliminary Study** Sacha Morris, *King's College London*
#47	**Shear-based Grasp Control for Multi-fingered Underactuated Tactile Robotic Hands** Chris Ford, *University of Bristol*
#48	**From Impulse to Action: AI-Driven HD-sEMG Approach for Personalised & Intuitive Prosthetic Control** Balvinder Dhillon, *Queen Mary University of London*
#49	**Soft Acoustic Curvature Sensor: Design and Development** Mohammad Sheikh Sofla, *University of Lincoln*
#50	**Feeling the Pinch: Differentiating Thin Materials with a Biomimetic Soft Optical Tactile Sensor** Loong Yi Lee, *University of Bristol*
#51	**OmniDexter: A Modular Tendon-Driven Robotic Wrist with Enhanced Precision and Versatility** Mingxuan Song, *University College London*
#52	**TAG-CAPC: Tendon-driven Assistive Glove with Contextually-Aware Perception Control** Chen Hu, *King's College London*
#53	**Few-Shot Learning of Force-Based Motions From Demonstration Through Pre-training of Haptic Representation** Marina Aoyama, *The University of Edinburgh*
#54	**Learning Visuotactile Estimation and Control for Non-prehensile Manipulation under Occlusions** Joao Moura, *The University of Edinburgh*
#55	**Light Vector (LiVec) Non-camera-based Tactile Sensor Design** Stephen Redmond, *University College Dublin*
#56	**ViTacTip: Design and Verification of a Novel Biomimetic Physical Vision-Tactile Fusion Sensor** Qingzheng Cong, *Imperial College London*
#57	Linyan Han, *University of Leeds*
#58	**MultiGrainGripper: Enhancing Fin Ray Soft Grippers to Grasp Granular Material** Silvia Terrile, *University of Bristol*
#59	**Interaction & Motion Enhancement of Articulated-Soft Robots via an Integral-Action-Complemented Variable Impedance Control Approach** Emmanouil Spyrakos, *King's College London*

Getting to the Event Place



Main Entrance (Strand Entrance)
Located at the front of King's College London on the Strand, this is where you will enter the venue and find the registration desk.

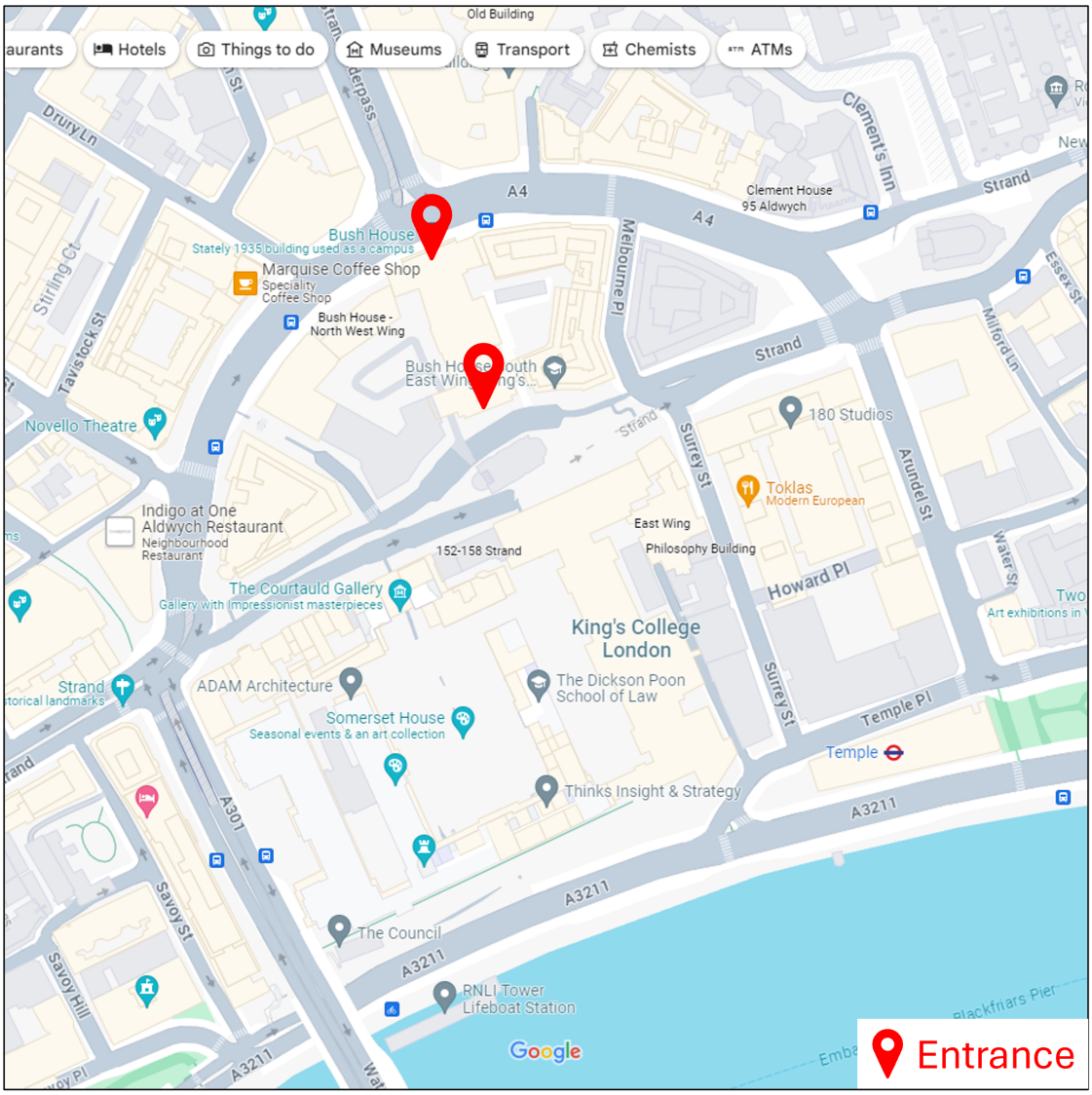
Bush House Auditorium
Situated on the ground floor of Bush House, this auditorium will host all talks, keynotes and tutorials.

Poster Space
Located on the 8th Floor South Terrace of Bush House, this area will house the exhibition booths and poster presentations.

Emergency Exits
All emergency exits are clearly marked in the venue. Please take a moment to familiarize yourself with the nearest exit routes for your safety.

A detailed legend is included on the map to assist you in navigating the venue. If you need any help, the information desk near the main entrance is available to assist you.

Entrance Information

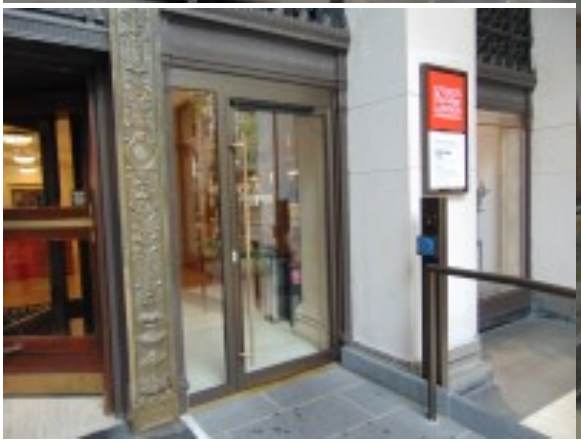


Outside Access (from Arcade)

- This entrance provides access to level 0.
- Step-free access is available.

Photos:






Outside Access (from Aldwych)

- This entrance provides access to level 1 of Bush House Central.
- There is ramped/sloped access at this entrance.

Photos:



Lift Access

- The lift is located in the centre of the building, offering access to all levels, from Level 0 to Level 8.

Photos:

Getting to the Venue

Address
Bush House Central Block,
King's College London, Strand,

London WC2R 2LS

Train
Nearest Station: Charing Cross (9-minute walk).

Other Nearby Stations: Waterloo: 12-minute walk. Waterloo East: 10-minute walk. Blackfriars: 12-minute walk.

For detailed train schedules and ticket purchases, visit Rail Timetable Information.

Bus
Bus Routes: The following buses stop directly outside the university: 1, 4, 26, 59, 68, 76, X68, 168, 171, 172, 176 (24 hour), 188, 243 (24 hour), 341 (24 hour), 521, RV1.

By Underground
Nearest Station: Temple (District and Circle lines) - 2-minute walk.

Other Nearby Stations: Charing Cross (Bakerloo and Northern lines) - 10-minute walk, Embankment (District, Circle and Bakerloo lines) - 10-minute walk, Waterloo (Jubilee, Northern, Bakerloo, Waterloo & City lines) - 12-minute walk, Holborn (Central and Picadilly lines) - 12-minute walk, Chancery Lane (Central line) - 15-minute walk.

By Boat
River Services: From the west, take the Putney – Blackfriars route and disembark at either Embankment Pier or Blackfriars Pier.

Driving & Parking
Parking: There is no public parking available at the university. However, a pay-and-display parking system operates in nearby streets, including Surrey Street. Motorcycle bays are available on the Strand, Arundel Street, Temple Place, and other nearby streets.

Taxi
Taxi Information: Taxis are readily available throughout London. The university can be reached by taxi from any major station or location in central London.

Accommodation

Below are a few suggestions:

Strand Palace Hotel
Location: 372 Strand, Westminster Borough, London, WC2R 0JJ
6-min walk to venue

Fitzrovia Hotel
Location: 20-28 Bolsover St, London W1W 5NB
20-min underground to venue

Langham Court Hotel
Location: 31-35 Langham St, London W1W 6BU
20-min underground to venue

Strathmore Hotel
Location: 41 Queen's Gate Gardens, South Kensington, London SW7 5NB
20-min underground to venue

Venue WiFi Access

Eduroam is accessible throughout the venue.

Alternatively, there is a 'The Cloud' network.

How to connect to the Cloud WiFi:

1. Switch on your smartphone, tablet or laptop and check that WiFi is enabled.
2. Select '_The Cloud' from the available network list.
3. Open your internet browser – the venue landing page will appear. If it does not, type in any web address to prompt the browser to load the landing page.
4. If it is your first time using The Cloud WiFi, you will need to create your own personal log-in. Follow the simple one-time registration process by sharing some details.
5. Once registered you can access the internet via The Cloud.

Refreshments & Water Access

Refreshments will be available during all breaks, including hot tea and coffee. Some water will be available but in order to reduce our environmental impact, we would like to encourage as many attendees as possible to bring a reusable water bottle to refill.

Photos & Social Media

Please take photos and videos and tag us & share your content using @UK_Robot_Manip and #UKRobotManipWS! Follow us on X: @UK_Robot_Manip!

Lab Tours

Information about joining these tours will be shared in the preceding speaker session. Registered tour attendees are asked to gather at their assigned meeting location at least 5 minutes before the end of the lunch break.

Please note that ice skating and the guided walk take place outside of the workshop venue and are at the participants' own risk.