

Day 1: Wednesday, 19 July 2017	
8:30-9:00	Registration
9:00-9:30	Opening & Welcome address Yang Gao, TAROS-2017 General Chair
9:30-10:30	Day-1 Keynote Lecture: <i>Deep Reinforcement Learning for Robotic Control Problems</i> Nicolas Heess, Senior Research Scientist, Google DeepMind.
10:30-11:00 Tea Break & Networking	
11:00-13:00 Oral Presentation Session 1.1: Swarm and Multi-Robotic Systems	<ul style="list-style-type: none"> • Tom Bridgwater, Alan Winfield and Tony Pipe. <i>“Reactive Virtual Forces for Heterogeneous Swarm Exploration and Mapping”</i> • **James O’Keeffe, Danesh Tarapore, Alan Millard and Jon Timmis. <i>“Towards Fault Diagnosis in Swarm Robotic Systems via Characterisation of Robot Behaviour”</i> • *Ali Narenji Sheshkalani, Ramtin Khosravi and Maysam Mohammad. <i>“Verification of Visibility-Based Properties on Multiple Moving Robots”</i> • Eric Schneider, Simon Parsons and Elizabeth Sklar. <i>“Mechanism Selection for Multi-Robot Task Allocation”</i> • Elisa Donati, Godfried J. van Vuuren, Donato Romano, Katsuaki Tanaka, Thomas Schmickl and Cesare Stefanini. <i>“aMUSSELS: Diving and anchoring in a new bio-inspired under-actuated robot class for long-term environmental exploration and monitoring”</i> • Juan Nogales, Mauricio Escarpinati and Gina Barbosa de Oliveira. <i>“Shark-inspired Target Approach Strategy for Foraging with Visual Clues”</i>
13:00-14:00 Lunch & Networking	
14:00-15:20 Oral Presentation Session 1.2 Human-Robot Interaction	<ul style="list-style-type: none"> • Guido Bugmann, Dominic Cassidy, Paul Doyle and Khushdeep Singh Mann. <i>“An Open-Source Tele-Operated Mobile Manipulator: CHAP V1”</i> • *Junshen Chen, Marc Glover, Chenguang Yang, Chunxu Li and Zhijun Li. <i>“Development of an Immersive Interface for Robot Teleoperation”</i> • Edwin Daniel Oña Simbaña, Alberto Jardón Huete and Carlos Balaguer. <i>“The Automated Box and Blocks Test an Autonomous Assessment Method of Gross Manual Dexterity in Stroke Rehabilitation”</i> • Robert Wortham, Andreas Theodorou and Joanna Bryson. <i>“Robot Transparency: Improving Understanding of Intelligent Behaviour for Designers and Users”</i>
15:20-15:40 Tea Break & Networking	
15:40-17:00 Oral Presentation Session 1.3 Robotic Learning and Imitation	<ul style="list-style-type: none"> • *Jens Lundell, Murtaza Hazara and Ville Kyrki. <i>“Generalizing Movement Primitives to New Situations”</i> • Mark Baxendale, Martin Pearson, Mokhtar Nibouche, Emanuele Secco and Tony Pipe. <i>“Self-adaptive context aware audio localization for robots using parallel cerebellar models”</i> • Joe Watson, Josie Hughes and Fumiya Iida. <i>“Real-Time Robotic Grasping with Convolutional Neural Networks and externally collected training data”</i> • James Gillespie, Inaki Rano, Nazmul Siddique and Jose Santos. <i>“Learning Bio-Inspired Target Seeking using Reinforcement Learning”</i>
17:00-18:00	Day-1 Wrap-Up & Panel Discussions
18:00-19:00 Ice Breaker Reception @ Conference Venue	
19:00-20:00	IET Public Lecture (open to both TAROS participants and the Public) <i>First European Mars Rover</i> Abbie Hutty, Principle Engineer, Airbus

Day 2: Thursday, 20 July 2017	
9:00-10:00	<p>Day-2 Keynote Lecture: <i>On-orbit Assembly of Large Space Telescope with Autonomous Robotic Systems</i> Ping Jia, President of Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP), Chinese Academy of Sciences.</p>
10:00-10:30 Tea Break & Networking	
10:30-12:30 Oral Presentation Session 2.1 Robot Navigation, Planning and Safety	<ul style="list-style-type: none"> • *Stefan Schubert, Peer Neubert and Peter Protzel. <i>"Towards camera based navigation in 3D maps by synthesizing depth images"</i> • **Pedro Proença and Yang Gao. <i>"Probabilistic Combination of Noisy Points and Planes for RGB-D Odometry"</i>. • Stefan Edelkamp, Baris Secim and Erion Plaku. <i>"Surface Inspection via Hitting Sets and Multi-Goal Motion Planning"</i> • Silvain Louis, Karen Godary-Dejean, Lionel Lapierre, Thomas Claverie and Sébastien Villéger. <i>"Formal method for mission controller generation of a mobile robot"</i> • Sing-Kai Chiu, Dejanira Araiza-Illan and Kerstin Eder. <i>"Risk-based Triggering of Bio-inspired Self-Preservation to Protect Robots from Threats"</i> • *Alan Winfield and Marina Jirotko. <i>"The Case for an Ethical Black Box"</i>
12:30-14:00 Lunch & Networking	
14:00-15:40 Poster Sessions <i>A: Humanoid & Bio-inspired Robots</i> <i>B: Mobile Robots & Vehicles</i> <i>C: Robot Design & Testing</i>	<ul style="list-style-type: none"> • Christopher Wallbridge and Guido Bugmann, <i>"Recovery of a Humanoid Robot from a Destabilising Impact"</i> • Vaibhav Gandhi, Ganesh Kumar Kalyani, Zhijun Yang and Tao Geng, <i>"Using Robot Operating System (ROS) and Single Board Computer to Control Bioloid Robot Motion"</i> • Matthew Hale, Jonathan L. Du Bois and Pejman Iravani, <i>"A Comparison of Analytical and Empirical Controllers for the SLIP Hopper"</i> • Zhanye Yang, Pejman Iravani, Andrew Plummer and Min Pan, <i>"Investigation of Hardware-in-the-Loop Walking/Running test with Spring Mass System"</i> • Ryan Draper, Jane Sheard and Matt Troughton. <i>"Soft Robotic Snake with Variable Stiffness Actuation"</i> • Steffen Müller, Thanh Q. Trinh and Horst-Michael Gross. <i>"Local real-time motion planning using evolutionary optimization"</i> • Mark Witkowski and Vince Gallo. <i>"The Virtual Beehive"</i> • Chris Harris. <i>"Autonomous Vehicle Decision-Making: Should We Be Bio-Inspired?"</i> • Víctor H. Andaluz. <i>"Mobile Manipulators for Cooperative Transportation of Objects in Common"</i> • Víctor H. Andaluz. <i>"Navigation and Dynamic Control of Omnidirectional Platforms"</i> • Víctor H. Andaluz. <i>"Dynamic Unified Control of Omnidirectional Robots"</i> • Anastasia Stone and Ildar Farkhatdinov. <i>"Robotics Education for Children at Secondary School Level and Above"</i> • Emily Ingham, Shuhei Miyashita and Dana Damian. <i>"Elastomeric Spring Actuator Using Nylon Wires"</i> • Rodrigo D. Solis-Ortega, Abbas A. Dehghani-Sanij and Uriel Martinez-Hernandez. <i>"Characterization of kinetic and kinematic parameters for wearable robotics"</i> • Alex Watts and Constantina Lekakou. <i>"A Robot Gripper with Sensor Skin"</i>

<p><i>D: Detection & Recognition</i></p>	<ul style="list-style-type: none"> • ***Josie Hughes and Fumiya Iida. <i>"3D Printed Sensorized Soft Robotic Manipulator Design"</i> • Shuai He, Zhenbang Xu and Xiaoming Wang. <i>"Design and Testing of a Parallel Manipulator for Space Micro-vibration Simulation"</i> • Owen McAree. <i>"A novel low cost, light weight, scanning laser range finder for small unmanned helicopters"</i> • Rebecca Allday, Simon Hadfield and Richard Bowden. <i>"From Vision to Grasping: Adapting Visual Networks"</i> • Steven Balding and Darryl Davis. <i>"Simple anchoring model for robotic colonies"</i> • Thomas Wright and Barry Lennox. <i>"Algorithmic Approach to Planar Void Detection and Validation in Point Clouds"</i>
<p><i>E: Learning & Adaptive Behaviours</i></p>	<ul style="list-style-type: none"> • Thomas Lowndes, Alexander Phillips, Catherine Harris, Eric Rogers, Bing Chu and Ekaterina Popova. <i>"Evaluating the capabilities of the EcoSUBμ to perform emergent and adaptive behaviours using simulation"</i> • James Finnis. <i>"Homeostatic robot control using simple neuromodulatory techniques"</i>
<p><i>F: H&R, R&R Interaction</i></p>	<ul style="list-style-type: none"> • David Cameron, Samuel Fernando, Emily Cowles-Naja, Abigail Perkins, Emily Collins, Abigail Millings, Michael Szollosy, Roger Moore, Amanda Sharkey and Tony Prescott. <i>"Children's age influences their use of biological and mechanical questions towards a humanoid"</i> • ***Erwin Lopez, Guido Herrmann and Ute Leonards. <i>"Drivers' Manoeuvre Classification for Safe HRI"</i> • Tsvetan Zhivkov, Eric Schneider and Elizabeth Sklar. <i>"Measuring the Effects of Communication Quality on Multi-Robot Team Performance"</i> • Luke Hickton, Matthew Lewis and Lola Canamero. <i>"A Flexible Component-Based Robot Control Architecture for Hormonal Modulation of Behaviour and Affect"</i>
<p>15:40-16:00 Tea Break & Networking</p>	
<p>16:00-17:00 Soft and Reconfigurable Robots</p>	<ul style="list-style-type: none"> • Constantina Lekakou, Seri Mustaza, Tom Crisp, Yahya Elsayed and C.M. Saaj. <i>"A Material-based Model for the Simulation and Control of Soft Robot Actuator"</i> • Thomas Collins and Wei-Min Shen. <i>"Integrated and Adaptive Locomotion and Manipulation for Self-Reconfigurable Robots"</i> • Alexander Thorn, Dorukhan Afacan, Emily Ingham, Can Kavak, Shuhei Miyashita and Dana Damian. <i>"Low-power and Low-cost Stiffness-variable Oesophageal Tissue Phantom"</i>
<p>17:00-18:00</p>	<p>Day-2 Wrap-Up & Panel Discussions</p>
<p>19:00-21:00 Conference Dinner @ Harbour Hotel Guildford (See Appendix for location map)</p>	

Day 3: 21 July 2017	
9:00-10:00	Day-3 Keynote Lecture: <i>Towards zero manual intervention</i> Rob Buckingham, Director of Remote Applications in Challenging Environments (RACE), UK Atomic Energy Authority
10:00-10:30 Tea Break & Networking	
10:30-12:30 Oral Presentation Session 3 Service and Industrial Robots	<ul style="list-style-type: none"> • Zhuoling Huang, Sam Wane and Simon Parsons. <i>“Towards automated strawberry harvesting: Identifying the picking point”</i> • Andreas Grünauer, Georg Halmetschlagler-Funek, Johann Prankl and Markus Vincze. <i>“The Power of GMMs: Unsupervised Dirt Spot Detection for Industrial Floor Cleaning Robots”</i> • Ola Ringdahl, Polina Kurtser and Yael Edan. <i>“Strategies for selecting best approach direction for a sweet-pepper harvesting robot”</i> • Seyedmohammadhadi Sadati, Seyedeh Elnaz Naghibi, Ali Shiva, Ian D. Walker, Althoefer Kaspar and Thrishantha Nanayakkara. <i>“Mechanics of Continuum Manipulators, A Comparative Study of Five Methods with Experiments”</i> • Abdul Syafiq Abdull Sukor, Ze Ji and Rossitza Setchi. <i>“Abnormality Detection in Smart Homes Using Case-based Reasoning”</i> • Jelizaveta Konstantinova, Senka Krivic, Agostino Stilli, Justus Piater and Kaspar Althoefer. <i>“Autonomous Object Handover using Wrist Tactile Information”</i>
12:30-14:00 Lunch & Networking	
14:00-14:40 Award Ceremony	<ul style="list-style-type: none"> • Best Paper Prize sponsored by Springer • Best Student Paper Prize in memory of the late Prof. Ulrich Nehmzow • Best Poster Prize sponsored by UK-RAS Network • Best Robotics Demonstration Prize sponsored by IET
14:40-15:00	Closing Remarks

*Best Paper Nominees

**Best Student Paper Nominees

***Best Poster Nominees