

4th UK Robot Manipulation Workshop

12-13 January 2023

University of Bristol

Programme

Schedule – Posters – Venue



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Thursday 12 January

10:00 – 10:45	Registration	<i>(Reception)</i>
10:45 – 11:00	Welcome and Introduction	<i>(Lecture Theatre)</i>
11:00 – 12:00	Soft Manipulation – Chair: Nathan Lepora	<i>(Lecture Theatre)</i>
11:00	Fumiya Iida (Cambridge University) (Soft) Robot Manipulation beyond Benchmarks	
11:20	Thomas George Thuruthel (University College London) Feedback control with soft tactile sensors	
11:40	Perla Maiolino (Oxford University) Exploiting Embodied Intelligence For Robotic Manipulation	
12:00 – 13:00	Lunch	<i>(Restaurant)</i>
13:00 – 13:30	Poster Spotlights 1	<i>(Lecture Theatre)</i>
13:30 – 14:30	Tutorial – Nathan Lepora (University of Bristol) Robot Dexterity & Tactile Servo Control	<i>(Lecture Theatre)</i>
14:30 – 15:30	Bristol Robotics Lab Tour	<i>(BRL)</i>
15:30 – 16:00	Coffee break, Demos, Posters	<i>(Restaurant, Atrium, 014)</i>
16:00 – 17:00	Industrial Manipulation – Chair: Efi Psomopoulou	<i>(Lecture Theatre)</i>
16:00	Jeremy Wyatt (Amazon Robotics)	
16:20	Brice Denoun & Tom Queen (Shadow Robot Company) Improving the Shadow Hand Dexterity - A focus on control and tactile sensing	
16:40	IET	
17:00 – 18:00	Panel Discussion Moderator: Fumiya Iida Panelists: TBD	<i>(Lecture Theatre)</i>

Friday 13 January

09:00 – 09:30	Registration	(Reception)
09:30 – 10:30	Robot Control for Manipulation – Chair: Mehmet Dogar	(Lecture Theatre)
	09:30 Bruno Vilhena Adorno (University of Manchester) Constrained task-space control using vector field inequalities: a formalism for manipulation under constraints	
	09:50 Chenguang (Charlie) Yang (University of the West of England)	
	10:10 Efi Psomopoulou & Dandan Zhang (University of Bristol)	
10:30 – 11:00	Coffee break, Demos, Posters	(Restaurant, Atrium, 014)
11:00 – 11:30	Poster Spotlights 2	(Lecture Theatre)
11:30 – 12:30	Robot Learning for Manipulation I – Chair: Dandan Zhang	(Lecture Theatre)
	11:00 Edward Johns (Imperial College London) Scalable Vision-based Robot Learning	
	11:20 Ingmar Posner (Oxford University)	
	11:40 Mehmet Dogar (University of Leeds) Towards Physics-Based Manipulation in Mixed (Rigid-and-Soft) Multi-Object Containers	
12:30 – 14:00	Lunch & Posters/Demos	(Restaurant, Atrium, 014)
14:00 – 15:00	Plenary Talk Ravinder Dahiya (Northeastern University, IEEE Sensors Council) Printed Electronic skin with learning capability	(Lecture Theatre)
15:00 – 15:30	Coffee break, Demos, Posters	(Restaurant, Atrium, 014)

15:30 – 16:50	Robot Learning for Manipulation II – Chair: Edward Johns	<i>(Lecture Theatre)</i>
15:30	Shan Luo <i>(King's College London)</i> Visuo-Tactile Learning for Manipulating Challenging Objects	
15:50	Zhibin (Alex) Li <i>(University College London)</i> Learning Adaptive Motor Skills for Manipulation and Grasping	
16:10	Matthew Howard (King's College London)	
16:30	Mohan Sridharan <i>(University of Birmingham)</i> Back to the Future: Lessons from Old-school AI for Modern Manipulation	
16:50 – 17:30	Awards & Closing remarks	<i>(Lecture Theatre)</i>

Posters Schedule

Thursday 12 January

13:00 – 13:30

1	What, Where and How: On the Effectiveness of Open-Loop Replay Norman Di Palo, Edward Johns (Imperial College London)
24	Neural Implicit Representation for 3D Shape Reconstruction Using Vision-Based Tactile Sensing Mauro Comi, Nathan Lepora (University of Bristol)
9	A Tactile Internet-Based Micromanipulation System with Haptic Guidance for Remote Microsurgery Jialin Lin, Dandan Zhang (University of Bristol)
2	One-Shot Imitation Learning for Robotic Manipulation Eugene Valassakis, Kamil Dreczkowski, Pietro Vitiello, Georgios Papagiannis, Norman Di Palo, Edward Johns (Imperial College London)
14	Generation of GelSight Tactile Images for Sim2Real Learning Daniel Fernandes Gomes, Paolo Paoletti, Shan Luo (King's College London)
3	Where To Start? Transferring Simple Skills to Complex Environments Vitalis Vosylius, Edward Johns (Imperial College London)
10	Efficient Skill Acquisition for Industrial Insertion Tasks in Obstructed Environments Jun Yamada, Jack Collins, Ingmar Posner (University of Oxford)
18	Goal-Conditioned Model Simplification for Deformable Object Manipulation Shengyin Wang, Rafael Papallas, Matteo Leonetti, Mehmet Dogar (University of Leeds)
4	DALL-E-Bot: Introducing Web-Scale Diffusion Models to Robotics Ivan Kapelyukh, Vitalis Vosylius, Edward Johns (Imperial College London)
20	TacGripper: A Novel Low-Cost Tactile Gripper for Soft Grasping Xuyang Zhang, Xuyang Zhang, Tianqi Yang, Haoran Li, Dandan Zhang, Nathan Lepora (University of Bristol)
21	Robust Goal-Conditioned Tactile Pushing using Deep Reinforcement Learning Max Yang, Nathan Lepora (University of Bristol)

5	Visual servoing for grasp agnostic skill imitation Georgios Papagiannis, Kamil Dreczkowski, Vitalis Vosylius, Edward Johns (Imperial College London)
11	Leveraging Scene Embeddings for Gradient-Based Motion Planning in Latent Space Jun Yamada, Chia-Man Hung, Jack Collins, Ioannis Havoutis, Ingmar Posner (University of Oxford)
16	Coupled Multiple Dynamic Movement Primitives Generalization for Deformable Object Manipulation Zhenxi Cui, Wanyu Ma, Jiewen Lai, Henry K. Chu, Yi Guo (The Hong Kong Polytechnic University)
17	A comparison of dynamics interpolation methods for speeding up trajectory optimization David Russell, Rafael Papallas, Mehmet Dogar (University of Leeds)
12	A Tactile Feedback Insertion Strategy for Peg-in-Hole Tasks Oliver Gibbons, Alessandro Albini, Perla Maiolino (University of Oxford)
19	Real-Time Physics-Based Object Pose Tracking during Non-Prehensile Manipulation Zisong Xu, Rafael Papallas, Mehmet Dogar (University of Leeds)
15	Where Shall I Touch? Vision-Guided Tactile Poking for Transparent Object Grasping Jiaqi Jiang, Guanqun Cao, Aaron Butterworth, Thanh-Toan Do, Shan Luo (King's College London)
13	Design of a 3D-Printed Soft Robotic Hand with Integrated Distributed Tactile Sensing Oliver Shorthose, Alessandro Albini, Liang He, Perla Maiolino (University of Oxford)
32	Printed Electronic Skin allowing Robots to Feel, Learn and Mimic the Mechanical and Thermal Pain Reflexes Fengyuan Liu, Joao Neto, Radu Chirila, Abhishek Singh Dahiya, Ravinder Dahiya (University of Glasgow)

Friday 13 January
11:00 – 11:30

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- 35 Wrinkle Direction Detection and Its Application on Robotic Cloth Wrinkle Removal**
Yulei Qiu, Jihong Zhu, Jens Kober, Michael Gienger (University of York)
- 37 Tactile Prediction for Robot Manipulation and Control**
Willow Mandil, Kiyanoush Nazari, Amir Ghalamzan Esfahini (University of Lincoln)
- 6 A Teleoperation Interface Study for Robot-assisted Ultrasound Scanning**
Weiyong Si, Ning Wang, Chenguang Yang (University of the West of England)
- 7 Quantifying Morphological Computation With an Impedance-Controlled Simulated Quadruped Robot**
Vijay Chandiramani, Helmut Hauser (University of Bristol)
- 39 dPMP-Deep Probabilistic Motion Planning: A use case in Strawberry Picking Robot**
Chiara Bigi, Amir Ghalamzan E. (University of Lincoln)
- 22 A generalisable spatial acuity evaluation method for tactile sensors**
Ella Maule, Benjamin Ward-Cherrier, Nathan Lepora (University of Bristol)
- 23 Human-robot handover with an anthropomorphic hand**
Chris Ford, Nathan Lepora (University of Bristol)
- 25 Bi-Touch: Sim-to-real Deep Reinforcement Learning for Bimanual Tactile Manipulation**
Yijiong Lin, Nathan Lepora (University of Bristol)
- 28 Hierarchical Reinforcement Learning with Universal Policies for Multi-Step Robotic Manipulation**
Xintong Yang, Ze Ji, Jing Wu, Yu-Kun Lai, Changyun Wei, Guoliang Liu, Rossitza Setchi (Cardiff University)
- 29 Benchmarking End-Effector Performance for Household Clothing**
Angus B. Clark, Luke Cramphorn-Neal, Michal Rachowiecki, Austin Gregg-Smith (Dyson Technology Ltd)
- 30 Reconfigurable Soft Robots by Building Blocks**
Mohamed G. B. Atia (University of Nottingham)
- 31 Harvester Ant Model for Evaluation of Tactile Sensing Behaviour for Grasping**
Emily-Jane Rolley-Parnell, Barbara Webb (University of Edinburgh)

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- 26 The Smart Cobotics Centre: Autonomous Dexterous Manipulation**
Saekwang Nam, Nathan Lepora (University of Bristol)
- 27 Design and development of a robust vision-based tactile sensor**
Prasad Rayamane, Ze Ji, Michael Packianather (Cardiff University)
- 33 Toward sEMG-driven Adaptive Impedance Control of an Upper-limb Prosthesis**
Laura Ferrante, Mohan Sridharan, Claudio Zito, Dario Farina (University of Birmingham)
- 34 BURG-Toolkit: Robot Grasping Experiments in Simulation and the Real World**
Martin Rudorfer, Markus Suchi, Mohan Sridharan, Markus Vincze, Ales Leonardis (University of Birmingham)
- 38 Fully Autonomous Strawberry Harvesting System (ROBOFRUIT)**
Soran Parsa, Amir Ghalamzan Esfahani (University of Lincoln)
- 8 A Neuromorphic System for Real-time Tactile Texture Classification**
George Brayshaw, Benjamin Ward-Cherrier, Martin J. Pearson (University of Bristol)
- 40 Deep Movement Primitives: Toward Breast Cancer Examination Robot**
Francesco Castelli, Amir Ghalamzan E. (University of Lincoln)
- 41 Constrained Variable Impedance Control using Quadratic Programming**
Zehao Jin, Dongdong Qin, Andong Liu, Wen-An Zhang, Li Yu (Zhejiang University of Technology)

Workshop floorplan



Venue

Enterprise Park 1

(Old Hewlett Packard Enterprise Bristol next to [Bristol Robotics Laboratory](#))

[map link](#)

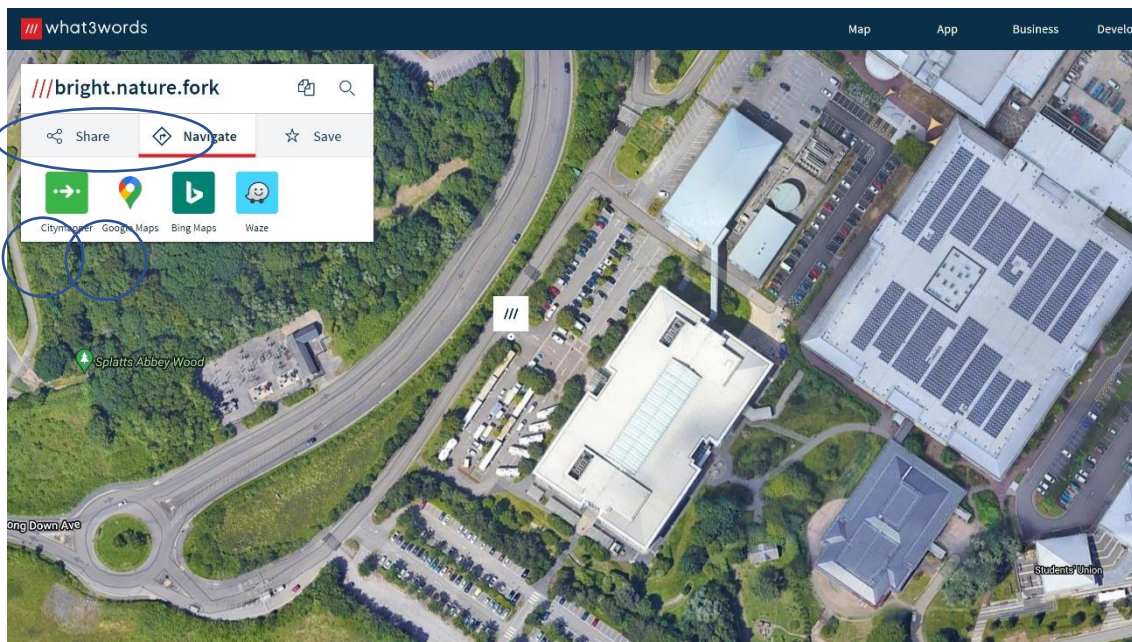
Driving Instructions from your location to EP1

For the precise location of the Enterprise 1 building (EP1) please use this website link:

[what3words /// The simplest way to talk about location](#)

Then search the words:

Bright.Nature.Fork



If you then select the navigate option and select 'google maps', this will provide clear instructions from your location to the venue EP1.

If you select the option 'city mapper' then this will assist in planning any public transport you may need from your location to EP1.

Please note: For walking instructions from the bus stop on UWE campus please use the given directions on the next pages. This website will not take you through the campus.

Driving Instructions to EP1

(Please ensure you read all the directions carefully)

Entrance is only permitted via the west entrance of UWE



- From the A4174/Filton Road follow signs for the MOD, exit the roundabout and then move into middle lane (denoted by the blue line on the map above).
- Roundabout – 2nd exit.
- Roundabout – 1st exit.
- At the barrier access will be given to conference delegates.
- Keep left/downhill until you reach car park at front of EP1.
- Please park on the right-hand side of the car park.

NB: No vehicle access through North or East Entrances to EP1.

Bus/Walking Instructions to EP1



Getting the bus to EP1

It's easy to get around the city by bus and Metrobus. [Travelwest](#) and [First Bus](#) have details of Campus bus stop locations and bus services to Frenchay Campus.

WALKING FROM THE BUS STOP TO EP1

- Head left when stepping off the bus,
- Walk straight up the hill and then follow the pavement round to the right.
- When you reach the path between engineering block (rusty building) and the business block (grey building) turn left.
- Keep the engineering building to your left and follow the path down the hill
- Follow this until you see a right hand turn into a car park.
- From there walk through the car park round to the front of the building as shown on the map.

Train Instructions to EP1

The nearest train station is Bristol Parkway. See the [National Rail website](#) for further information.