

Program at a glance (IEEE IRC 2020)

November 9 (Monday)		
Place Time	Room 1	Room 2
07:30-17:00	Registration	
08:30-08:40	Opening Ceremony Dr. Phillip Sheu, University of California, Irvine, USA	
08:40-09:30 Taiwan Time 16:40-17:30 PST	Keynote I Dr. Mark R. Cutkosky, Stanford University, USA Session Chair: Phillip Sheu	
09:30-9:50	Break	
09:50-11:10	IRC (1) Motion Planning, Control and Navigation I	IRC (2) Human-Robot Interaction I
11:10-11:20	Intermission	
11:20-12:20	IRC (3) Motion Planning, Control and Navigation II	IRC (4) Manipulation and Multi-Robot Systems I
12:20-13:30	Lunch	
13:30-14:20 Taiwan Time	Keynote II Dr. Li-Chen Fu, National Taiwan University, Taiwan Session Chair: Chun-Ming Chang	
14:20-14:40	Break	
14:40-15:40	IRC (5) Motion Planning, Control and Navigation III	IRC (6) Human-Robot Interaction II
15:40-15:50	Intermission	
15:50-16:50	IRC (7) Robot Simulation I	IRC (8) Manipulation and Multi-Robot Systems II
16:50-17:00	Intermission	
17:00-18:20	IRC (9) Robot Simulation II	IRC (10) Manipulation and Multi-Robot Systems III
18:20-	Break	
November 10 (Tuesday)		
Place Time	Room 1	Room 2
07:30-17:00	Registration	
08:30-09:20 Taiwan Time 16:30-17:20 PST	Keynote III Dr. Allison Okamura, Stanford University, USA Session Chair: Peter Kazanzides	
09:20-09:50	Break	

09:50-10:40 Taiwan Time 17:50-18:40 PST	Keynote IV Dr. Mykel Kochenderfer, Stanford University, USA Session Chair: Eric T. Matson	
10:40-10:50	Intermission	
10:50-11:50	Poster (1)	
11:50-13:30	Lunch	
13:30-14:30	Invited papers	
14:30-14:50	Break	
14:50-16:10	IRC (11) Machine Learning	IRC (12) Sensor Fusion and Integration
16:10-16:20	Intermission	
16:20-17:00	Workshop: ERRoSS	Workshop: NFCR
17:00-17:10	Intermission	
17:10-18:10	Poster (2)	
18:10-18:30	Break	
18:30-21:00 Taiwan Time 18:30-21:00 SGT	Keynote V Dr. David Hsu, National University of Singapore (NUS), Singapore Session Chair: Daniela D'Auria	
November 11 (Wednesday)		
Place Time	Room 1	Room 2
07:30-12:00	Registration	
08:40-10:00	Workshop: CHARMS (1)	
10:00-10:20	Break	
10:20-11:40	Workshop: CHARMS (2)	
11:40-13:00	Lunch	

Detailed Sessions (IEEE IRC 2020)

Session	Paper ID	Title
Session 1: Motion Planning, Control and Navigation I (full paper: 15 mins/paper) Session Chair: Leonardo Bobadilla	55	Chao Liu and Mark Yim <i>A Quadratic Programming Approach to Modular Robot Control and Motion Planning</i>
	79	Neset Unver Akmandor and Taskin Padir <i>A 3D Reactive Navigation Algorithm for Mobile Robots by Using Tentacle-Based Sampling</i>
	85	Fedor Ilitchev and Doron Nussbaum <i>Catching a Robot Intruder with Limited Information</i>
	112	Nam Tran , Jie Ying Wu, Anton Deguet and Peter Kazanzides <i>A Deep Learning Approach to Intrinsic Force Sensing on the da Vinci Surgical Robot</i>
	116	Richa Varma , Chris Melville, Claudio Pinello and Tuhin Sahai <i>Post Quantum Secure Command and Control of Mobile Agents : Inserting quantum-resistant encryption schemes in the Secure Robot Operating System</i>
Session 2: Human-Robot Interaction I (full paper: 15 mins/paper) Session Chair: Jun Takamatsu	31	Yun-Hsuan Su , Yana Sosnovskaya, Blake Hannaford and Kevin Huang <i>Securing Robot-assisted Minimally Invasive Surgery through Perception Complementarities</i>
	42	Yun-Hsuan Su , Adnan Munawar, Anton Deguet, Andrew Lewis, Kyle Lindgren, Yangming Li, Russell H. Taylor, Gregory S. Fischer, Blake Hannaford and Peter Kazanzides <i>Collaborative Robotics Toolkit (CRTK): Open Software Framework for Surgical Robotics Research</i>
	72	Peng Chang and Taskin Padir <i>Sim2Real2Sim: Bridging the Gap Between Simulation and Real-World in Flexible Object Manipulation</i>
	77	Zainab Al-Qurashi and Brian Ziebart Recurrent Neural Networks for Hierarchically Mapping Human-Robot Poses

<p>Session 3: Motion Planning, Control and Navigation II (short paper: 12 mins/paper)</p> <p>Session Chair: Richa Varma</p>	78	<p>Pedro Miguel Uriguen Eljuri, Gustavo Alfonso Garcia Ricardez, Nishanth Koganti, Jun Takamatsu and Tsukasa Ogasawara</p> <p><i>Combining Symbolic and Motion Planners for Rearranging Tasks in Daily-life Environments</i></p>
	86	<p>Lhilo Kenye, Mehul Arora, Rahul Kala, Rishitha Palugulla, Bharath Bhat and Abhijeet Nayak</p> <p><i>Re-localization for Self-Driving Cars using Semantic Maps</i></p>
	105	<p>Tauhidul Alam, Alexander Campaneria, Mathew Silva, Leonardo Bobadilla and Gabriel A. Weaver</p> <p><i>Coastal Infrastructure Monitoring through Heterogeneous Autonomous Vehicles</i></p>
	110	<p>Tauhidul Alam, Logan Gandy, Leonardo Bobadilla and Ryan N. Smith</p> <p><i>Synergistic AUV Navigation through Deployed Surface Buoys</i></p>
	87	<p>Darío Javier Guevara Proaño and Fernando Auat Cheein</p> <p><i>Cluster-based scan registration for vehicle localization in urban environments</i></p>
<p>Session 4: Manipulation and Multi-Robot Systems I (full paper: 15 mins/paper)</p> <p>Session Chair: Taskin Padir</p>	14	<p>Gao Ziyang, Armagan Elibol and Nakyoung Chong</p> <p><i>Non-Prehensile Manipulation Learning through Self-Supervision</i></p>
	19	<p>Akiya Yasuda, Gustavo Alfonso Garcia Ricardez, Jun Takamatsu and Tsukasa Ogasawara</p> <p><i>Packing Planning and Execution Considering Arrangement Rules</i></p>
	58	<p>Nantawat Pinkam, Armagan Elibol and Nak Young Chong</p> <p><i>Informative Mobile Robot Exploration for Radiation Source Localization with a Particle Filter</i></p>
	52	<p>John Ericksen, Abhinav Aggarwal, Matthew Fricke and Melanie Moses</p> <p><i>LOCUS: A Multi-Robot Loss-Tolerant Algorithm for Surveying Volcanic Plumes</i></p>
<p>Session 5: Motion Planning, Control and Navigation III</p>	76	<p>Naoki Shirakura, Gustavo Alfonso Garcia Ricardez, Jun Takamatsu and Tsukasa Ogasawara</p> <p><i>Design of the Reusable Controller for Pushing Unliftable Objects Using a Multicopter</i></p>

<p>(full paper: 15 mins/paper)</p> <p>Session Chair: Nuno Macedo</p>	111	<p>Shan-Ling Chen, Chia-Wei Jen, Shang-Chih Lin, Zheng-Long Lin, Yennun Huang and Shun-Feng Su</p> <p><i>A Vision-based Dual-axis Positioning System with YOLOv4 and Improved Genetic Algorithms</i></p>
	33	<p>Adam Seewald, Hector Garcia de Marina, Henrik Skov Midtiby and Ulrik Pagh Schultz</p> <p><i>Mechanical and Computational Energy Estimation of a Fixed-Wing Drone</i></p>
	99	<p>Bernd Kast, Philipp Sebastian Schmitt, Sebastian Albrecht, Wendelin Feiten and Jianwei Zhang</p> <p><i>Hierarchical Planner with Composable Action Models for Asynchronous Parallelization of Tasks and Motions</i></p>
<p>Session 6: Human-Robot Interaction II</p> <p>(short paper: 12 mins/paper)</p> <p>Session Chair: Nikolay Bratovanov</p>	12	<p>Bing-Xian Lu, Ji-Jie Wu, Yu-Chung Tsai, Wan-Ting Jiang and Kuo-Shih Tseng</p> <p><i>A Novel Telerobotic Search System using an Unmanned Aerial Vehicle</i></p>
	27	<p>Urban B. Himmelsbach and Thomas M. Wendt</p> <p><i>Built-In 360 Degree Separation Monitoring for Grippers on Robotic Manipulators in Human-Robot Collaboration</i></p>
	36	<p>Carlos Medina Sánchez, Jesús Capitán, Matteo Zella and Pedro J. Marron</p> <p><i>Point-Cloud Fast Filter for People Detection with Indoor Service Robots</i></p>
	97	<p>Hebah Elgibreen, Sumayah Almazyad, Shahad Bin Shuail, Miad Al Qahtani and Latifah Alhwiseen</p> <p><i>Robot Framework for Anti-Bullying in Saudi Schools</i></p>
	91	<p>Alwin Hoffmann, Ludwig Naegele and Wolfgang Reif</p> <p><i>How to find assembly plans (fast) - Hierarchical state space partitioning for efficient multi-robot assembly</i></p>
<p>Session 7: Robot Simulation I</p> <p>(short paper: 12 mins/paper)</p> <p>Session Chair: Bernd Kast</p>	7	<p>Felix Setiono, Armagan Elibol and Nak-Young Chong</p> <p><i>Human Emotional State Estimation Evaluation using Heart Rate Variability and Activity Data</i></p>
	18	<p>Tommy Sugiarto, Chun-Lung Hsu, Chi-Tien Sun, Shu-Hao Ye, Kuan-Ting Lu and Wei-Chun Hsu</p> <p><i>Head Orientation Prediction Based on Deep Learning on sEMG for Low-Latency Virtual Reality Application</i></p>
	1	<p>Mohamed A. Abdelhady, Douwe Dresscher and Jan F. Broenink</p> <p><i>Reuse-oriented SLAM Framework using Software Product Lines</i></p>

	80	Ainur Begalinova , Ross D King, Barry Lennox and Riza Batista-Navarro <i>Self-supervised learning of object slippage: An LSTM-based model trained on low-cost tactile sensors</i>
	90	Alexandre Frantz and Denis Zampunieris <i>Separation of Concerns Within Robotic Systems Through Proactive Computing</i>
Session 8: Manipulation and Multi-Robot Systems II (full paper: 15 mins/paper) Session Chair: Hebah ELGibreen	23	Dongyoon Shin , Hyeji Kim, Jihyuk Gong, Uijeong Jeong, Yeeun Jo and Eric Matson <i>Stealth UAV through Coandă Effect</i>
	51	Alexander Julian Golkowski , Marcus Handte, Peter Roch and Pedro José Marrón <i>Quantifying the Impact of the Physical Setup of Stereo Camera Systems on Distance Estimations</i>
	101	Gonzalo Lopez-Nicolas , Rafael Herguedas, Miguel Aranda and Youcef Mezouar <i>Simultaneous shape control and transport with multiple robots</i>
	102	Felix Keppler , Sebastian Wagner and Klaus Janschek <i>SAFESTOP: Disturbance Handling in Prioritized Multi-robot Trajectory Planning</i>
Session 9: Robot Simulation II (full paper: 15 mins/paper) Session Chair: Jan Broenink	8	Michael Riedl and Dominik Henrich <i>Scalable Visual Representation of Sensor-Based, Nested Robot Programs</i>
	11	Hugo Pacheco and Nuno Macedo <i>ROSY: An elegant language to teach the pure reactive nature of robot programming</i>
	44	Andrew Murtagh , Patrick Lynch and Conor McGinn <i>Presenting Botmark: a Computer Benchmark for Service Robotics</i>
	65	Davide Brugali <i>Runtime reconfiguration of robot control systems: a ROS-based case study</i>
	66	Clément Robert , Jérémie Guiochet and Hélène Waeselynck <i>Testing a non-deterministic robot in simulation - How many repeated runs ?</i>
	17	Cheng-Yi Su, Chao-Chung Peng , Ankit A. Ravankar and Abhijeet Ravankar

<p>Session 10: Manipulation and Multi-Robot Systems III (short paper: 12 mins/paper)</p> <p>Session Chair: Gonzalo Lopez- Nicolas</p>		<i>Dynamics Modelling and Parameter Identification of a Reaction Wheel Based Pendulum</i>
	54	Nanami Ohnuki , Yuta Furudate, Sadayoshi Mikami, Kaori Chiba and Yuji Ishida <i>Automated Voluntary Finger Lifting Rehabilitation Support Device for Hemiplegic Patients to Use at Home</i>
	56	Sergei Savin , Oleg Balakhnov and Alexandr Klimchik <i>Energy-based local forward and inverse kinematics methods for tensegrity robots</i>
	59	Nikolay Bratovanov and Zlatko Sotirov <i>Virtualization for the Purposes of Modeling and Computer Simulation of a Class of Overconstrained Robots</i>
	69	Martin Schörner , Constantin Wanninger, Alwin Hoffmann, Oliver Kosak, Hella Ponsar and Wolfgang Reif <i>Modeling and Execution of Coordinated Missions in Reconfigurable Robot Ensembles</i>
	106	Georgios Zamanakos, Adam Seewald, Henrik Midtiby and Ulrik Schultz <i>Energy-Sensitive Vision-Based Autonomous Tracking and Landing of a UAV</i>
<p>Invited Paper Session (full paper: 15 mins/paper)</p> <p>Session Chair: Luca Muratore</p>	67	Hoang-Dung Bui, Hai Nguyen, Hung La and Shuai Li <i>A Deep Learning-Based Autonomous Robot Manipulator for Sorting Application</i>
	75	Ashutosh Singandhupe and Hung La <i>MCC-EKF for Autonomous Car Security</i>
	60	Riccardo Monica , Jacopo Aleotti and Dario Lodi Rizzini <i>Detection of Parcel Boxes for Pallet Unloading Using a 3D Time-of-Flight Industrial Sensor</i>
	70	Filippo Vella , Agnese Augello, Ignazio Infantino, Salvatore Gaglio, Umberto Maniscalco and Giovanni Pilato <i>An Artificial Soft Somatosensory System for a Cognitive Robot</i>
<p>Session 11: Machine Learning</p>	9	Hoang Tung Dinh and Tom Holvoet <i>Verifying autonomous decision making against environment assumptions: An experience report</i>

<p>(full paper: 15 mins/paper)</p> <p>Session Chair: Riccardo Monica</p>	40	Paul Gautier , Johann Laurent and Jean-Philippe Diguët <i>Comparison of Market-based and DQN methods for Multi-Robot processing Task Allocation (MRpTA)</i>
	64	Alexander Poeppel , Alwin Hoffmann and Wolfgang Reif <i>Robust Distance Estimation of Capacitive Proximity Sensors in HRI using Neural Networks</i>
	96	Davide Corsi , Enrico Marchesini, Alessandro Farinelli and Paolo Fiorini <i>Formal Verification for Safe Deep Reinforcement Learning in Trajectory Generation</i>
	119	Lei Shi , Cosmin Copot and Steve Vanlanduit <i>A Deep Regression Model for Safety Control in Visual Servoing Applications</i>
<p>Session 12: Sensor Fusion and Integration</p> <p>(full paper: 15 mins/paper)</p> <p>Session Chair: Filippo Vella</p>	6	Mojtaba Karimi , Edwin Babaïans, Martin Oelsch, Tamay Aykut and Eckehard Steinbach <i>Skewed-redundant Hall-effect Magnetic Sensor Fusion for Perturbation-free Indoor Heading Estimation</i>
	26	Dorian Rohner and Dominik Henrich <i>Using Active Vision for Enhancing an Surface-based Object Recognition Approach</i>
	39	Enrico Schröder , Mirko Mählich, Julien Vitay and Fred Hamker <i>Monocular 3D Object Detection using Feature Map Transformation: Towards learning perspective-invariant scene representations</i>
	43	Fabian Duerr , Hendrik Weigel, Mirko Maehlich and Juergen Beyerer <i>Iterative Deep Fusion for 3D Semantic Segmentation</i>
<p>Poster Session I</p> <p>Session Chair: Chun-Ming Chang</p>	48	Micaela Verucchi , Luca Bartoli, Fabio Bagni, Francesco Gatti, Paolo Burgio and Marko Bertogna <i>Real-Time clustering and LiDAR-camera fusion on embedded platforms for self-driving cars</i>
	28	Jian Li , Yiyao Zhu, Langcheng Huo and Yongquan Chen <i>Sample-efficient learning of soft priorities for safe control with constrained Bayesian optimization</i>
	46	Myoungjin Song, Miran Lee , Young-Dae Hong and Bumjoo Lee <i>Analytical Differentiation of Manipulator Jacobian</i>
	104	Jyi-Shane Liu and Wei-Chao Chang <i>Vision-based Drone Navigation for Orbital Inspection of Pole-like Objects</i>

	118	Naoki Shirakura , Takuya Kiyokawa, Hikaru Kumamoto, Jun Takamatsu and Tsukasa Ogasawara <i>Semi-automatic Collection of Marine Debris by Collaborating UAV and UUV</i>
	38	Digesh Chitrakar, Rahul Mitra and Kevin Huang <i>Haptic Interface for Hexapod Gait Execution</i>
	68	Jesse Leaman and Hung La <i>The Intelligent Power Wheelchair Upgrade Kit</i>
Poster Session II Session Chair: Chun-Ming Chang	41	Gabriele Bolano , Arne Roennau and Ruediger Dillmann <i>Planning and Evaluation of Robotic Solutions in a Logistic Line Through Augmented Reality</i>
	47	Simon Janzon, Carlos Medina Sánchez, Matteo Zella and Pedro José Marrón <i>Person Re-Identification in Human Following Scenarios: An Experience with RGB-D Cameras</i>
	61	Pascal Becker , Niklas Spielbauer, Arne Roennau and Rüdiger Dillmann <i>Real-Time In-Situ Process Error Detection in Additive Manufacturing</i>
	63	Adriana Bono, Agnese Augello, Giovanni Pilato and Salvatore Gaglio <i>Exploiting Cognitive Architectures to design Storytelling Activities for NarRob</i>
	109	Miguel Campusano , Niels Heltner, Niclas Mølby, Kjeld Jensen and Ulrik Pagh Schultz <i>Towards Declarative Specification of Multi-Drone BVLOS Missions for UTM</i>
Workshop ERROSS (12 mins/paper) Session Chair: Bernhard Dieber	First International Workshop on Engineering Resilient Robot Software Systems https://erross.org/	
	1	Víctor Mayoral Vilches <i>Industrial robot ransomware: Akerbeltz</i>
	3	Guido Breitenhuber <i>Towards application level testing of ROS Networks</i>
	4	Floris Erich and Noriaki Ando <i>Testudine, a Graphical User Interface for Physical Integration</i>

Workshop NFCR (12 mins/paper) Session Chair: Fabio Persia	Fourth International Workshop on New Frontiers in Computational Robotics	
	1	Kazuhiko Takahashi <i>Remarks on Adaptive Compensator with Quaternion Neural Network in Computed Torque Control</i>
	2	Fabio Persia, Daniela D'Auria and Giovanni Pilato <i>Fast Learning and Prediction of Event Sequences in a Robotic System</i>
Workshop CHARMS (12 mins/paper) Session Chair: Eric T. Matson	6th Workshop on Collaboration of Humans, Agents, Robots, Machines and Sensors	
	1	Dana Utebayeva , Manal Alduraibi, Lyazzat Ilipbayeva, Yelmurat Temirgaliyev and Akhan Almagambetov <i>Multi-label UAV sound classification using Stacked Bidirectional LSTM</i>
	2	Hyeonae Jang and Eric Matson <i>Partner Selection for Agents: A Utility Theory Approach</i>
	3	Ulzhalgas Seidaliyeva , Manal Alduraibi, Lyazzat Ilipbayeva and Nurzhigit Smailov <i>Deep residual neural network-based classification of loaded and unloaded UAV images</i>
	4	Dana Utebayeva , Manal Alduraibi, Yelmurat Temirgaliyev, Lyazzat Ilipbayeva and Sungat Marxuly <i>Stacked BiLSTM - CNN for Multiple label UAV sound classification</i>
	5	Hyeonjun Park , Bumjoo Lee and Donghan Kim <i>Design of Modular End-effector for Collaborative Robot based on Underactuated Mechanism</i>
	6	Sangheum Lee , Harin Kim, Hyeonjun Park, Taeyang Gwon and Donghan Kim <i>Real-Time Joint Torque Estimation on Embedded system using EMG and Artificial Neural Network for Exoskeleton Robot</i>
	7	Pengcheng Ma and Qian Gao <i>Context Aware Feature Interaction based Recommendation System</i>
	8	Ulzhalgas Seidaliyeva , Manal Alduraibi, Lyazzat Ilipbayeva and Akhan Almagambetov <i>Loaded and unloaded UAV detection using deep neural network</i>

9	<p>Youlim Ko, Kar Ee Ho, Minji Lee and Eric Matson</p> <p><i>UAV Threat Level Assessment based on the Velocity and Distance from Collision</i></p>
10	<p>Zahra Ghorrati</p> <p><i>A New Adaptive Learning algorithm to train Feed-Forward Multi-layer Neural Networks, Applied on Function Approximation</i></p>
11	<p>Shulin Li, Eric Matson, John Springer and Anthony Smith</p> <p><i>Applying a Multiagent Approach to Track UAV Movement</i></p>
12	<p>Adam Zielonka, Andrzej Sikora and Marcin Woźniak</p> <p><i>Data system model for easy human-machine interactions over communication interfaces</i></p>