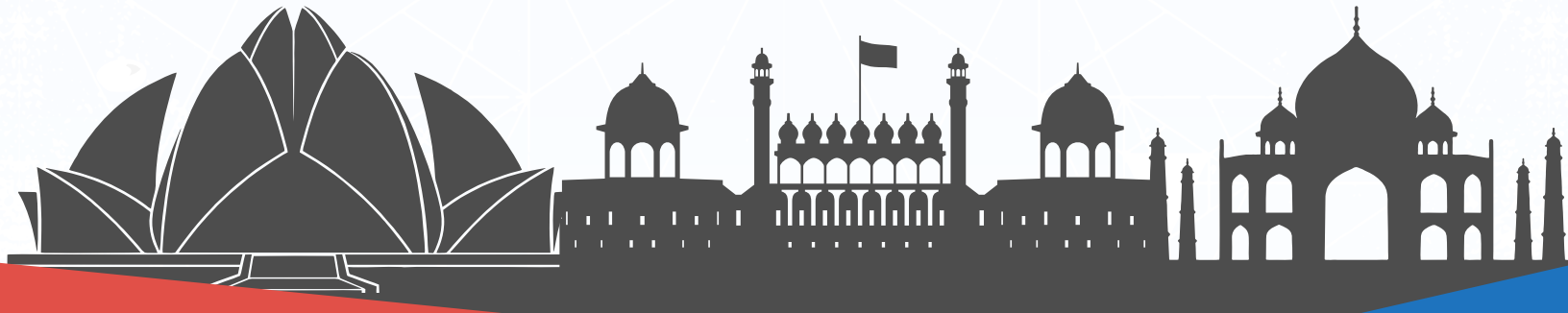
IEEE
RO-MAN
2019

The 28th IEEE International Conference on Robot & Human Interactive Communication

October 14-17, 2019
Le Meridien, Windsor Place, New Delhi, India

"Responsible Robotics and AI for the Real World"

THE CONFERENCE PROGRAM BOOK



www.ro-man2019.org

Program Book

28th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN2019)

October 14 – 18, 2019
New Delhi, India

Conference theme:
Responsible Robotics and AI for the Real World

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Message from the General and Program Chairs

On behalf of the Organizing Committee, we welcome you to the new era of the International Conference on Robot and Human Interactive Communication. IEEE RAS/RSJ/KROS Ro-Man 2019 is being held for the first time in the Indian subcontinent. This conference is a leading forum where the state-of-the-art innovative results, the latest developments as well as future perspectives relating to robot and human interactive communication are presented and discussed.

The idea behind bringing the conference to India is manifold. We wish to make Ro-Man, which has a very rich history, as a venue for multidisciplinary research in the fast "Robotically-Developing" regions like Indian subcontinent, and to bridge the different communities and create mutually fruitful R&D collaboration platforms across continents. We believe that together we will be able to create more impactful technology, which will benefit the society and the world at large. Further, given the rise of robots and AI, and their application to various social circumstances, it is incumbent on us to make the technology responsible. This underlines our vision behind the theme of the conference: "Responsible Robotics and AI for the Real World". For the first time in the history of the conference, and perhaps in the robotics community Ro-Man belongs to, we have received an overwhelming number of high quality papers from the Indian subcontinent indicating the growing interest in the region. At the same time, we are having a global reach with contributions from more than 30 countries. We also have the ambition of making Ro-Man more inclusive and connected to the industry and end users. We are grateful to see bigger industrial participation through sponsorships, exhibitions and registrations. We are proud to join hands with one of the largest NGOs in India underlining our increasing commitment to social impact aspect of the conference. All these not only demonstrate the interest of the international community and the stakeholders, but also ensures the continued visibility, wider outreach, and the impact that the conference is going to make. Certainly, the objectives behind bringing Ro-Man to India have been achieved, thanks to you all.

The four days conference program includes invited talks, keynote talks, oral and poster presentations, workshops, panel discussions, exhibitions, demonstrations, and competitions. On the social event side, we start with a welcome reception, followed by a cultural event, gala dinner, award ceremony, local tours, and optional post and pre-conference tours in the nearby cities.

We received a total of overwhelming 295 submissions, 237 as regular papers, 41 as special session papers and 17 as Late Breaking Reports. The review was completed by the program committee by taking help from about 90 Associate Editors and about 600 reviewers worldwide. Each paper was reviewed by at least two reviewers and a large number of the papers had at least 3 reviewers. Each rejection decision was scrutinized carefully by the program committee to ensure fairness and positivity in the review process and in few ambiguous cases, additional reviews were sought to arrive at a conclusive decision. The complete program is divided into 25 oral sessions (20 - regular and 5 - special) in five parallel tracks and one interactive poster sessions. Selected papers will be invited for extended versions for submission to a Special Issue at the Advanced Robotics journal.

The combined effort of the international community and the local organizing committee is the backbone of any conference, and Ro-Man 2019 would not have taken this shape without such a synergy.

We expect this year’s Ro-Man to serve as the greater facilitator of the much-needed cross-disciplinary collaboration, as well as for creation of bigger ecosystems by bridging academics, industry, end users, policy makers, and the media, thereby ensuring meaningful societal impact. We are happy to see the overwhelming number of queries and responses for scientific and technological collaboration with Ro-Man community towards social causes. We also do our part in saving the environment and reducing the carbon footprint by taking a number of steps. This includes making use of biodegradable materials for conference kits, creating a shorter version of program booklet to print, and implementing the policy of reducing plastic, paper and food waste.

We would like to thank all the sponsors and partners of the conference, and IEEE RAS, RSJ, and KROS for being the financial co-sponsor and facilitator of the conference.

Finally, we would like to thank all the International Program Committee Members, Reviewers, Authors, and the Delegates for your contributions and participation in Ro-Man 2019, and help in continuing the legacy of Ro-Man. Without you, none of our efforts could have been of any use.

Welcome again to the vibrant week of Ro-Man in New Delhi, India, and we hope to see you next year in Naples, Italy.

Amit Kumar Pandey
(General Chair)

Santanu Chaudhury
(General Co-Chair)

Kazuhiko Kawamura
(Honorary General Chair)

Program Committee Chairs

John-John Cabibihan

Mary Anne Williams

T. Asokan

Laxmidhar Behera

MESSAGE FROM THE LOCAL ORGANIZING COMMITTEE CHAIRS

Dear Delegates,

We welcome you all to the 28th IEEE International Conference on Robots and Human Interactive Communications (Ro-MAN) to be held at Le Meridien Hotel in New Delhi, India during October 14-18, 2019. This is the first time Ro-MAN is taking place in the Indian subcontinent providing more reasons to celebrate the occasion.

October is a festive month in India during which a number of festivals, like Durga Puja, Dipawali, Navaratri and many others will take place. The weather will be pleasant if not too cold. The sky will be clear with no fog during this period, thanks to Delhi Government's effort in reducing the pollution level in the city. The conference venue is at the heart of the India's capital providing easy access to several other landmarks, such as, India Gate, President's palace, Lotus temple, Lodhi Gardens, Delhi Haat etc. We have planned for a conference tour of the city on October 17th afternoon. Interested delegates will also have the option of availing private and personal tours to other destinations before or after the conference.

The conference events are spread over 4 days with about 25 oral sessions (20 regular and 5 special sessions), one Poster session, 12 workshops, one competition and several exhibitions and demonstrations. In addition, we will have a welcome reception and a gala dinner. Please refer to the program book and schedule for more details.

It has been a yearlong preparation to reach this stage when we will be all together under a single roof. The local organizing committee has been at the helm of affairs on ground zero ensuring smooth running of the event. We have been supported by many in this journey and this would be an appropriate place to acknowledge their contributions and express our gratitude. First of all, we would like to thank Mr. Harish Mysore, President of IEEE India chapter for providing guidance and several local IEEE registration documents required for obtaining clearances from Govt. authorities. We are also grateful to The Robotic Society of India (RSI) for endorsing our event and providing the connect within its members for wider dissemination of information. We would like to thank all of our sponsors for providing the necessary financial support for this conference. A special thanks is due to many other committee members like Dr. Amit K. Pandey, Dr. Laxmidhar Behera, Mr. Ganga Kumar, Mr. Prakash Ambwani, Mr. Karan Gandhi and Mr. Ajay Rana who have worked beyond their prescribed roles to help us out of several hurdles.

We hope that this will be an exciting and engaging event to leave a deep impression among the participants. We will look forward to meet you all in person. We wish you all a happy and pleasant journey to India and back.

Yours Sincerely,

Swagat Kumar
Subir Saha
K Madhav Krishna

(Local Organizing Committee Chairs)

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Wang, Haoping
Wang, Shuihua
Yokota, Sho
Zollo, Loredana

GENERAL INFORMATION

Weather Information: New Delhi, during the month of October have a pleasant weather with maximum temperature being 33°C and minimum being 15°C. It will remain mostly sunny with clear skies during this period. More information: https://www.holiday-weather.com/new_delhi/averages/october/

Emergency Contact: In case of any emergency, please contact any one of the following members of the event management committee:

- Mr. Rajesh Charanda: +91 99101 99551
- Ms. Rashda Khanam: +91 99101 99551
- Mr. Prakash Ambwani: +91 98711 0892

Travel Advisory:

- Helpline Numbers: https://indianhelpline.com/DELHI-HELPLINE-NUMBERS/
- Avail services and hospitality from well-known companies and vendors. If in doubt, please take help from the reception desk.

Delhi Metro Route Map:

Delhi Metro provides cheapest, safest and fastest mode of transport within New Delhi. It is advisable to buy a Metro pass at Rs. 50 (refundable) and use it for paying money at entry and exit gates. This will avoid standing in the queue. The smart cards are available at any customer service centres inside the metro stations.

- Delhi Metro Map: http://www.delhimetrorail.com/Zoom_Map.aspx
- Metro Smart Card: https://www.dmrcsmartcard.com

Cabs / Taxi Rides:

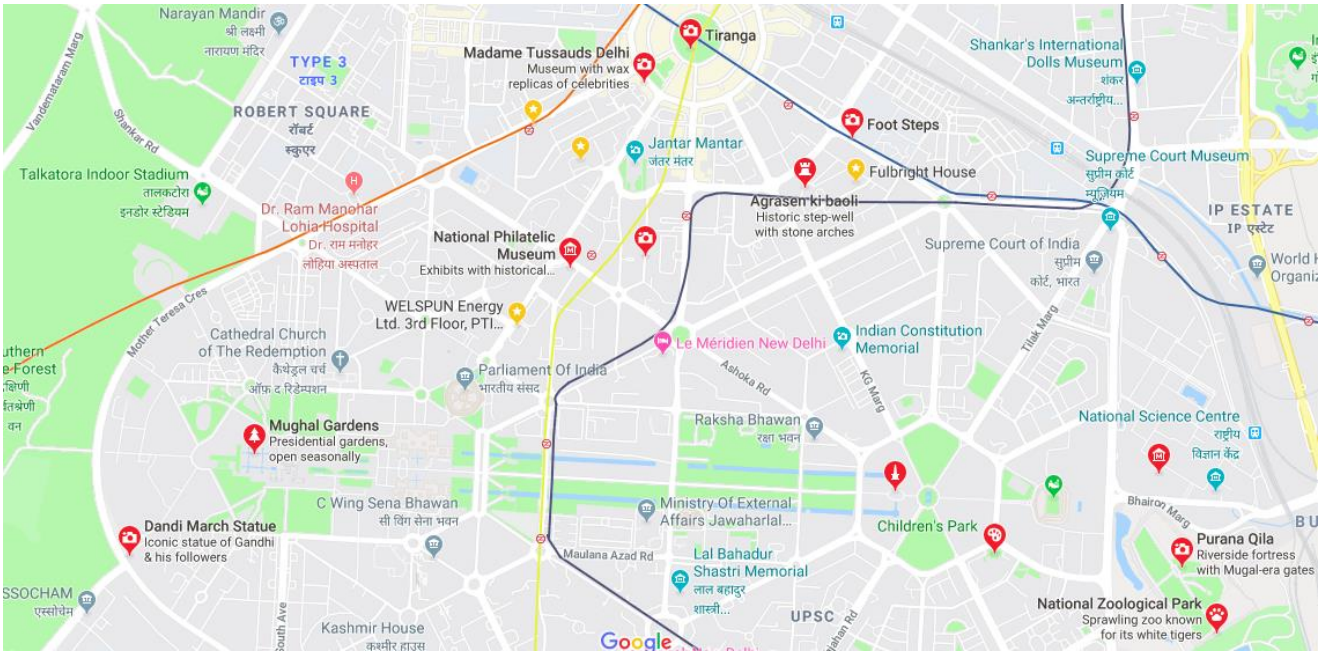
It is quite easy and hassle free to use Uber or Ola to book cabs. Install Ola or Uber app on your phone to make use of the service. More information is available at the following links:

- Uber: https://www.uber.com/global/en/cities/new-delhi/
- Ola: https://www.gb.olacabs.com

Avoid booking cabs from unknown sources. If required, take help from airport authorities.

LOCATION AND VENUE

Le Meridien, Windsor Place. New Delhi 110001, India Phone: +91 11 2371 0101



(https://www.marriott.com/hotels/travel/delmd-le-meridien-new-delhi/)

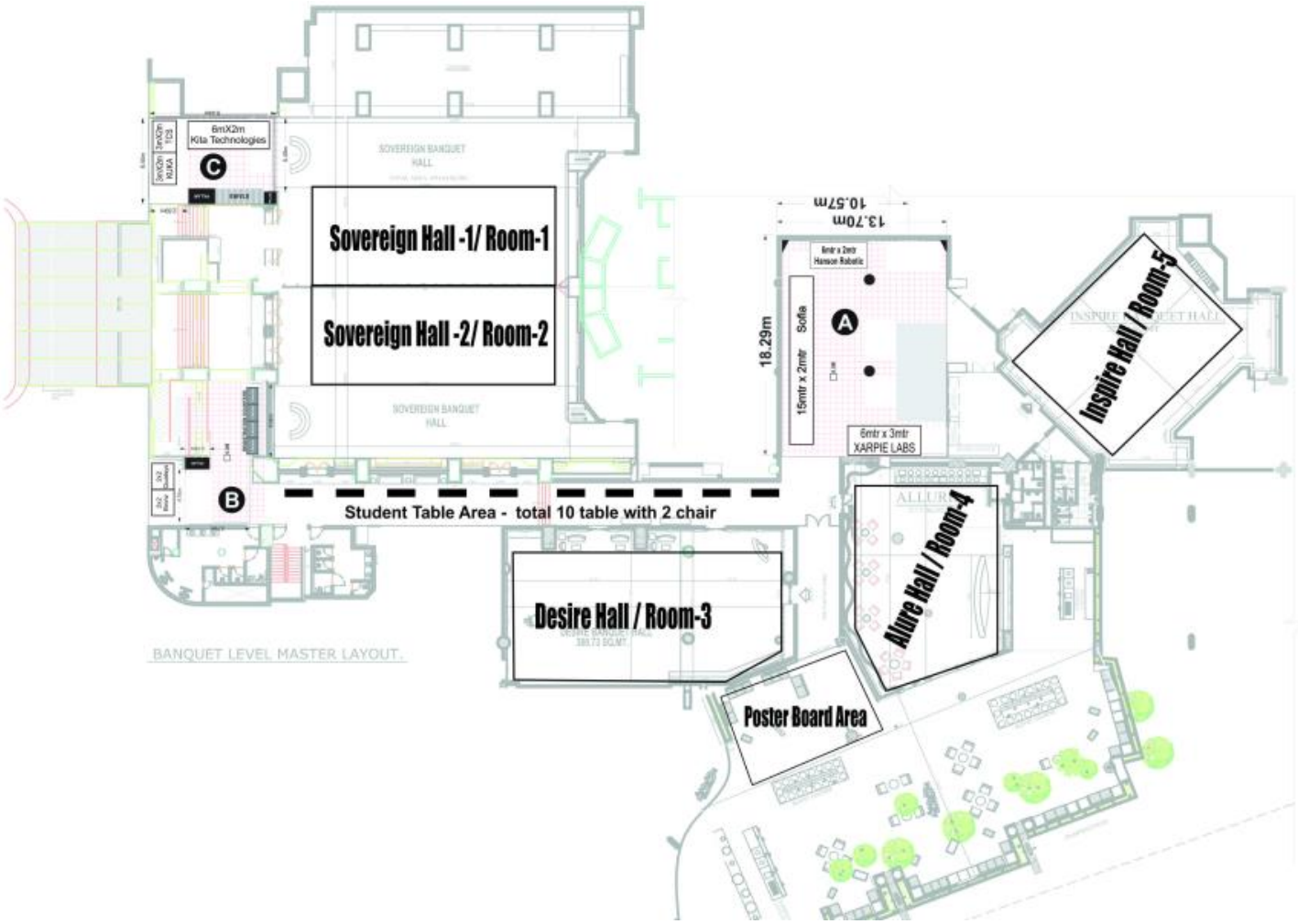
Located in the heart of the city, the iconic glass building of Le Meridien New Delhi has been recognized as one of the 100 Icons of Delhi. The hotel is readily accessible to city's important facilities and institutions. The shopping hubs Connaught Place and Janpath Market are within walking distance from the hotel. Being at the heart of the capital, there are many tourist attractions around this place: Humayun Tomb, Lodhi Gardens, National Zoological Park, Madame Tussauds Museum, National Philatelic Museum, Purana Quila, India Gate, President's palace, etc.

CONFERENCE CENTER MAP AND FLOOR PLAN

Layout / Floor Maps – Le Meridien Hotel

Key	Seminar Halls	Exhibition Venues
R1	Sovereign 1	A
R2	Sovereign 2	B
R3	Inspire	C
R4	Allure	
R5	Desire	

Ground Floor Map



PLENARY TALKS

Tuesday, October 15, 2019 **09:00-10:00**

On Human-Robot Joint Action

Dr. Rachid Alami, Laboratory for Analysis and Architecture of Systems (LAAS) - CNRS, FR

Abstract: This talk will address some key decisional issues that are necessary for a cognitive and interactive robot which shares space and tasks with humans. We adopt a constructive approach based on the identification and the effective implementation of individual and collaborative skills. The system is comprehensive since it aims at dealing with a complete set of abilities articulated so that the robot controller is effectively able to conduct in a flexible manner a human-robot collaborative problem solving and task achievement. These abilities include geometric reasoning and situation assessment based essentially on perspective-taking and affordances, management and exploitation of each agent (human and robot) knowledge in a separate cognitive model, human-aware task planning and interleaved execution of shared plans. We will also discuss the key issues linked to the pertinence and the acceptability by the human of the robot behaviour, and how this influence qualitatively the robot decisional, planning, control and communication processes.

Speaker Bio: Dr. Rachid Alami is a Senior Scientist at LAAS-CNRS. He received an engineering diploma in computer science in 1978 from ENSEEIHT, a Ph.D. in

Robotics in 1983 from Institut National Polytechnique and an Habilitation HDR in 1996 from Paul Sabatier University. He contributed and took important responsibilities in several national, European and international research and/or collaborative projects (EUREKA: FAMOS, AMR and I-ARES projects, ESPRIT: MARTHA, PROMotion, ECLA, IST: COMETS, IST FP6 projects: COGNIRON, URUS, PHRIENDS, and FP7 projects: CHRIS, SAPHARI, ARCAS, SPENCER, H2020: MuMMER , France: ARA, VAP-RISP for planetary rovers, PROMIP, several ANR projects). His main research contributions fall in the fields of Robot Decisional and Control Architectures, Task and motion planning, multi-robot cooperation, and human-robot interaction. He is currently the head of the Robotics and InteractionS group at LAAS. He has been offered in 2019 the Academic Chair on Cognitive and Interactive Robotics at the Artificial and Natural Intelligence Toulouse Institute (ANITI).

Tuesday, October 15, 2019 **16:30-17:30**

Autonomous Driving: Simulation and Navigation

Prof. Dinesh Manocha, Department of Computer Science and Electrical & Computer Engineering, University of Maryland at College Park

Abstract: Autonomous driving has been an active area of research and development over the last decade. Despite considerable progress, there are many open challenges including automated driving in dense and urban scenes. In this talk, we give an overview of our recent work on simulation and navigation technologies for autonomous vehicles. We present a novel simulator, AutonoVi-Sim, that uses recent developments in physics-based simulation, robot motion planning, game engines, and behavior modeling. We describe novel methods for interactive simulation of multiple vehicles with unique steering or acceleration limits taking into account vehicle dynamics constraints. We present techniques for navigation with non-vehicle traffic participants such as cyclists and pedestrians. Our approach facilitates data analysis, allowing for capturing video from the vehicle's perspective, exporting sensor data such as relative positions of other traffic participants, camera data for a specific sensor, and detection and classification results. We highlight its performance in traffic and driving scenarios. We also present novel multi-agent simulation algorithms using reciprocal velocity obstacles that can model the behavior and trajectories of different traffic agents in dense scenarios, including cars, buses, bicycles and pedestrians. We also present novel methods for extracting trajectories from videos and use them for behavior modeling and safe navigation. These techniques are based on spectral analysis and demonstrated on urban datasets corresponding to ArgoVerse and TRAF.

Speaker Bio: Dinesh Manocha is the Paul Chrisman Iribe Chair in Computer Science & Electrical and Computer Engineering at the University of Maryland College Park. He is also the Phi Delta Theta/Matthew Mason Distinguished Professor Emeritus of Computer Science at the University of North Carolina – Chapel Hill. He has won many awards, including Alfred P. Sloan Research Fellow, the NSF Career Award, the ONR Young Investigator Award, and the Hettleman Prize for scholarly achievement. His research interests include multi-agent simulation, virtual environments, physically-based modeling, and robotics. He has published more than 520 papers and supervised more than 36 PhD dissertations. He is an inventor of 10 patents, several of which have been licensed to industry. His work has been covered by the New York Times, NPR, Boston Globe, Washington Post, ZDNet, as well as DARPA Legacy Press Release. He is a Fellow of AAAI, AAAS, ACM, and IEEE, member of ACM SIGGRAPH Academy, and Pioneer of Solid Modeling Association. He received the Distinguished Alumni Award from IIT Delhi the Distinguished Career in Computer Science Award from Washington Academy of Sciences. He was a co-founder of Impulsonic, a developer of physics-based audio simulation technologies, which was acquired by Valve Inc in November 2016.

Wednesday, October 16, 2019 **09:00-10:00**

Intelligent Robotics for Quality Living for All

Prof. Marcelo H Ang Jr, Advanced Robotics Centre, National University of Singapore

Abstract: Robotics science and technology have evolved from the seminal applications in industrial robotics in manufacturing to today's varied applications in service, health care, education, entertainment and other industries

including construction, mining and agriculture. One common theme in these emerging applications is the human-centered nature in unstructured environments, where robotic systems surround humans, aiding and working with us to enrich and enhance the quality of our lives. This talk presents our latest developments in fundamental capabilities in both “body” and “intelligence.” An example of self-driving cars is presented. This talk will then conclude with the challenges in science and technology to further accelerate the robotics revolution.

Speaker Bio: He has received his BSc and MSc degrees in Mechanical Engineering from the De La Salle University in the Philippines and University of Hawaii, USA in 1981 and 1985, respectively, and his PhD in Electrical Engineering from the University of Rochester, New York in 1988 where he was an Assistant Professor of Electrical Engineering. In 1989, he joined the Department of Mechanical Engineering of the National University of Singapore where he is currently an Associate Professor and Acting Director of the Advanced Robotics Center. His research interests span the areas of robotics, mechatronics, autonomous systems, and applications of intelligent systems. He teaches robotics; creativity and innovation; applied electronics and instrumentation; computing; design and related topics. In addition to academic and research activities. He is also actively involved in the Singapore Robotic Games as its founding chairman, and the World Robot Olympiad as member of its Advisory Council.

SOCIAL AND CULTURAL EVENTS, AWARD CEREMONY

Free Local City Tour: October 17, 2019. Start time: 14:00 Hours, duration 4 hours

All registered delegates will be able to avail the free ticket for the local city tour. Tentative Landmarks to be covered: Lotus Temple, India Gate, President’s Palace and Lodhi Garden. A light snack will be provided during the trip.

Number of Available seats: 200 (5 Buses, each with 40 persons’ sitting capacity). The free tickets will be issued on a first-come-first-serve basis during the registration process.

Cultural Event, Gala Dinner and Award Ceremony: October 16, 2019, 19:00. Venue: Sovereign

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Awards: Ro-Man 2019 has best paper awards in different categories. The finalists and winners will be announced and awarded during the Gala Dinner.

Cultural Program: The cultural program is sponsored and hosted by Grameen Sneh Foundation. (https://www.grameensnehfoundation.org/)**.** Grameen Sneh Foundation is a registered non-governmental Organization established with a zealous endeavor of striving endlessly towards the welfare of underprivileged cancer patients, without distinction of caste or religion. Grameen Sneh Foundation, established in the year of 2009, with the mission to provide improved quality of life to every individual through sustained change in their social, physical, economical status with special emphasis on the rural people and most vulnerable section of the society like women, children and elder people.

The cultural event for the Ro-MAN 2019 conference includes the following parts:

1. Inaugural Dance (Theme: Hausla-Fight Against Cancer, dedicated to cancer warriors) (Duration: 10-15 Minutes)

“Hausla” which in English translates as Courage is an annual programme organized by Grameen Sneh Foundation every year in different cities of India. HAUSLA' is a national move against cancer and it motivates Cancer patients and survivors and is a sustainable and informative campaign against cancer.

Cancer patient's Mind, Body and Soul as a whole is emphasized in HAUSLA. Till date Grameen Sneh Foundation has organized almost half a dozen such programmes under the banner “Hausla” across various cities. Many celebrities, eminent personalities, Bollywood actors (Dr. Sonalman singh, Manisha Koirala, Shatrughan Sinha, Manoj Tiwari, etc.) along with famous artists, writers, senior bureaucrats, doctors amongst other participated in the event.

The programme comprises of Fashion show & Theatre Act by Cancer Survivors Awareness programme for attendants and cancer survivors including the Display of Art, Painting and other natural activities prepared by cancer survivors. The last in its series was organized in year 2018 in New Delhi where more than 1000 Cancer Survivors & Cancer patients participated and got benefited.

2. Odissi Dance (Duration: 25-30 Minutes)

Odissi dance is one of the invocatory dance forms of Orissa. It has originated from the word "Udra" means Utkal. Devi shakti is one of the prominent dance features of Indian classical dance. On this particular dance from we offer our salutation to "Aadi shakti”, a unified symbol of Divine forces. She represents the personification of universal mother and as the embodiment of power and also as symbol of peace. The proposed dance form will be choreographed by Guru Sri Chandrakant Sutar.

3. Bihar Darapan (Duration: 25-30 Minutes)

The land of Nalanda University, one of the first universities in the world, and Vaishali, one of the first examples of a republic, the state of Bihar inherits a historically influential image of India's cultural consciousness. From this land, Lord Buddha, Lord Mahavira and Guru Gobind Singh inspired for Buddhist, Jainim and Khalsa Panth. Great rulers like Samrat Ashoka, jurists like Chanakya, scholars like Banabhatta and astronomers like Aryabhata added to its rich legacy. Bihar has been the land of action for Mahatma Gandhi and the birthplace of Dr. Rajendra Prasad, the first President of Independent India. The flavors of music, food, folk songs all add to the rich cultural diversity reflected through this small ‘Bihar Darapan’.

4. Ganesh Vandana (Duration: 10-15 Minutes)

This group performance, full of action and energy will provide a cultural glimpse of Ganesh festival, which is widely observed throughout India, especially in the states such as Maharashtra, Madhya Pradesh, Karnataka, Goa, Andhra Pradesh, Kerala, Telangana, Odisha, West Bengal, Gujrat and Chhattisgarh, Tamil Nadu and Indian diaspora worldwide. Lord Ganesha is considered as the dispeller of the obstacles (Vighna Harta).

EXHIBITION AND COMPETITIONS

Exhibit 1: Visualization: from digital reality to humanoid intelligence

Xarpie Labs is one of India's fastest emerging digital reality companies specializing in visualization, simulation and creation of multisensory 3D experiences. Recognized by NASSCOM #natc2019 among leaders in emerging tech, Xarpie Labs has been working with technologies such as virtual reality (VR), augmented reality (AR) and immersive web experiences. It has successfully proved the validity of immersive visualizations in various industries.

The company will build technologies that could entail reviewing the perception that robotic intelligence might be non-contextual and 'artificial'. Value education and healthcare with the aid of humanoid robots may only be the tip of the iceberg. The possibilities of Xarpie Labs' contribution in the impending field of robotics are endless. Xarpie Labs is proud to redefine visualization through the kaleidoscope of perception: from digital reality all the way through to humanoid intelligence. We call it "real" as opposed to "artificial".

Exhibit 2: Sophia the Robot from Hanson Robotics

Watch out for Sophia at the Hanson Robotics' booth in the exhibition hall. She will be available for interaction with guests, take questions from the visitors, and demonstrate some of her new features and capabilities. Sophia was developed by Hanson Robotics Limited, creator of the one of the world's most human-like expressive robots.

Co-designing with labs, universities, and companies around the world, Sophia is an architecture and a platform for the development of real AI applications. She has appeared on CBS 60 Minutes with Charlie Rose, the Tonight Show Starring Jimmy Fallon, Good Morning Britain. Sophia has also received the title of Innovation Champion for the United Nations Development Programme (UNDP) to promote sustainable development with the use of technology and innovation in developing countries and named the new ambassador and future AI Tutor for iTutorGroup, the premier online education platform and largest English-language learning institution in the world. She was also named the 2018 Gold Edison AwardTM winner in Robotics.

Exhibit 3: IIWA Collaborative Robot from KUKA

The LBR iiwa is the world's first series-produced sensitive, and therefore HRC-compatible, robot. LBR stands for "Leichtbauroboter" (German for lightweight robot), iiwa for "intelligent industrial work assistant". This signals the beginning of a new era in industrial, sensitive robotics – and lays the foundations for innovative and sustainable production processes. For the first time, humans and robots can work together on highly sensitive tasks in close cooperation. This opens up the possibility of new applications and the way is paved for greater cost-effectiveness and utmost efficiency. The collaborative and sensitive LBR iiwa robot is available in two versions with payload capacities of 7 and 14 kilograms.

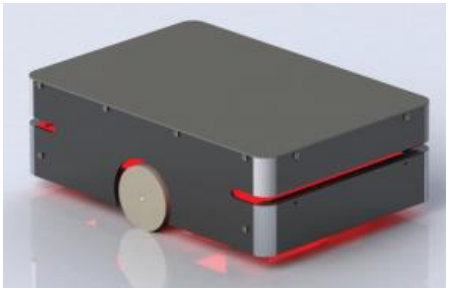
This robot will be on display as an exhibition at the Kuka booth. The capabilities of this robot, particularly collision detection, hand-guided motion, automatic mastering, null space motion, TCP force monitoring will be demonstrated during the exhibition.

Exhibit 4: Motion Capture System from Qualisys

As a leading global provider of optical motion capture technology within Life Science, Engineering and Entertainment, Qualisys has been supplying organizations with state-of-the-art camera systems and software for 30 years. Qualisys is ISO 9001:2015 certified and all clinical products comply with Medical Device Directive 93/42/EEC and have FDA clearance (K171547). These certifications are a reflection of our dedication to quality and our continued reinvestment in development, technology, and people. In this conference we are showcasing our technology, High end cameras for motion detection in above mentioned applications.

Exhibit 5: Collaborative Mobile Robot Platform from Peer Robotics

RM100, is a collaborative mobile platform that brings human-robot interaction for material handling in manufacturing and warehousing industries. Capable of carrying a payload on 100Kg, RM100 can autonomously navigate in a human populated environment using constant human detection and obstacle avoidance protocols.



Integrated with force feedback-based control, RM100 can detect external human force and activates the drive in the direction of guiding force. Using sensor fusion from multiple onboard sensors, RM100 can localize itself in any complex surrounding, reducing any human effort to provide initial position data to the robot. Equipped with additional layers of safety and natural interactive mode, RM100 is the perfect solution for a dynamic and ever-growing industries.

Competition: *Socialis Impremiere*: Robotics in the Social Context

This competition being organized in association with IIT Kanpur to encourage students to showcase their work at this premier conference. The participating teams are expected to demonstrate and show robot-based solutions to solve problems in the social context related to the following areas: ● Healthcare: Preventive or Interventional ● Waste management ● Agricultural Innovation ● Energy Production/Regulation ● Water Purification/ Distribution ● Disaster Prevention/ Evacuation ● Traffic Regulation and Management.

The shortlisted teams have been given 15 minutes to demonstrate their work both through slides presentation as well as physical demonstration.

Coordinators: Mr. Suryansh Agarwal, UG student at IIT Kanpur and Prof. Laxmidhar Behera, IIT Kanpur.

WORKSHOPS AND TUTORIALS

Workshops and tutorials will be held on Monday the 14th and on Thursday the 17th of October.

Monday, October 14, 2019

WS1: Cognitive and Interactive Robotics
WS2: Trust, Acceptance and Social Cues in Robot Interaction - SCRITA
WS5: Using HRI (Human-Robot Interaction) Technologies to Solve the Current Social Challenges in India and Asian Countries
WS6: Robot-Human Financial Transactions and Enforceable Agreements
WS8: Challenges of Human-Robot Interaction in Extreme and Hazardous Environments
WS10: Internet of intelligent robotic things for healthy living and active ageing: where we are and future trends
WS11: Robots for Learning: R4L - Building Interaction for Classroom Robots

Thursday, October 17, 2019

WS3: Blockchain Technologies for Robotic Systems
WS7: Social robots and artificial agents for developing countries: Challenges and opportunities
WS9: TransLearn: Robot Skill Transfer from Simulation to Real World Deployment in Manufacturing Industries and Warehouses
WS12: Social Human-Robot Interaction of Human-care Service Robots
WS13: Merging Artistic and Research Practices Toward More Expressive Robotic Systems

Monday, October 14, 2019 **WS5: Full-day, Room: R1**

Workshop on Using HRI (Human-Robot Interaction) Technologies to Solve the Current Social Challenges in India and Asian Countries

Workshop Website: https://www.hripreneur.io/

Abstract: The workshop of Using HRI (Human-Robot Interaction) Technologies to Solve the Current Social Challenges in India and Asia Countries provides an all-in-one forum to discuss and address the critical issues of how to transform the HRI-related lab research developments into commercializable products to solve the daily imperative demanding social problems. Particularly, we provide series of lectures from ideations, customer discoveries and HRI product development, to the business/financial modeling and raising capitals specifically for

the HRI commercial products. This year, we plan to have innovation ideathon event where students, research labs, startups, companies, venture capitals and industry sectors can have a perfect networking venue to seek collaboration opportunities to solve the India and Asia local social challenges. The purpose of this workshop is aiming at fulfilling the unmet need to merge the scientific findings in Human-Robot Interaction research communities and the endusers, focus on the design & engineering journey of taking physical products to market. Particularly, We care about "social innovation," that is, solving social and environmental issues through enterprise. We believe a focus on users and customers ensures sustainable and scalable solutions. We hope through holding this workshop, pure lab researches can have smooth transitions into practical applications, and therefore have immediate impact to the human societies in the foreseeable future.

Organizers:

Ker-Jiun Wang, University of Pittsburgh, USA; Mohammad Shidujaman, Tsinghua University, China; Caroline Yan Zheng, Royal College of Art, UK; Prakash Thakur, EXGwear Inc., USA

Monday, October 14, 2019 **WS10: Half-day, Morning, Room: R2**

Workshop on Internet of intelligent robotic things for healthy living and active ageing: where we are and future trends

Workshop website: https://www.santannapisa.it/en/istituto/biorobotica/news/internet-intelligent-robotic-things-healthy-living-and-active-ageing-where

Abstract: This workshop has the purpose of bringing together researchers from different scientific communities either interested in or actively working on the application of ICT and robotics to provide services specifically designed for the elderly in order to enhance their everyday life and be provided with highquality healthcare services. We believe a multidisciplinary environment is ideal for fostering and promoting this research area because of its fundamentally interdisciplinary nature. To effectively provide useful robotic services for elderly users requires an intimate collaboration between psychologists, sociologists, computer scientists, and robotics researchers.

Organizers:

Filippo Cavallo, Scuola Superiore Sant'Anna, Italy; Laura Fiorini, Scuola Superiore Sant'Anna, Italy; Alessandro Di Nuovo, Sheffield Hallam University, UK; Yasuo Okabe, Kyoto University, Japan; N. Alberto Borghese, Università degli Studi di Milano, Italy

Monday, October 14, 2019 **WS8: Half-day, Afternoon, Room: R2**

Workshop on Challenges of Human-Robot Interaction in Extreme and Hazardous Environments

Workshop website: https://rainhub.org.uk/challenges-of-human-robot-interaction/

Abstract: The aim of this workshop is to bring together researchers working on robotics for extreme environments and researchers in Human-Robot Interaction, in order to allow both groups to share information on approaches to their common problems of how to produce autonomous interactive agents for extreme environments. In such areas, robots are required to reduce the risks associated with operations staff, typically by removing the requirement for people to enter the hazardous environments and to increase productivity in high consequence and cluttered facilities. Hence, the primary topic will be novel interaction with remotely located robotic agents that could be deployed in environments such as nuclear inspection and decommissioning, offshore energy and maintenance, space exploration, deep mining etc.

Organizers:

Ayan Ghosh, The University of Sheffield, UK; Robert Skilton, Culham Center for fusion Energy, UK; Emily Collins, The University of Liverpool, UK

Monday, October 14, 2019 **WS11: Half-day, Afternoon, Room: R3**

Workshop on Robots for Learning: R4L - Building Interaction for Classroom Robots

Workshop website: http://r4l.epfl.ch/RoMan2019/

Abstract: Since several years, several research groups have investigated the use of robots for learning and teaching. Their work is divided into two main streams that we could call the interaction stream (i-stream) and the building stream (b-stream). The I-stream develops embodied agents able to conduct rich interactions with learners. These are mainly humanoids, part of humanoïds or roboticized animals that engaged learners in activities (writing, playing, counting, …) and are able to interact about these activities. These robots namely provide verbal and non-verbal hints, encouragement and feedback on several dimensions of the task: performance, cognitive (e.g. level of (mis-)understanding), social (e.g. regulation turn taking in teams), meta-cognitive or emotional. In the b-stream, the learner's activities is to build the robots capacities. The most popular building activities consist of programming a robot such Thymio, mostly to acquire programming skills. Many other projects in the Makers or FabLab educational initiatives explore the physical construction of the robot either by assembling components from a toolkit such as Lego Mindstorms or by using 3D printing, wiring, etc. These construction activities usually include programming is well, but generally target broader learning goals, mostly STEM skills. While the I-STREAM addresses research questions that are very close to HRI and ROMAN topics, the work on the b-stream is generally addressed in other venues, creating a divide within those who explore robots in education. This workshop proposes to bring these two streams together because many developments that exist in one stream could also benefit to the other stream. A typical example of these synergies are situations where a humannöid (i-stream) and a learner jointly manipulate a graspable robot (b-stream). This workshop aims to create many more bridges between these two streams.

Organizers:

Wafa Johal, École Polytechnique Fédérale Lausanne, Switzerland; Mohamed Chetouani, Sorbonne University, France; Pierre Dillenbourg, École Fédérale Polytechnique Lausanne, Switzerland; Tony Belpaeme, Plymouth University, UK

Monday, October 14, 2019 **WS2: Half-day, Morning, Room: R4**

Workshop on Trust, Acceptance and Social Cues in Robot Interaction - SCRITA

Workshop website: http://scrita2019.herts.ac.uk

Abstract: This Workshop will focus on users' trust in robots. We aim to explore different aspects of Human-Robot Interaction that can affect, enhance, undermine, or recovery of humans' trust in robots, such as the use of social cues, behaviour transparency (goals and actions), etc.. In particular, this session will bring together leading researchers in the field to share and discuss ideas and findings that can guide the design and development of robots that human users would accept and trust.

Organizers:

Alessandra Rossi, University of Hertfordshire, UK; Patrick Holthaus, University of Hertfordshire, UK; Sílvia Moros, University of Hertfordshire, UK; Marcus Scheunemann, University of Hertfordshire, UK; Giulia Perugia, University of Hertfordshire, UK

Monday, October 14, 2019 **WS6: Half-day, Morning, Room: R5**

Workshop on Robot-Human Financial Transactions and Enforceable Agreements

Workshop website: https://www.atr.cs.kent.edu/ro-man

Abstract: The concept of mutual agreements and contracts undergirds western civilization. In contemporary society, these agreements often encompass productive economic exchanges of value, such as the exchange of goods and services for monetary compensation. Exchanges of value, whether contractual or informal, are powerful societal tools. The purchase of goods and services can help humans achieve desired goals or tasks, and the concept of monetary compensation can shape human behavior, e.g. when used as an incentive mechanism. In its current state, HRI research considers the use of monetary compensation but fails to fully or accurately replicate such interaction due to the constraints of conventional money and the lack of tools to perform such exchanges of value between a robot and a human agent. In parallel, formal agreements between a human and a robot cannot be fully replicated nor incite realism due to the lack of agency in robots, restrictions in our legal system on the enforceability of such agreements, and the lack of technology that allows for these agreements to take place.

Blockchain technology - smart contracts and cryptocurrencies, along with the study of cryptoeconomics serve as the enabling constructs of the latter. This novel workshop presents attendees with the (1) tools to faithfully allow financial transactions to take place between robots and humans without third-party mediation, (2) a framework to interpret simple natural language agreements as digital, automatable, self-enforceable agreements - smart contracts, and (3) novel human-robot interaction models that can be unlocked by these tools.

Organizers:

Irvin Steve Cardenas, Kent State University, USA; Jong-Hoon Kim, Kent State University, USA

Monday, October 14, 2019 **WS1: Half-day, Afternoon Room: R5**

Workshop on Cognitive and Interactive Robotics

Workshop website: https://robotics.iiit.ac.in/roman-workshop/

Abstract: Research in cognitive robotics is concerned with endowing robots with higher level cognitive functions that enable them to reason, act and have conceptual understanding of the world like humans. For example, such robots must be able to reason about goals, actions, when to perceive and what to look for while they autonomously explore their environment and determine which are the important features that need to be considered for making a decision. They should also understand the cognitive states of other agents required for collaborative task execution, do dialogue exchange with other agents if they do not understand instructions and can enhance itself quickly by learning new behaviour automatically from the observations of a dynamic environment. In short, cognitive robotics is concerned with integrating AI, perception, reasoning, human-robot interactions, continual learning, and action with a theoretical and implementation framework. Such frameworks will have a big role to play in Service Robotics, Enterprise Robotics and Industry 4.0 which aims to revolutionalize current industrial automation through the use of technologies such as Cloud Computing, IOT, additive manufacturing, robotics and Artificial Intelligence.

Organizers:

Mohan Sridharan, Univ of Birmingham, UK; Arun Kumar Singh, Univ of Tartu, Estonia; Ilana Nisky, Ben Gurion; Rachid Alami, LAAS-CNRS, France; K Madhava Krishna, IIIT Hyderabad, India; Balaraman Ravindran, IIT Madras, India; Brojeshwar Bhowmick, TCS Research; Swagat Kumar, TCS Research; Rajesh Sinha, TCS Research; Balamuralidhar P, TCS Research; Arpan Pal, TCS Research

Thursday, October 17, 2019 **WS12: Half-day, Morning, Room: R1**

5th Workshop on Social Human-Robot Interaction of Human-care Service Robots

Workshop website: https://cares.blogs.auckland.ac.nz/education/activities-on-international-conferences-and-journals/ro-man-2019-workshop/

Abstract: Service robots with social intelligence are starting to be integrated into our everyday lives. The robots are intended to help improve aspects of quality of life as well as improve efficiency. We are organizing an exciting workshop at RO-MAN 2019 that is oriented towards sharing the ideas amongst participants with diverse backgrounds ranging from Human-Robot Interaction design, social intelligence, decision making, social psychology and aspects and robotic social skills. The purpose of this workshop is to explore how social robots can interact with humans socially and facilitate the integration of social robots into our daily lives. This workshop focuses on three social aspects of human-robot interaction: (1) technical implementation of social robots and products, (2) form, function and behavior, and (3) human behavior and expectations as a means to understand the social aspects of interacting with these robots and products.

Organizers:

Ho Seok Ahn, The University of Auckland, New Zealand; JongSuk Choi, Korea Institute of Science and Technology (KIST), Republic of Korea; Hyungpil Moon, Sungkyunkwan University, Republic of Korea; Minsu Jang, Electronics and Telecommunications Research Institute (ETRI), Republic of Korea; Sonya S. Kwak, Korea Institute of Science and Technology (KIST), Republic of Korea; Yoonseob Lim, Korea Institute of Science and Technology (KIST), Republic of Korea

Thursday, October 17, 2019 **WS9: Half-day, Morning, Room: R2**

Workshop on TransLearn: Robot Skill Transfer from Simulation to Real World Deployment in Manufacturing Industries and Warehouses

Workshop website: https://translearn.github.io/

Abstract: Industry 4.0 will be driven by two main technologies: AI and Robotics. The combination of both allows robots to learn skills and tasks without explicitly programming them. Data-driven robot learning algorithms offer an untapped potential for significantly reducing robot programming cost, optimizing robot movements and enabling new robot application. Current learning algorithms, however, require a lot of data to learn complex industrial tasks. The generation of this data by real robots is cost-intensive and time-consuming. Simulations are attractive environments for training robots as they provide an abundant source of cheap, scalable and safe data. On the other hand, behaviors developed by agents in simulation are often specific to the characteristics of the simulator, and physics simulators do not reflect the physical world sufficiently well. Due to modelling errors, strategies that are successful in simulation may not transfer to their real-world counterparts ("reality gap").

Organizers:

Daniel Braun, KUKA**;** Manuel Kaspar, KUKA**;** Pascal Meißner, Karlsruhe Institute of Technology**;** Jonas Kiemel, Karlsruhe Institute of Technology**;** Swagat Kumar, TATA Consultancy Services**;** Rajesh Sinha, TATA Consultancy Services**;** Laxmidhar Behera, IIT Kanpur, India

Thursday, October 17, 2019 **WS7: Half-day, Morning, Room: R3**

Workshop on Social robots and artificial agents for developing countries: Challenges and opportunities

Workshop website: https://robotics4good.github.io/socialrobots4development/

Abstract: This inaugural workshop "Social robots and artificial agents for developing countries: Challenges and opportunities" will focus on the application of social robots and artificial agents to serve populations in developing countries. While social robots are making way into our lives these are primarily focused to serve populations in developed countries. There is a lack of human-robot interaction research in developing countries which is nearly half of the population on the planet. Social robots potentially can make a huge impact in the developing world where they are a distinct novelty and our understanding about how robots are perceived by these subjects is very limited. The focus of this workshop is on the following areas but not limited to: rural/urban development, education, health, gender issues, agriculture, environmental sustainability, social welfare, and sustainable development. We believe that these fields are those where social robots and artificial agents can have an impact on society in the developing world.

Organizers:

Amol Deshmukh, University of Glasgow, UK; Laxmidhar Behera, Indian Institute of Technology Kanpur, India; Akshay Nagarajan, Amrita University, Kerala, India; Amit Kumar Pandey, Hanson Robotics, Hong Kong

Thursday, October 17, 2019 **WS3: Half-day, Morning, Room: R4**

Workshop on Blockchain Technologies for Robotic Systems

Workshop website: https://researchers.pagesperso-orange.fr/bct4ros2019/

Abstract: This workshop seeks to move beyond the classical view of robotic systems to advance our understanding about the possibilities and limitations of combining robots with blockchain technology. Insights about the following questions are especially important: What blockchain tools are available to increase the reliability and transparency of robotic systems? What kind of algorithms are suitable to combine both technologies? Are there new models and methods to connect robots to blockchain-based technology such as "smart contracts"? Are distributed networks such as Bitcoin a feasible way to integrate robotic systems in our society? Are there new business models for robot ventures based on cryptographic algorithms?

Organizers:

Önder Gürcan, CEA LIST, France; Fabio Bonsignorio, Heron Robots, Italy

Thursday, October 17, 2019 **WS13: Half-day, Morning, Room: R5**

Workshop on Merging Artistic and Research Practices Toward More Expressive Robotic Systems

Workshop website: https://radlab.mechse.illinois.edu/roman-2019-workshop/

Abstract: As we work to bring robots out of the factory and into humans' everyday life, it is important to begin designing the contextual embedding and subsequent expression of these systems with greater care. Researchers and artists hold two critical components to helping design machines that make sense to lived human experience, which is situated in context and culture. However, for these communities to effectively collaborate, some transfer of concepts and approach must occur. In this full day workshop, participants will explore movement from an embodied perspective, see selected performances that leverage robotic systems in their expression, and work collaboratively through a series of facilitated exercises to develop new research collaborations embedded in artistic practice. Participants will learn about frameworks, pragmatics, and challenges in this space from a team of roboticist-dancers who collaborated as the director of a robotics lab and that lab's artist in residence in 2017-2018. The goal of this session will be to attune participants to the philosophy of movement artists and provide key takeaways that may be of use in robotics research. Selected performers will present their work to kick off the day and inspire fruitful interaction. In the second half of the day, participants will be paired up and given roles that correspond to "artistic lead" and "research lead". These teams will work to develop a new concept for leveraging robots to present artistic ideas and using artistic practice inside robotics research. The workshop will conclude with breakout sessions for targeted discussions about the benefits and challenges of working in this way and for brainstorming sessions that will hopefully further nurture new collaborations.

Organizers:

Amy LaViers, University of Illinois at Urbana-Champaign, USA; Catie Cuan, Stanford University, USA

SPECIAL SESSIONS

SS1: Transparency and Trust in Human-Robot Interaction
SS2: Social and Affective Robots
SS3: Social Human-Robot Interaction of Service Robots
SS4: Robotics for Rehabilitation
SS5: Medical Robotics and Intelligent Control Systems in the Indian Context

Tuesday, October 15, 2019 **TuAS1 – Room T5 - 10:30-12:00**

SS1: Transparency and Trust in Human-Robot Interaction

Topic: This Session will focus on the impact of robot transparency on human users trust of robot in health-care environments. We aim to explore difference aspects of Human-Robot Interaction that can affect, enhance, undermine and recovery of humans' trust in robots, such as behaviour transparency (goals and actions). In particular, this session will bring together leading researchers in the fields to share and discuss ideas and findings to guide the design and development of robots that human users would accept and trust.

Organizers:

Alessandra Rossi (UK); Silvia Rossi (Italy); Alan Wagner (USA); Chung Hyuk Park (USA)

Tuesday, October 15, 2019 **TuBS1 – Room T5 - 13:00-14:30**

SS2: Social and Affective Robots

Topic: Robots are expected to act as mediators to elicit more active communication and provide life support for humans. Robots have found a number of applications in many aspects of our daily life, including elderly care, therapeutic and educational purposes (e.g. therapy for children with autism), entertainment, wellbeing and so on. The critical role of robots here is to interact with and assist humans in their every-day activities. Towards achieving

naturalistic interaction, it is necessary to endow the robots with “social intelligence” and, in particular, the ability to be able to respond appropriately to human affect. This, in turn, would allow them to simulate the human-human interaction and communication by being more engaging and sensitive to our affective states. Considering a wide variety of users, the robots should be also capable of deciding what kind of services and interactions they perform. The accurate and autonomous evaluation is needed through the technology (with a minimum supervision of humans), especially if the users are children or people with special needs. For this user-centred human-robot interaction, it is required that the social robots can learn the user’s emotional states and be able to respond to it accordingly. Advances in the affective computing field have recently allowed us to measure humans’ affective states such as emotions, empathy and engagement from different modalities. These include audio (verbal and non-verbal vocalizations), visual (body posture and facial expressions) and physiological (heart rate and electrodermal activity) signals. While advanced modelling techniques based on computer vision and machine learning have been proposed so far to analyse human behaviour using these modalities, a little attention has been paid to analysis of affect from naturalistic behaviours as expressed in human-robot interactions (HRI). The main aim of Affective Robot Special Session is to bring together researchers working in Robotics and Artificial Intelligence, and exploit jointly the most recent advances in these two fields. This special session is oriented towards sharing the ideas of participants with diverse background ranging from robotics, machine learning, computer vision and social psychology. The goal is to facilitate the integration of social robotics and affective computing as an emerging field. In particular, the goal of the special session is to identify new concepts and challenges (methodologies, ethical questions) in designing and learning of robots that are affect-sensitive.

Organizers:
Jaeryoung Lee (Japan); Ognjen Rudovic (USA); Rosalind W. Picard (USA)

Tuesday, October 15, 2019 TuCS1 – Room T5 – 15:00-16:30

SS3: Social Human-Robot Interaction of Service Robots

Topic: The purpose of this special session is to explore how social robots can interact with humans socially and facilitate the integration of service robots. This special session focuses on three social aspects of human-robot interaction: (1) technical implementation of social robots and products, (2) form, function and behavior, and (3) human behavior and expectations as a means to understand the social aspects of interacting with these robots and products. This is the follow-up event of the special session with the same title at RO-MAN 2018, which will continue to pursue deeper understanding on social human-robot interaction.

Organizers:
Minsu Jang (Korea); Ho Seok Ahn (New Zealand); Jongsuk Choi (Korea)

Wednesday, October 16, 2019 WeAT5 – Room T5 - 10:30-12:00

SS4: Robotics for Rehabilitation

Topic: In an increasingly connected world, robotics and automation have assumed a leading role in different facets of our society, and there is a need for productive collaboration and interaction between robots and humans. The main focus of this special session on robotics for rehabilitation is on the robot’s science and systems aspects that are needed to interact, assist and cooperate with humans. The aim of this special session is to understand this topic from multiple perspectives: (i) physical and social interaction with humans; (ii) robot adaptation to a patient's performance during rehabilitation; (iii) human-robot interaction safety; iv) control strategies that enhance human-robot synergies; and v) assessment standards and tools for rehabilitation robotics. The special call is intended for researchers from areas spanning robotics, biomechanics, human-robot interaction, assistive and rehabilitation robotics, robotic systems design, field robotics, wearable robotics, biomedical and clinical domains. This special session will foster multidisciplinary discussion and consolidation of perspectives, methodologies and assessment tools to align and benefit research efforts in robotics for rehabilitation.

Organizers:

Vineet Vashista (India); Neelesh Kumar (India); Chemori Ahmed (France)

Wednesday, October 16, 2019 **WeCT5 – Room T5 - 15:30-17:00**

SS5: Medical Robotics and Intelligent Control Systems in the Indian Context

Topic: To provide practical information through theoretical innovations designed to help robotic engineers and researchers integrate emerging technologies for the development of health care. Thus this session will provide a forum for the exchange of ideas in support of practice quality improvement through the field of medical robotics and intelligent control systems.

Organizers:
M. Felix Orlando (India); Yogesh Vijay Hote (India)

RO-MAN 2019 Technical Program Tuesday October 15, 2019

Track 1	Track 2	Track 3	Track 4	Track 5
08:30-09:00 TuOR. Room R1 & R2 Inauguration				
09:00-10:00 TuI_PL Room R1 & R2 Plenary Talk I: On Human-Robot Joint Action by Dr. Rachid Alami, Laboratory for Analysis and Architecture of Systems (LAAS) - CNRS, France				
10:00-10:30 TuAM_TBr. Tea Break I				
10:30-12:00 TuAT1 Room R1 Cognitive Interaction Design	10:30-12:00 TuAT2 Room R2 Human Robot Interaction	10:30-12:00 TuAT3 Room R3 Social Robots I	10:30-12:00 TuAT4 Room R4 Tele-Operation and Autonomous Robots	10:30-12:00 TuAS1 Room R5 Transparency and Trust in Human Robot Interaction
12:00-13:00 TuL_Br Lunch Break I				
13:00-14:30 TuBT1 Room R1 Robots in Education	13:00-14:30 TuBT2 Room R2 Human Centred Robot Design	13:00-14:30 TuBT3 Room R3 Social Robots II	13:00-14:30 TuBT4 Room R4 Situation Awareness and Spatial Cognition	13:00-14:30 TuBS1 Room R5 Social and Affective Robots
14:30-15:00 TuPM_TBr Tea Break II				
15:00-16:30 TuCT1 Room R8 Cognitive Skills and Mental Models	15:00-16:30 TuCT2 Room R2 HRI and Collaboration in Manufacturing Environment	15:00-16:30 TuCT3 Room R3 Social Robots III	15:00-16:30 TuCT4 Room R4 Visual Perception and Autonomous Robots	15:00-16:30 TuCS1 Room R5 Social Human Robot Interaction of Service Robots
16:30-17:30 TuII_PL Room R1 & R2 Plenary Talk II: Autonomous Driving: Simulation and Navigation by Prof. Dinesh Manocha, Department of Computer Science and Electrical and Computer Engineering, University of Maryland at College Park.				

RO-MAN 2019 Technical Program Wednesday October 16, 2019

Track T1	Track T2	Track T3	Track T4	Track T5
09:00-10:00 WeIII_PL Room R1 & R2 Plenary Talk III: Intelligent Robotics for Quality Living for All by Prof. Marcelo H Ang Jr, National University of Singapore				
10:00-10:30 WeAM_TBr Tea Break III				
10:30-12:00 WeAT1 Room R8 Machine Learning and Adaptation	10:30-12:00 WeAT2 Room R2 Imitation Learning	10:30-12:00 WeAT3 Room R3 Motion Planning, Navigation, and Control in Human Centered Environment	10:30-12:00 WeAT4 Room R4 Medical Robotics	10:30-12:00 WeAT5 Room R5 Robotics for Rehabilitation
12:00-13:00 WeL_Br Room T7 Lunch Break				
13:00-14:30 WeBT1 Room R1 Human Robot Collaboration and Cooperation	13:00-14:30 WeBT2 Room R2 Linguistic Communication and Dialogue	13:00-14:30 WeBT3 Room R3 Robot Companions	13:00-14:30 WeBT4 Room R4 Therapy and Rehabilitation	13:00-14:30 WeBT5 Room R5 Medical Robotics and Intelligent Control Systems in the Indian Context
14:30-15:00 WePM_TBr Tea Break IV				
15:00-17:00 WeCT1 Poster Slot 1	15:00-17:00 WeCT2 Poster Slot 2	15:00-17:00 WeCT3 Poster Slot 3	15:00-17:00 WeCT4 Poster Slot 4	15:00-17:00 WeCT5 Poster Slot 5
17:00-18:00 WePD Room R4 Panel Discussion on Responsible Robotics and AI for the Real World				
19:00-22:00 WeBanquet Room R1 & R2 Banquet Dinner, Cultural Show and Award Ceremony				

TuAT1 Room T8

Cognitive Interaction Design (Regular Session)

Chair: Behera, Laxmidhar — IIT Kanpur

Co-Chair: Orlandini, Andrea — National Research Council of Italy

10:30-10:45 TuAT1.1

Learning Optimal Parameterized Policy for High Level Strategies in a Game Setting.

Prakash, Ravi (Indian Institute of Technology, Kanpur), Vohra, Mohit (Indian Institute of Technology, Kanpur), Behera, Laxmidhar (IIT Kanpur)

10:45-11:00 TuAT1.2

Learning Context-Sensitive Strategies in Space Fortress.

Agarwal, Akshat (Carnegie Mellon University), Hope, Ryan (Carnegie Mellon University), Sycara, Katia (Carnegie Mellon University)

11:00-11:15 TuAT1.3

Estimating Optimal Placement for a Robot in Social Group Interaction.

Pathi, Sai Krishna (Örebro University), Kristofferson, Annica (Mälardalen University), Kiselev, Andrey (Orebro University), Loutfi, Amy (Örebro University)

11:15-11:30 TuAT1.4

ROS-TiPIEx: How to Make Experts in A.I. Planning and Robotics Talk Together and Be Happy.

La Viola, Carlo (ISTC-CNR), Orlandini, Andrea (National Research Council of Italy), Umbrico, Alessandro (National Research Council of Italy), Cesta, Amedeo (CNR -- National Research Council of Italy, ISTC)

11:30-11:45 TuAT1.5

Robot with an Olfactory Display: Decorating Its Movements by Smells.

Senbonmatsu, Hikaru (University of Tsukuba), Tanaka, Fumihide (University of Tsukuba)

11:45-12:00 TuAT1.6

Learning Sequential Human-Robot Interaction Tasks from Demonstrations: The Role of Temporal Reasoning.

Carpio Mazariegos, Estuardo Rene (University of New Hampshire), Clark-Turner, Madison (University of New Hampshire), Begum, Momotaz (University of New Hampshire)

TuAT2 Room T2

Human Robot Interaction (Regular Session)

Chair: Indurkhya, Bipin — Jagiellonian University

Co-Chair: Edwards, Autumn — Western Michigan University

10:30-10:45 TuAT2.1

Generation of Expressive Motions for a Tabletop Robot Interpolating from Hand-Made Animations.

Mier, Gonzalo (Pablo De Olavide University), Caballero, Fernando (Universidad Pablo De Olavide), Nakamura, Keisuke (Honda Research Institute Japan Co., Ltd), Merino, Luis (Universidad Pablo De Olavide), Gomez, Randy (Honda Research Institute Japan Co., Ltd)

10:45-11:00 TuAT2.2

A Common Social Distance Scale for Robots and Humans.

Banks, Jaime (Texas Tech University), Edwards, Autumn (Western Michigan University)

11:00-11:15 TuAT2.3

Transparent Robot Behavior Using Augmented Reality in Close Human-Robot Interaction.

Bolano, Gabriele (FZI Forschungszentrum Informatik), Juelg, Christian (FZI Forschungszentrum Informatik), Roennau, Arne (FZI Forschungszentrum Informatik, Karlsruhe), Dillmann, Rüdiger (FZI - Forschungszentrum Informatik - Karlsruhe)

11:15-11:30 TuAT2.4

Your Robot Is Watching: Using Surface Cues to Evaluate the Trustworthiness of Human Actions.

Surendran, Vidullan (Pennsylvania State University), Wagner, Alan Richard (Penn State University)

11:30-11:45 TuAT2.5

Spatially Situated End-User Robot Programming in Augmented Reality.

Kapinus, Michal (Brno University of Technology, Faculty of Information Technology), Beran, Vitezslav (Brno University of Technology), Materna, Zdenek (Faculty of Information Technology, Brno University of Technology), Bambusek, Daniel (Brno University of Technology, Faculty of Information Technology)

11:45-12:00 TuAT2.6

Human-Robot Interaction through Fingertip Haptic Devices for Cooperative Manipulation Tasks.

Musić, Selma (Technische Universität München), Prattichizzo, Domenico (University of Siena), Hirche, Sandra (Technische Universität München)

TuAT3 Room T3

Social Robots I (Regular Session)

Chair: Cabibihan, John-John — Qatar University

Co-Chair: Deshmukh, Amol — University of Glasgow

10:30-10:45 TuAT3.1

Social and Entertainment Gratifications of Videogame Play Comparing Robot, AI, and Human Partners.

Bowman, Nick (Texas Tech University), Banks, Jaime (Texas Tech University)

10:45-11:00 TuAT3.2

The Influence of Emotions on Time Perception in a Cognitive System for Social Robotics.

Cominelli, Lorenzo (E. Piaggio Research Center), Garofalo, Roberto (E. Piaggio Research Center), De Rossi, Danilo (University of Pisa)

11:00-11:15 TuAT3.3

Shakespeare and Robots: Participatory Performance Art for Older Adults.

Greer, Julienne (Universtiy of Texas at Arlington), Doelling, Kris (Previously University of Texas at Arlington), Xu, Ling (University of Texas at Arlington, School of Social Work), Fields, Noelle (University of Texas at Arlington)

11:15-11:30 TuAT3.4

Recognition of Aggressive Interactions of Children Toward Robotic Toys.

Alhaddad, Ahmad Yaser (Qatar University), Cabibihan, John-John (Qatar University), Bonarini, Andrea (Politecnico Di Milano)

11:30-11:45 TuAT3.5

The Power to Persuade: A Study of Social Power in Human-RobotInteraction.

Hashemian, Mojgan (INESC-ID), Paiva, Ana (INESC-ID and Instituto Superior Técnico, TechnicalUniversity Of), Mascarenhas, Samuel (INESC-ID / Instituto Superior Técnico, University of Lisbon), Santos, Pedro A. (Instituto Superior Tecnico), Prada, Rui (INESC ID, Instituto Superior Tecnico, University of Lisbon)

11:45-12:00 TuAT3.6

Eyes on You: Field Study of Robot Vendor Using Human-Like Eye Component "Akagachi".

Hayashi, Kotaro (Toyohashi University of Technology), Toshimitsu, Yasunori (MIT)

TuAT4 Room T4

Tele-Operation and Autonomous Robots (Regular Session)

Chair: Fitter, Naomi T. — University of Southern California

Co-Chair: Ikeda, Tetsushi — Hiroshima City University

10:30-10:45 TuAT4.1

Haptic Directional Information for Spatial Exploration.

Ghosh, Ayan (The University of Sheffield), Penders, Jacques (Sheffield Hallam University), Soranzo, Alessandro (Sheffield Hallam University)

10:45-11:00 TuAT4.2

User Interface Tradeoffs for Remote Deictic Gesturing.

Fitter, Naomi T. (University of Southern California), Joung, Youngseok (University of Southern California), Hu, Zijian (University of Southern California), Demeter, Marton (University of Southern California), Mataric, Maja (University of Southern California)

11:00-11:15 TuAT4.3

Improving Robot Transparency: An Investigation with Mobile Augmented Reality.

Rotsidis, Alexandros (University of Bath), Theodorou, Andreas (University of Bath), Bryson, Joanna (University of Bath), Wortham, Robert Hale (University of Bath)

11:15-11:30 TuAT4.4

Investigation of the Driver's Seat That Displays Future Vehicle Motion.

イシイ, ユウキ (広島市立大学), Ikeda, Tetsushi (Hiroshima City University), Kobayashi, Toru (Hiroshima City University), Kato, Yumiko (St. Marianna University School of Medicine), Utsumi, Akira (ATR Intelligent Robotics and Communication Labs), Nagasawa, Isamu (SUBARU Co., LTD), Iwaki, Satoshi (Hiroshima City University)

11:30-11:45 TuAT4.5

Combining Electromyography and Fiducial Marker Based Tracking for Intuitive Telemanipulation with a Robot Arm Hand System.

Dwivedi, Anany (University of Auckland), Gorjup, Gal (The University of Auckland), Kwon, Yongje (The University of Auckland), Liarokapis, Minas (The University of Auckland)

11:45-12:00 TuAT4.6

Humanoid Co-Workers: How Is It Like to Work with a Robot?.

Vishwanath, Ajay (Nanyang Technological University), Singh, Aalind (Institute for Media Innovation), Chua, Yi Han Victoria (Nanyang Technological University), Dauwels, Justin (Nanyang Technological University), Thalmann, Nadia Magnenat (Nanyang Technological University)

TuAS1 Room T5

Transparency and Trust in Human Robot Interaction (Special Session)

Chair: Rossi, Silvia — Universita' Di Napoli Federico II

Co-Chair: Rossi, Alessandra — University of Hertfordshire

10:30-10:45 TuAS1.1

Verbal Explanations for Deep Reinforcement Learning Neural Networks with Attention on Extracted Features (I).

Wang, Xinzhi (Tsinghua University), Yuan, Shengcheng (LazyComposer Inc., Beijing), Zhang, Hui (Tsinghua University), Sycara, Katia (Carnegie Mellon University), Lewis, Mike (Univ of Pittsburgh)

10:45-11:00 TuAS1.2

Coherent and Incoherent Robot Emotional Behavior for Humorous and Engaging Recommendations (I).

Rossi, Silvia (Universita' Di Napoli Federico II), Cimmino, Teresa (University of Naples Federico II), Matarese, Marco (University of Naples Federico II), Raiano, Mario (University of Naples Federico II)

11:00-11:15 TuAS1.3

Getting to Know Kaspar: Effects of People's Awareness of a Robot's Capabilities on Their Trust in the Robot (I).

Rossi, Alessandra (University of Hertfordshire), Moros, Sílvia (University of Hertfordshire), Dautenhahn, Kerstin (University of Waterloo), Koay, Kheng Lee (University of Hertfordshire), Walters, Michael Leonard (University of Hertfordshire)

11:15-11:30 TuAS1.4

Privacy First: Designing Responsible and Inclusive Social Robot Applications for in the Wild Studies (I).

Tonkin, Meg (University of Technology Sydney), Vitale, Jonathan (University of Technology Sydney), Herse, Sarita (University of Technology Sydney), Raza, Syed Ali (University of Technology, Sydney), Madhisetty, Srinivas (University of Technology Sydney), Kang, Le (University of Technology Sydney), Vu, The Duc (University of Technology Sydney), Johnston, Benjamin (University of Technology, Sydney), Williams, Mary-Anne (University of Technology Sydney)

11:30-11:45 TuAS1.5

Trust Repair in Human-Swarm Teams (I).

Liu, Rui (Kent State University), Cai, Zekun (University of Pittsburgh), Lewis, Mike (Univ of Pittsburgh), Lyons, Joseph (AFRL), Sycara, Katia (Carnegie Mellon University)

11:45-12:00 TuAS1.6

"You Are Doing so Great!" – the Effect of a Robot's Interaction Style on Self-Efficacy in HRI (I).

Zafari, Setareh (Vienna University of Technology), Schwaninger, Isabel (TU Wien), Hirschmanner, Matthias (TU Wien), Schmidbauer, Christina (Vienna University of Technology), Weiss, Astrid (Vienna Univerity of Technology), Koeszegi, Sabine Theresia (Vienna University of Technology)

TuBT1 Room T8

Robots in Education (Regular Session)

Chair: Robins, Ben — University of Hertfordshire

Co-Chair: Johal, Wafa — École Polytechnique Fédérale De Lausanne

13:00-13:15 TuBT1.1

A Participatory Design Process of a Robotic Tutor of Assistive Sign Language for Children with Autism.

Axelsson, Minja (Aalto University), Racca, Mattia (Aalto University), Weir, Daryl (Futurice Oy), Kyrki, Ville (Aalto University)

13:15-13:30 TuBT1.2

Robot Analytics: What Do Human-Robot Interaction Traces Tell Us about Learning?.

Nasir, Jauwairia (EPFL), Norman, Utku (Swiss Federal Institute of Technology in Lausanne (EPFL)), Johal, Wafa (École Polytechnique Fédérale De Lausanne), Olsen, Jennifer (EPFL), Shahmoradi, Sina (EPFL), Dillenbourg, Pierre (EPFL)

13:30-13:45 TuBT1.3

Improv with Robots: Creativity, Inspiration, Co-Performance.

Rond, Jesse (Oregon State University), Sanchez, Alan (Oregon State University), Berger, Jaden (Oregon State University), Knight, Heather (Oregon State University)

13:45-14:00 TuBT1.4

CoWriting Kazakh: Transitioning to a New Latin Script Using Social Robots.

Kim, Anton (Nazarbayev University), Omarova, Meruyert (Nazarbayev University), Zhaksylyk, Adil (Nazarbayev University), Asselborn, Thibault (EPFL), Johal, Wafa (École Polytechnique Fédérale De Lausanne), Dillenbourg, Pierre (EPFL), Sandygulova, Anara (Nazarbayev University)

14:00-14:15 TuBT1.5

Design and Perception of a Social Robot to Promote Hand Washing among Children in a Rural Indian School.

Radhakrishnan, Unnikrishnan (Amrita University), Deshmukh, Amol (University of Glasgow), Ramesh, Shanker (AMMACHI Labs, Amrita Vishwa Vidyapeetham, Amritapuri, India), K Babu, Sooraj (AMMACHI Labs, Amrita Vishwa Vidyapeetham, Amritapuri, India), A, Parameswari (Ammachilabs, Amrita Vishwa Vidyapeetham, Amritapuri, India), Rao R, Bhavani (Amrita Vishwa Vidyapeetham University)

14:15-14:30 TuBT1.6

The Effect of Interaction and Design Participation on Teenagers' Attitudes towards Social Robots.

Björling, Elin (University of Washington), Xu, Wendy M. (University of Washington), Cabrera, Maria Eugenia (University of Washington), Cakmak, Maya (University of Washington)

TuBT2	Room T2
Human Centred Robot Design (Regular Session)	
Chair: Kato, Shohei	Nagoya Institute of Technology
Co-Chair: Kim, Joonhwan	Korea Advanced Institute of Science and Technology(KAIST)

13:00-13:15 TuBT2.1

Unconventional Uses of Structural Compliance in Adaptive Hands.

Chang, Che-Ming (University of Auckland), Gerez, Lucas (The University of Auckland), Elangovan, Nathan (University of Auckland), Zisimatos, Agisilaos (National Technical University of Athens), Liarokapis, Minas (The University of Auckland)

13:15-13:30 TuBT2.2

Design and Analysis of a Soft Bidirectional Bending Actuator for Human-Robot Interaction Applications.

Singh, Kumar Surjdeo (Indian Institute of Technology Madras), Thondiyath, Asokan (IIT Madras)

13:30-13:45 TuBT2.3

Instrumented Shoe Based Foot Clearance and Foot-To-Ground Angle Measurement System for the Gait Analysis.

Tiwari, Ashutosh (Indian Institute of Technology), Saxena, Somya (PGI Chandigarh), Joshi, Deepak (Indian Institute of Technology)

13:45-14:00 TuBT2.4

Energy Conscious Over-Actuated Multi-Agent Payload Transport Robot.

Tallamraju, Rahul (International Institute of Information Technology, Hyderabad), Verma, Pulkit (International Institute of Information Technology), Sripada, Venkatesh (Oregon State University, Corvallis, USA), Agrawal, Shrey (International Institute of Information Technology, Hyderabad), Karlapalem, Kamalakar (IIIT-Hyderabad)

14:00-14:15 TuBT2.5

Effect of Human Hand Dynamics on Haptic Rendering of Stiff Springs Using Virtual Mass Feedback.

Desai, Indrajit (Indian Institute of Technology Bombay), Gupta, Abhishek (Indian Institute of Technology, Bombay), Chakraborty, Debraj (Indian Institute of Technology Bombay)

14:15-14:30 TuBT2.6

DronePick: Object Picking and Delivery Teleoperation with the Drone Controlled by a Wearable Tactile Display.

Ibrahimov, Roman (Skolkovo Institute of Technology and Science), Tsykunov, Evgeny (Skolkovo Institute of Science and Technology), Shirokun, Vladimir (Skolkovo Institute of Science and Technology), Somov, Andrey (Skolkovo Institute of Technology and Science), Tsetserukou, Dzmitry (Skolkovo Institute of Science and Technology)

TuBT3	Room T3
Social Robots II (Regular Session)	
Chair: Sandygulova, Anara	Nazarbayev University
Co-Chair: Cabibihan, John-John	Qatar University

13:00-13:15 TuBT3.1

Design of a Robotic Crib Mobile to Support Studies in the Early Detection of Cerebral Palsy: A Pilot Study.

Jamshad, Rabeya (Georgia Institute of Technology), Fry, Katelyn (Georgia Institute of Technology), Chen, Yu-ping (Georgia State University), Howard, Ayanna (Georgia Institute of Technology)

13:15-13:30 TuBT3.2

AppGAN: Generative Adversarial Networks for Generating Robot Approach Behaviors into Small Groups of People.

Yang, Fangkai (KTH Royal Institute of Technology), Peters, Christopher (Royal Institute of Technology)

13:30-13:45 TuBT3.3

Effective Robot Evacuation Strategies in Emergencies.

Nayyar, Mollik (The Pennsylvania State University), Wagner, Alan Richard (Penn State University)

13:45-14:00 TuBT3.4

Surprise! Predicting Infant Visual Attention in a Socially Assistive Robot Contingent Learning Paradigm.

Klein, Lauren (University of Southern California), Itti, Laurent (University of Southern California), Smith, Beth (University of Southern California), Rosales, Marcelo R. (University of Southern California), Nikolaidis, Stefanos (University of Southern California), Mataric, Maja (University of Southern California)

14:00-14:15 TuBT3.5

Learning Socially Appropriate Robot Approaching Behavior Toward Groups Using Deep Reinforcement Learning.

Gao, Yuan (Uppsala University), Yang, Fangkai (KTH Royal Institute of Technology), Frisk, Martin (Uppsala University), Hernandez, Daniel (University of York), Peters, Christopher (Royal Institute of Technology), Castellano, Ginevra (Uppsala University)

14:15-14:30 TuBT3.6

What Do Children Want from a Social Robot? Toward Gratifications Measures for Child-Robot Interaction.

De Jong, Chiara (University of Amsterdam), Kühne, Rinaldo (University of Amsterdam), Peter, Jochen (University of Amsterdam), van Straten, Caroline Lianne (University of Amsterdam), Barco, Alex (ASCoR, University of Amsterdam)

TuBT4	Room T4
Situation Awareness and Spatial Cognition (Regular Session)	
Chair: Pandey, Amit Kumar	Hanson Robotics
Co-Chair: Louie, Wing-Yue Geoffrey	Oakland University

13:00-13:15 TuBT4.1

Desk Organization: Effect of Multimodal Inputs on Spatial Relational Learning.

Rowe, Ryan (University of Washington), Singhal, Shivam (University of Washington), Yi, Daqing (University of Washington), Bhattacharjee, Tapomayukh (University of Washington), Srinivasa, Siddhartha (University of Washington)

13:15-13:30 TuBT4.2

Audio-Visual SLAM towards Human Tracking and Human-Robot Interaction in Indoor Environments.

Chau, Aaron (University of Calgary), Sekiguchi, Kouhei (Kyoto University), Nugraha, Aditya Arie (RIKEN AIP), Yoshii, Kazuyoshi (Kyoto University), Funakoshi, Kotaro (Honda Research Inst. Japan Co., Ltd)

13:30-13:45 TuBT4.3

Teaching a Robot How to Spatially Arrange Objects: Representation and Recognition Issues.

Buoncompagni, Luca (University of Genoa), Mastrogiovanni, Fulvio (University of Genoa)

13:45-14:00 TuBT4.4

Simple, Inexpensive, Accurate Calibration of 9 Axis Inertial Motion Unit.

Das, Shome S (Indian Institute of Science, Bangalore)

14:00-14:15 TuBT4.5

Towards a Driver Monitoring System for Estimating Driver Situational Awareness.

Hijaz, Alaaldin (Oakland University), Louie, Wing-Yue Geoffrey (Oakland University), Mansour, Iyad (Dura Automotive)

14:15-14:30 TuBT4.6

Automatic Speech-Gesture Mapping and Engagement Evaluation in Human Robot Interaction.

Ghosh, Bishal (Indian Institute of Technology Ropar), Dhall, Abhinav (Indian

Institute of Technology Ropar), Singla, Ekta (Indian Institute of Technology Ropar)

TuBS1	Room T5
Social and Affective Robots (Special Session)	
Chair: Sgorbissa, Antonio	University of Genova
Co-Chair: Cominelli, Lorenzo	E. Piaggio Research Center

13:00-13:15 TuBS1.1

Designing an Experimental and a Reference Robot to Test and Evaluate the Impact of Cultural Competence in Socially Assistive Robotics (I).

Recchiuto, Carmine Tommaso (University of Genova), Papadopoulos, Chris (University of Bedfordshire), Hill, Tetiana (University of Bedfordshire, Vicarage St, Luton LU13JU, UK), Castro, Nina (Advinia Healthcare, 314 Regents Park Rd, London N32JX, UK), Bruno, Barbara (University of Genova), Papadopoulos, Irena (Middlesex University Higher Education Corporation), Sgorbissa, Antonio (University of Genova)

13:15-13:30 TuBS1.2

Using Socially Expressive Mixed Reality Arms for Enhancing Low-Expressivity Robots (I).

Groechel, Thomas (Univeristy of Southern California), Shi, Zhonghao (Univeristy of Southern California), Pakkar, Roxanna (University of Southern California), Mataric, Maja (University of Southern California)

13:30-13:45 TuBS1.3

Wearable Affective Robot That Detects Human Emotions from Brain Signals by Using Deep Multi-Spectrogram Convolutional Neural Networks (Deep MS-CNN) (I).

Wang, Ker-Jiun (University of Pittsburgh), Zheng, Caroline Yan (Royal College of Art)

13:45-14:00 TuBS1.4

Real-Time Gazed Object Identification with a Variable Point of View Using a Mobile Service Robot (I).

Yuguchi, Akishige (Nara Institute of Science and Technology), Inoue, Tomoaki (Nara Institute of Science and Technology), Garcia Ricardez, Gustavo Alfonso (Nara Institute of Science and Techonology (NAIST)), Ding, Ming (Nara Institute of Science and Technology), Takamatsu, Jun (Nara Institute of Science and Technology), Ogasawara, Tsukasa (Nara Institute of Science and Technology)

14:00-14:15 TuBS1.5

A Reinforcement-Learning Approach for Adaptive and Comfortable Assistive Robot Monitoring Behaviors (I).

Raggioli, Luca (University of Naples Federico II), Rossi, Silvia (Universita' Di Napoli Federico II)

14:15-14:30 TuBS1.6

Proposing Human-Robot Trust Assessment through Tracking Physical Apprehension Signals in Close-Proximity Human-Robot Collaboration (I), pp. 1-6.

Hald, Kasper (Aalborg University), Rehm, Matthias (Aalborg University), Moeslund, Thomas B. (Aalborg University)

TuCT1	Room T8
Cognitive Skills and Mental Models (Regular Session)	
Chair: Lewis, Michael	University of Pittsburgh
Co-Chair: Schulz, Trenton	University of Oslo

15:00-15:15 TuCT1.1

Ontologenius : A Long-Term Semantic Memory for Robotic Agents.

Sarthou, Guillaume (LAAS-CNRS), Clodic, Aurélie (Laas - Cnrs), Alami, Rachid (CNRS)

15:15-15:30 TuCT1.2

Mind Perception and Causal Attribution for Failure in a Game with a Robot.

Miyake, Tomohito (Osaka University), Kawai, Yuji (Osaka University), Park, Jihoon (Osaka University), Shimaya, Jiro (Osaka University), Takahashi, Hideyuki (Osaka University), Asada, Minoru (Osaka University)

15:30-15:45 TuCT1.3

Designing Child-Robot Interaction with Robotito.

Ewelina, Bakała (Facultad De Ingeniería, Universidad De La República, Montevideo), Visca, Jorge (Facultad De Ingeniería, Universidad De La República, Montevideo), Tejera López, Gonzalo Daniel (Universidad De La Republica, Facultad De Ingeniería, Instituto D), Seré, Andrés (Facultad De Ingeniería, Universidad De La República, Montevideo), Amorin, Guillermo (Facultad De Ingeniería, Universidad De La República, Montevideo), Gómez-Sena, Leonel (Laboratorio De Neurociencias, Facultad De Ciencias, Universidad)

15:45-16:00 TuCT1.4

Conflict Mediation in Human-Machine Teaming: Using a Virtual Agent to Support Mission Planning and Debriefing.

Haring, Kerstin Sophie (University of Denver), Tobias, Jessica (United States Air Force Academy), Waligora, Justin (United States Air Force Academy), Phillips, Elizabeth (Brown University), Tenhundfeld, Nathan (University of Alabama in Huntsville), Gale, Lucas (University of Southern California), De Visser, Ewart (George Mason University), Jonathan, Gratch (University of Southern California), Tossell, Chad (USAF Academy)

16:00-16:15 TuCT1.5

Towards Automatic Visual Fault Detection in Highly Expressive Human-Like Animatronic Faces with Soft Skin.

Mayet, Ralf (Hanson Robotics), Diprose, James (Hanson Robotics), Pandey, Amit Kumar (Hanson Robotics)

16:15-16:30 TuCT1.6

Differences of Human Perceptions of a Robot Moving Using Linear or Slow In, Slow Out Velocity Profiles When Performing a Cleaning Task.

Schulz, Trenton (University of Oslo), Holthaus, Patrick (University of Hertfordshire), Amirabdollahian, Farshid (The University of Hertfordshire), Koay, Kheng Lee (University of Hertfordshire), Torresen, Jim (University of Oslo), Herstad, Jo (University of Oslo)

TuCT2	Room T2
HRI and Collaboration in Manufacturing Environment (Regular Session)	
Chair: Penders, Jacques	Sheffield Hallam University
Co-Chair: Beran, Vitezslav	Brno University of Technology

15:00-15:15 TuCT2.1

Combining Interactive Spatial Augmented Reality with Head-Mounted Display for End-User Collaborative Robot Programming.

Bambusek, Daniel (Brno University of Technology, Faculty of Information Technology), Materna, Zdenek (Faculty of Information Technology, Brno University of Technology), Kapinus, Michal (Brno University of Technology, Faculty of Information Technology), Beran, Vitezslav (Brno University of Technology), Smrz, Pavel (Brno University of Technology)

15:15-15:30 TuCT2.2

Modulating Human Input for Shared Autonomy in Dynamic Environments.

Mower, Christopher Edwin (University of Edinburgh), Moura, Joao (Heriot-Watt University), Davies, Aled (Costain Group PLC), Vijayakumar, Sethu (University of Edinburgh)

15:30-15:45 TuCT2.3

Seamless Manual-To-Autopilot Transition: An Intuitive Programming Approach to Robotic Welding.

Eto, Haruhiko (Massachusetts Institute of Technology), Asada, Harry (MIT)

15:45-16:00 TuCT2.4

Teaching Method for Robot's Gripper Posture with a Laser Sensor on a Pan-Tilt Actuator: A Method for Specifying Posture Feature Curves and Posture Feature Point.

Ishihata, Kenji (Hiroshima City University), Sato, Kenjiro (Hiroshima City University), Fukui, Yuta (Hiroshima City Univercity), Iwaki, Satoshi (Hiroshima City University), Ikeda, Tetsushi (Hiroshima City University)

16:00-16:15 TuCT2.5

Model Checking Human-Agent Collectives for Responsible AI.

Abeywickrama, Dhaminda (University of Southampton), Cirstea, Corina (Electronics and Computer Science, University of Southampton), Ramchurn, Sarvapali (University of Southampton)

16:15-16:30 TuCT2.6

IoT Based Submersible ROV for Pisciculture, pp. 1-6.

Rohit, Mehboob Hasan (North South University), Barua, Sailanjan (North South University), Akter, Irin (North South University), Karim, S M Mujibul (North South University), Akter, Sharmin (North South University), Elahi, M. M. Lutfe (North South University)

TuCT3 Room T3

Social Robots III (Regular Session)

Chair: Suri, Venkata Ratnadeep — Indraprasta Institute of Information Technology, Delhi, (IIIT-Delhi)

Co-Chair: Zibetti, Elisabetta — CHART-LUTIN

15:00-15:15 TuCT3.1

Teaching Pepper Robot to Recognize Emotions of Traumatic Brain Injured Patients Using Deep Neural Networks.

Ilyas, Chaudhary Muhammad (Aalborg University), Schmuck, Viktor (Aalborg University, Denmark), Haque, Mohammad Ahsanul (Aalborg University), Nasrollahi, Kamal (Aalborg University), Rehm, Matthias (Aalborg University), Moeslund, Thomas B. (Aalborg University)

15:15-15:30 TuCT3.2

Mood Estimation As a Social Profile Predictor in an Autonomous, Multi-Session, Emotional Support Robot for Children.

Gamborino, Edwinn (National Taiwan University), Yueh, Hsiu-Ping (National Taiwan University), Lin, Weijane (National Taiwan University), Yeh, Su-Ling (National Taiwan University), Fu, Li-Chen (National Taiwan University)

15:30-15:45 TuCT3.3

Mapping Robotic Affordances with Pre-Requisite Learning Interventions for Children with Autism Spectrum Disorder.

Shukla, Jainendra (Indraprastha Institute of Information Technology, Delhi), Suri, Venkata Ratnadeep (Indraprasta Institute of Information Technology, Delhi, (IIIT-De), Garg, Jatin (Indraprastha Institute of Information Technology Delhi), Verma, Krit (Indraprastha Institute of Information Technology Delhi), Kansal, Prarthana (IIIT Delhi)

15:45-16:00 TuCT3.4

Health Counseling by Robots: Modalities for Breastfeeding Promotion.

Murali, Prasanth (Khoury College of Computer Science), O'Leary, Teresa (Khoury College of Computer and Information Science), Shamekhi, Ameneh (Northeastern University), Bickmore, Timothy (Northeastern University)

16:00-16:15 TuCT3.5

Persuasive ChairBots: A (Mostly) Robot-Recruited Experiment.

Agnihotri, Abhijeet (Oregon State University), Knight, Heather (Oregon State University)

16:15-16:30 TuCT3.6

Robot-Assisted Therapy for Children with Delayed Speech Development: A Pilot Study.

Zhanatkyzy, Aida (Nazarbayev University), Turarova, Aizada (Nazarbayev University), Telisheva, Zhansaule (Nazarbayev University), Abylkasymova, Galiya (Republican Children's Rehabilitation Center), Sandygulova, Anara (Nazarbayev University)

TuCT4 Room T4

Visual Perception and Autonomous Robots (Regular Session)

Chair: Hayashi, Kotaro — Toyohashi University of Technology

Co-Chair: Chemori, Ahmed — Lirmm - Cnrs

15:00-15:15 TuCT4.1

Grasping of Novel Objects for Robotic Pick and Place Applications.

Vohra, Mohit (Indian Institute of Technology, Kanpur), Prakash, Ravi (Indian Institute of Technology, Kanpur), Behera, Laxmidhar (IIT Kanpur)

15:15-15:30 TuCT4.2

A Novel Image-Based Path Planning Algorithm for Eye-In-Hand Visual Servoing of a Redundant Manipulator in a Human Centered Environment.

Raina, Deepak (TCS Robotics Innovation Lab), P, Mithun (International Institute of Information Technology Hyderabad), Shah, Suril Vijaykumar (Indian Institute of Technology Jodhpur), Swagat, Kumar (Tata Consultancy Services)

15:30-15:45 TuCT4.3

A Novel Geometry-Based Algorithm for Robust Grasping in Extreme Clutter Environment.

Kundu, Olyvia (TCS Innovation Labs), Swagat, Kumar (Tata Consultancy Services)

15:45-16:00 TuCT4.4

Fatigue Estimation Using Facial Expression Features and Remote-PPG Signal.

Hasegawa, Masaki (Toyohash University of Technology), Hayashi, Kotaro (Toyohashi University of Technology), Miura, Jun (Toyohashi University of Technology)

16:00-16:15 TuCT4.5

Model & Feature Agnostic Eye-In-Hand Visual Servoing Using Deep Reinforcement Learning with Prioritized Experience Reply.

Singh, Prerna (Tata Consultancy Services), Singh, Virender (TCS), Dutta, Samrat (TCS Research and Innovation), Swagat, Kumar (Tata Consultancy Services)

16:15-16:30 TuCT4.6

Reasoning on Shared Visual Perspective to Improve Route Directions.

Waldhart, Jules (LAAS-CNRS), Clodic, Aurélie (Laas - Cnrs), Alami, Rachid (CNRS)

TuCS1 Room T5

Social Human Robot Interaction of Service Robots (Special Session)

Chair: Ahn, Ho Seok — The University of Auckland, Auckland

Co-Chair: Jang, Minsu — Electronics & Telecommunications Research Institute

15:00-15:15 TuCS1.1

Human Interaction and Improving Knowledge through Collaborative Tour Guide Robots (I).

Velentza, Anna Maria (University of Birmingham, University of Macedonia), Heinke, Dietmar (University of Birmingham), Wyatt, Jeremy (University of Birmingham)

15:15-15:30 TuCS1.2

Identity, Gender, and Age Recognition Convergence System for Robot Environments (I).

Jang, Jaeyoon (ETRI)

15:30-15:45 TuCS1.3

Hospital Receptionist Robot V2: Design for Enhancing Verbal Interaction with Social Skills (I).

Ahn, Ho Seok (The University of Auckland, Auckland), Lim, Jong Yoon (University of Auckland), Ahn, Byeong-Kyu (Sungkyunkwan University), Johanson, Deborah (The University of Auckland), Hwang, Eui Jun (The University of Auckland), Lee, Min Ho (University of Auckland), Broadbent, Elizabeth (University of Auckland), MacDonald, Bruce (University of Auckland)

15:45-16:00 TuCS1.4

Developing a Questionnaire to Evaluate Customers' Perception in the Smart City Robotic Challenge (I).

Wang, Lun (Sapienza University of Rome), Iocchi, Luca (Sapienza University of Roma), Marrella, Andrea (Sapienza University of Rome, Italy), Nardi, Daniele (Sapienza University of Rome)

16:00-16:15 TuCS1.5

TeachMe: Three-Phase Learning Framework for Robotic Motion Imitation Based on Interactive Teaching and Reinforcement Learning (I).

Kim, Taewoo (University of Science and Technology), Lee, Joo-Haeng (ETRI)

16:15-16:30 TuCS1.6

Lindsey the Tour Guide Robot - Usage Patterns in a Museum Long-Term Deployment (I).

Del Duchetto, Francesco (University of Lincoln), Baxter, Paul Edward (University of Lincoln), Hanheide, Marc (University of Lincoln)

Technical Program for Wednesday October 16, 2019

WeAT1 Room T8

Machine Learning and Adaptation (Regular Session)

Chair: Gupta, Kamal Simon Fraser University

Co-Chair: Busch, Baptiste EPFL

10:30-10:45 WeAT1.1

HiFI: A Hierarchical Framework for Incremental Learning Using Deep Feature Representation.

Raj, Ankita (IIT Delhi), Majumder, Anima (Tata Consultancy Services), Swagat, Kumar (Tata Consultancy Services)

10:45-11:00 WeAT1.2

Reinforcement Learning Motion Planning for an EOG-Centered Robot Assisted Navigation in a Virtual Environment.

Garrote, Luís Carlos (Institute of Systems and Robotics), Perdiz, João (University of Coimbra), Pires, Gabriel (University of Coimbra), Nunes, Urbano J. (Instituto De Sistemas E Robotica)

11:00-11:15 WeAT1.3

Identifying Multiple Interaction Events from Tactile Data During Robot-Human Object Transfer.

Davari, Mohammad-Javad (Simon Fraser University), Hegedus, Michael James (Simon Fraser University), Gupta, Kamal (Simon Fraser University), Mehrandezh, Mehran (University of Regina)

11:15-11:30 WeAT1.4

Accuracy Improvement of Facial Expression Recognition in Speech Acts: Confirmation of Effectiveness of Information Around a Mouth and GAN-Based Data Augmentation.

Song, KyuSeob (KAIST (Korea Advanced Institute of Science and Technology)), Kwon, Dong-Soo (KAIST)

11:30-11:45 WeAT1.5

An Empirical Study of Person Re-Identification with Attributes.

Shree, Vikram (Cornell University), Chao, Wei-Lun (Cornell University), Campbell, Mark (Cornell University)

11:45-12:00 WeAT1.6

Q-Learning Based Navigation of a Quadrotor Using Non-Singular Terminal Sliding Mode Control.

Yogi, Subhash Chand (Indian Institute of Technology - Kanpur), Tripathi, Vibhu Kumar (Indian Institute of Technology, Kanpur), Kamath, Archit Krishna (Indian Institute of Technology, Kanpur), Behera, Laxmidhar (IIT Kanpur)

WeAT2 Room T2

Imitation Learning (Regular Session)

Chair: Wachs, Juan Purdue University

Co-Chair: Di Nuovo, Alessandro Sheffield Hallam University

10:30-10:45 WeAT2.1

SMAK-Net: Self Supervised Multi-Level Spatial Attention Network for Knowledge Representation towards Imitation Learning.

Ramachandruni, Kartik (TCS Innovation Labs), Vankadari, Madhu Babu (TCS), Majumder, Anima (Tata Consultancy Services), Dutta, Samrat (TCS Research and Innovation), Swagat, Kumar (Tata Consultancy Services)

10:45-11:00 WeAT2.2

Extending Policy from One-Shot Learning through Coaching.

Balakuntala Srinivasa Murthy, Mythra Varun (Purdue University), Venkatesh, L.N Vishnunandan (Purdue University), Padmakumar Bindu, Jyothsna (Purdue University), Voyles, Richard (Purdue University), Wachs, Juan (Purdue University)

11:00-11:15 WeAT2.3

DeepMoTlon: Learning to Navigate Like Humans.

Hamandi, Mahmoud (INSA Toulouse), D'Arcy, Michael (Northwestern University), Fazli, Pooyan (San Francisco State University)

11:15-11:30 WeAT2.4

Learning Active Spine Behaviors for Dynamic and Efficient Locomotion in Quadruped Robots.

Bhattacharya, Shounak (Indian Institute of Science), Singla, Abhik (Indian Institute of Science (IISc), Bangalore), Singh, Abhimanyu (BITS Pilani K K Birla Goa Campus), Dholakiya, Dhaivat (Indian Institute of Science), Bhatnagar, Shalabh (Indian Institute of Science, Bangalore), Amrutur, Bharadwaj (Indian Institute of Science), Ghosal, Ashitava (India Institute of Science (IISc), Nadubettu Yadukumar, Shishir (Indian Institute of Science)

11:30-11:45 WeAT2.5

Trajectory Based Deep Policy Search for Quadrupedal Walking.

Nadubettu Yadukumar, Shishir (Indian Institute of Science), Joglekar, Ashish (Robert Bosch Center for Cyber Physical Systems, Indian Institute), Shetty, Suhan (IISc), Dholakiya, Dhaivat (Indian Institute of Science), Singh, Abhimanyu (BITS Pilani K K Birla Goa Campus), Sagi, Aditya Varma (Indian Institute of Science), Bhattacharya, Shounak (Indian Institute of Science), Singla, Abhik (Indian Institute of Science (IISc), Bangalore), Bhatnagar, Shalabh (Indian Institute of Science, Bangalore), Ghosal, Ashitava (India Institute of Science (IISc), Amrutur, Bharadwaj (Indian Institute of Science)

11:45-12:00 WeAT2.6

Natural Language Interface for Programming Sensory-Enabled Scenarios for Human-Robot Interaction.

Buchina, Nina (Eindhoven University of Techniligy), Sterkenburg, Paula (Free University of Amsterdam), Lourens, Tino (TiViPE), Barakova, Emilia I. (Eindhoven University of Technology)

WeAT3 Room T3

Motion Planning, Navigation, and Control in Human Centered Environment (Regular Session)

Chair: Behera, Laxmidhar IIT Kanpur

Co-Chair: Krishna, Madhava IIIT Hyderabad

10:30-10:45 WeAT3.1

PIVO: Probabilistic Inverse Velocity Obstacle for Navigation under Uncertainty.

Poonganam, SriSai Naga Jyotish (IIIT Hyderabad), Goel, Yash (IIIT Hyderabad), Avula, Venkata Seetharama Sai Bhargav Kumar (International Institute of Information Technology, Hyderabad), Krishna, Madhava (IIIT Hyderabad)

10:45-11:00 WeAT3.2

Trajectory Advancement During Human-Robot Collaboration.

Tirupachuri, Yeshasvi (Italian Institute of Technology), Nava, Gabriele (Istituto Italiano Di Tecnologia), Rapetti, Lorenzo (IIT), Latella, Claudia (Istituto Italiano Di Tecnologia), Pucci, Daniele (Italian Institute of Technology)

11:00-11:15 WeAT3.3

Vision-Based Fast-Terminal Sliding Mode Super Twisting Controller for Autonomous Landing of a Quadrotor on a Static Platform.

Kamath, Archit Krishna (Indian Institute of Technology, Kanpur), Tripathi, Vibhu Kumar (Indian Institute of Technology, Kanpur), Yogi, Subhash Chand (Indian Institute of Technology - Kanpur), Behera, Laxmidhar (IIT

Kanpur)

11:15-11:30 WeAT3.4

Vision-Based Fractional Order Sliding Mode Control for Autonomous Vehicle Tracking by a Quadrotor UAV.

Maurya, Heera Lal (Indian Institute of Technology - Kanpur), Kamath, Archit Krishna (Indian Institute of Technology, Kanpur), Behera, Laxmidhar (IIT Kanpur), Verma, Nishchal K. (Indian Institute of Technology, Kanpur)

11:30-11:45 WeAT3.5

End-User Programming of Low and High-Level Actions for Robotic Task Planning.

Liang, Ying Siu (Université Grenoble Alpes), Pellier, Damien (Laboratoire d'Informatique De Grenoble - CNRS), Fiorino, Humbert (University Grenoble Alpes - Laboratoire d'Informatique De Grenob), Pesty, Sylvie (University of Grenoble-Alps)

11:45-12:00 WeAT3.6

Human Perception of Gait Styles on a Compass Walker in Variable Contexts Via Descriptive versus Emotive Labels.

Lambert, Jacey (University of Illinois at Urbana-Champaign), Huzaifa, Umer (University of Illinois at Urbana-Champaign), Rizvi, Wali (University of Illinois at Urbana Champaign), LaViers, Amy (University of Illinois at Urbana-Champaign)

WeAT4 Room T4

Medical Robotics (Regular Session)

Chair: Sgorbissa, Antonio — University of Genova

Co-Chair: Xie, Le — Shanghai Jiao Tong University

10:30-10:45 WeAT4.1

Master-Slave Guidewire and Catheter Robotic System for Cardiovascular Intervention.

Xiang, Yujia (Shanghai Jiao Tong University), Shen, Hao (Shanghai Jiao Tong University), Xie, Le (Shanghai Jiao Tong University), Wang, Hesheng (Shanghai Jiao Tong University)

10:45-11:00 WeAT4.2

A Brief Review of the Electronics, Control System Architecture, and Human Interface for Commercial Lower Limb Medical Exoskeletons Stabilized by Aid of Crutches.

Tabti, Nahla (Université Paris-Sud), Kardofaki, Mohamad (UVSQ), Alfayad, Samer (LISV, BIA), Chitour, Yacine (University of Paris Sud), Ben Ouezdou, Fathi (University of Versailles St. Quentin), Dychus, Eric (Sandyc)

11:00-11:15 WeAT4.3

Development of a Foldable Five-Finger Robotic Hand for Assisting Laparoscopic Surgery.

Anzai, Yuki (Yokohama National University), Sagara, Yuto (Yokohama National University), Kato, Ryu (Yokohama National University), Mukai, Masaya (Tokai University)

11:15-11:30 WeAT4.4

Effects of Flexible Surgery Robot on Endoscopic Procedure: Preliminary Bench-Top User Test.

Kim, Joonhwan (Korea Advanced Institute of Science and Technology(KAIST)), Hwang, Minho (Korea Advanced Institute of Science and Technology (KAIST)), Lee, Dong-Ho (Korea Advanced Institute of Science and Technology), Kim, Hansoul (Korea Advanced Institute of Science and Technology), Ahn, Jeongdo (Korea Advanced Institute of Science and Technology), You, Jae Min (Korea Advanced Institute of Science and Technology), Baek, DongHoon (KAIST), Kwon, Dong-Soo (KAIST)

11:30-11:45 WeAT4.5

Towards Securing the Sclera against Patient Involuntary Head Movement in Robotic Retinal Surgery.

Ebrahimi, Ali (Johns Hopkins University), Urias, Muller (Wilmer Eye Institute), He, Changyan (Beihang University), Patel, Niravkumar (Johns Hopkins University), Taylor, Russell H. (The Johns Hopkins University), Gehlbach, Peter (Johns Hopkins Medical Institute), Iordachita, Ioan Iulian (Johns Hopkins University)

11:45-12:00 WeAT4.6

Detecting Deception in HRI Using Minimally-Invasive and Noninvasive Techniques.

Iacob, David-Octavian (ENSTA-ParisTech), Tapus, Adriana (ENSTA-ParisTech)

WeAT5 Room T5

Robotics for Rehabilitation (Special Session)

Chair: Vashista, Vineet — Indian Institute of Technology Gandhinagar

Co-Chair: Fiorini, Laura — The BioRobotics Institute, Scuola Superiore Sant'Anna

10:30-10:45 WeAT5.1

Preliminary Evaluation of a Closed-Loop Social Robot for Reading Comprehension Testing (I).

Migovich, Miroslava (University of Tennessee), McCarthy, Jillian (University of Tennessee Health Science Center), Wade, Eric (University of Tennessee)

10:45-11:00 WeAT5.2

Evaluation of Physical Therapy through Analysis of Depth Images (I).

Kramer, Ivanna (University of Koblenz-Landau), Memmesheimer, Raphael (University of Koblenz-Landau), Schmidt, Niko (University of Koblenz-Landau), Paulus, Dietrich (Universtät Koblenz-Landau)

11:00-11:15 WeAT5.3

Optimal Feature Selection for EMG-Based Finger Force Estimation Using LightGBM Model (I).

Ye, Yuhang (South China University of Technology), Liu, Chao (LIRMM (UMR5506), CNRS, France), Zemiti, Nabil (LIRMM, Université Montpellier II - CNRS UMR 5506), Yang, Chenguang (University of the West of England)

11:15-11:30 WeAT5.4

Learning Robot Policies Using a High-Level Abstraction Persona-Behaviour Simulator (I).

Andriella, Antonio (IRI, CSIC-UPC), Torras, Carme (Csic - Upc), Alenyà, Guillem (CSIC-UPC)

11:30-11:45 WeAT5.5

Estimating the Effect of Robotic Intervention on Elbow Joint Motion (I).

Ghonasgi, Keya (The University of Texas at Austin), De Oliveira, Ana Christine (The University of Texas at Austin), Shafer, Anna (University of Texas at Austin), Rose, Chad (University of Texas at Austin), Deshpande, Ashish (University of Texas)

11:45-12:00 WeAT5.6

Development and Applicability of a Cable-Driven Wearable Adaptive Rehabilitation Suit (WeARS) (I).

Iyer, S. Srikesh (IIT Gandhinagar), V Joseph, Joel (Indian Institute of Technology Gandhinagar), Nakka, S S Sanjeevi (Indian Institute of Technology Gandhinagar), Singh, Yogesh (Indian Institute of Technology Gandhinagar), Vashista, Vineet (Indian Institute of Technology Gandhinagar)

WeBT1 Room T8

Human Robot Collaboration and Cooperation (Regular Session)

Chair: Lambrecht, Jens — Technische Universität Berlin

Co-Chair: Fazli, Pooyan — San Francisco State University

13:00-13:15 WeBT1.1

Can a Humanoid Robot Be Part of the Organizational Workforce? a User Study Leveraging Sentiment Analysis.

Mishra, Nidhi (Institute for Media Innovation, Nanyang Technological

University), Ramanathan, Manoj (Institute for Media Innovation, Nanyang Technological University), Satapathy, Ranjan (Institute for Media Innovation, Nanyang Technological University), Cambria, Erik (Nanyang Technological University), Thalmann, Nadia Magnenat (Nanyang Technological University)

13:15-13:30 WeBT1.2

A Multi Modal People Tracker for Real Time Human Robot Interaction.

Wengefeld, Tim (Ilmenau University of Technology), Mueller, Steffen (Ilmenau University of Technology), Lewandowski, Benjamin (Ilmenau University of Technology), Gross, Horst-Michael (Ilmenau University of Technology)

13:30-13:45 WeBT1.3

Human Prediction for the Natural Instruction of Handovers in Human Robot Collaboration.

Lambrecht, Jens (Technische Universität Berlin), Nimpsch, Sebastian (GESTALT Robotics GmbH)

13:45-14:00 WeBT1.4

Evaluation of an Industrial Robotic Assistant in an Ecological Environment.

Busch, Baptiste (EPFL), Cotugno, Giuseppe (King's College London), Khoramshahi, Mahdi (EPFL), Skaltsas, Grigorios (University of Hertfordshire), Turchi, Dario (Ocado), Urbano, Leonardo (EPFL), Waechter, Mirko (Karlsruhe Institute of Technology (KIT)), Zhou, You (Karlsruhe Institute of Technology (KIT)), Asfour, Tamim (Karlsruhe Institute of Technology (KIT)), Deacon, Graham (OCADO - Robotics Research), Russell, Duncan (Ocado Technology), Billard, Aude (EPFL)

14:00-14:15 WeBT1.5

Human Trust after Robot Mistakes: Study of the Effects of Different Forms of Robot Communication.

Ye, Sean (Georgia Institute of Technology), Neville, Glen (Georgia Institute of Technology), Schrum, Mariah (Georgia Institute of Technology), Gombolay, Matthew (Georgia Institute of Technology), Chernova, Sonia (Georgia Institute of Technology), Howard, Ayanna (Georgia Institute of Technology)

14:15-14:30 WeBT1.6

Path Planning through Tight Spaces for Payload Transportation Using Multiple Mobile Manipulators.

Tallamraju, Rahul (International Institute of Information Technology, Hyderabad), Sripada, Venkatesh (Oregon State University, Corvallis, USA), Shah, Suril Vijaykumar (Indian Institute of Technology Jodhpur)

WeBT2 Room T2

Linguistic Communication and Dialogue (Regular Session)

Chair: Trovato, Gabriele — Waseda University

Co-Chair: Kirstein, Franziska — Blue Ocean Robotics

13:00-13:15 WeBT2.1

Autonomous Generation of Robust and Focused Explanations for Robot Policies.

Struckmeier, Oliver (Aalto University), Racca, Mattia (Aalto University), Kyrki, Ville (Aalto University)

13:15-13:30 WeBT2.2

A Robot's Expressive Language Affects Human Strategy and Perceptions in a Competitive Game.

Roth, Aaron M. (Carnegie Mellon University), Reig, Samantha (Carnegie Mellon University), Bhatt, Umang (Carnegie Mellon University), Shulgach, Jonathan (Carnegie Mellon University), Amin, Tamara (Independent), Doryab, Afsaneh (Carnegie Mellon University), Fang, Fei (Carnegie Mellon University), Veloso, Manuela (Carnegie Mellon University)

13:30-13:45 WeBT2.3

Walk the Talk! Exploring (Mis)Alignment of Words and Deeds by Robotic Teammates in a Public Goods Game.

Correia, Filipa (INESC-ID and Instituto Superior Técnico, Technical University Of), Chandra, Shruti (INESC-ID and Instituto Superior Técnico, TechnicalUniversity Of), Mascarenhas, Samuel (INESC-ID / Instituto Superior Técnico, University of Lisbon), Charles-Nicolas, Julien (Técnico Lisboa), Gally, Justin Philippe Roger Luc (INSA Lyon), Lopes, Diana (Instituto Superior Técnico), Santos, Fernando P. (Princeton University), Santos, Francisco C. (IST, Universidade De Lisboa, Portugal), Melo, Francisco S. (Instituto Superior Tecnico), Paiva, Ana (INESC-ID and Instituto Superior Técnico, TechnicalUniversity Of)

13:45-14:00 WeBT2.4

Your Instruction May Be Crisp, but Not Clear to Me!.

Pramanick, Pradip (TCS Research & Innovation), Sarkar, Chayan (TCS Research & Innovation), Bhattacharya, Indrajit (TCS Research & Innovation)

14:00-14:15 WeBT2.5

Building Language-Agnostic Grounded Language Learning Systems.

Kery, Caroline (University of Maryland, Baltimore County), Pillai, Nisha (UMBC), Matuszek, Cynthia (University of Maryland, Baltimore County), Ferraro, Francis (University of Maryland Baltimore County)

14:15-14:30 WeBT2.6

Let Me Show You Your New Home: Studying the Effect of Proxemic-Awareness of Robots on Users' First Impressions.

Petrak, Björn (Augsburg University), Weitz, Katharina (Augsburg University), Aslan, Ilhan (Augsburg University), Andre, Elisabeth (Augsburg University)

WeBT3 Room T3

Robot Companions (Regular Session)

Chair: Indurkhya, Bipin — Jagiellonian University

Co-Chair: Michael, John — Central European University

13:00-13:15 WeBT3.1

An Adaptive Robot Teacher Boosts a Human Partner's Learning Performance in Joint Action.

Vignolo, Alessia (Istituto Italiano Di Tecnologia), Powell, Henry (University of Glasgow), McEllin, Luke (Central European University), Rea, Francesco (Istituto Italiano Di Tecnologia), Sciutti, Alessandra (Italian Institute of Technology), Michael, John (Central European University)

13:15-13:30 WeBT3.2

On the Role of Trust in Child-Robot Interaction.

Zguda, Paulina (Jagiellonian University), Kolota, Anna (Jagiellonian University), Jarosz, Mateusz (AGH University of Science and Technology), Sondej, Filip (AGH University of Science and Technology), Izui, Takamune (Tokyo University of Agriculture and Technology), Dziok, Maria (AGH University of Science and Technology), Belowska, Anna (AGH University of Science and Technology), Jędras, Wojciech (AGH University of Science), Venture, Gentiane (Tokyo University of Agriculture and Technology), Sniezynski, Bartlomiej (AGH University of Science and Technology), Indurkhya, Bipin (Jagiellonian University)

13:30-13:45 WeBT3.3

An Exploratory Study on Proxemics Preferences of Humans in Accordance with Attributes of Service Robots.

Samarakoon, Bhagya (University of Moratuwa), Muthugala Arachchige, Viraj Jagathpriya Muthugala (Singapore University of Technology and Design), Jayasekara, A.G.B.P. (University of Moratuwa), Elara, Mohan Rajesh (Singapore University of Technology and Design)

13:45-14:00 WeBT3.4

Augmented Reality As a Medium for Human-Robot Collaborative Tasks.

Chacko, Sonia (NYU Tandon School of Engineering), Kapila, Vikram (NYU Tandon School of Engineering)

14:00-14:15 WeBT3.5

Designing a Socially Assistive Robot for Long-Term In-Home Use for Children with Autism Spectrum Disorders.

Pakkar, Roxanna (University of Southern California), Clabaugh, Caitlyn (University of Southern California), Lee, Rhianna (University of Southern California), Deng, Eric (University of Southern California), Mataric, Maja

(University of Southern California)

14:15-14:30 WeBT3.6

Proof of Concept of a Projection-Based Safety System for Human-Robot Collaborative Engine Assembly.

Hietanen, Antti Eerikki (Tampere University of Technology), Changizi, Alireza (Tampere University of Technology), Lanz, Minna (Department of Mechanical Engineering and Industrial Systems), Kamarainen, Joni-Kristian (Tampere University of Technology), Ganguly, Pallab (Tampere University), Pieters, Roel S. (Tampere University), Latokartano, Jyrki Matias (Tampere University of Technology)

WeBT4 Room T4

Therapy and Rehabilitation (Regular Session)

Chair: Cavallo, Filippo — Scuola Superiore Sant'Anna - Pisa

Co-Chair: Fiorini, Laura — The BioRobotics Institute, Scuola Superiore Sant'Anna

13:00-13:15 WeBT4.1

Linear Parameter-Varying Identification of the EMG–Force Relationship of the Human Arm.

Pesenti, Mattia (Department of Information and Bioengineering, Politecnico Di Mil), Alkhoury, Ziad (University of Strasbourg), Bednarczyk, Maciej (ICube Laboratory, University of Strasbourg, Strasbourg), Omran, Hassan (ICube Laboratory, University of Strasbourg, Strasbourg), Bayle, Bernard (University of Strasbourg)

13:15-13:30 WeBT4.2

Co-Designing and Field-Testing Adaptable Robots for Triggering Positive Social Interactions for Adolescents with Cerebral Palsy.

Mariager, Casper Sloth (Aalborg University), Fischer, Daniel K. B. (Aalborg University), Kristiansen, Jakob (Aalborg University), Rehm, Matthias (Aalborg University)

13:30-13:45 WeBT4.3

Socially Assistive Robot's Behaviors Using Microservices.

Ercolano, Giovanni (University of Naples Federico II), Lambiase, Paolo D. (University of Naples Federico II), Leone, Enrico (University of Naples "Federico II"), Raggioli, Luca (University of Naples Federico II), Trepiccione, Davide (University of Naples Federico II), Rossi, Silvia (Universita' Di Napoli Federico II)

13:45-14:00 WeBT4.4

A Robot-Mediated Assessment of Tinetti Balance Scale for Sarcopenia Evaluation in Frail Elderly.

Fiorini, Laura (The BioRobotics Institute, Scuola Superiore Sant'Anna), D'Onofrio, Grazia (Complex Unit of Geriatrics, Department of Medical Sciences, IRC), Rovini, Erika (Scuola Superiore Sant'Anna - Pisa), Sorrentino, Alessandra (Scuola Superiore Sant'Anna), Coviello, Luigi (The Biorobotics Institute, Scuola Superiore Sant'Anna), Limosani, Raffaele (Scuola Superiore Sant'Anna), Sancarlo, Daniele (Complex Unit of Geriatrics, Department of Medical Sciences, IRC), Cavallo, Filippo (Scuola Superiore Sant'Anna - Pisa)

14:00-14:15 WeBT4.5

Stakeholder's Acceptance and Expectations of Robot-Assisted Therapy for Children with Autism Spectrum Disorder.

Oliver, Joan (Instituto De Robótica Para La Dependencia), Oliván, Rebeca (Instituto De Robótica Para La Dependencia), Shukla, Jainendra (Indraprastha Institute of Information Technology, Delhi), Folch, Annabel (Intellectual Disability and Developmental Disorders Research Uni), Martínez-Leal, Rafael (Intellectual Disability and Developmental Disorders Research Uni), Castellà, Mireia (Intellectual Disability and Developmental Disorders Research Uni), Puig, Domenec (Rovira I Virgili University)

14:15-14:30 WeBT4.6

SHEBA: A Low-Cost Assistive Robot for Older Adults in the Developing World.

Motahar, Tamanna (North South University), Farden, Fahim (North South University), Sarkar, Dibya Prokash (North South University), Islam, Atiqul (North South University), Cabrera, Maria Eugenia (University of Washington), Cakmak, Maya (University of Washington)

WeBT5 Room T5

Medical Robotics and Intelligent Control Systems in the Indian Context (Special Session)

Chair: Maria Joseph, Felix Orlando — Indian Institute of Technology Roorkie

Co-Chair: Pradhan, PyariMohan — IIT Roorkee

13:00-13:15 WeBT5.1

Bondgraph Modelling for the Master-Slave Robotic Teleoperation System (I).

Saini, Sarvesh (Indian Institute of Technology Roorkee), Pathak, Pushparaj M. (Indian Institute of Technology Roorkee), Maria Joseph, Felix Orlando (Indian Institute of Technology Roorkee)

13:15-13:30 WeBT5.2

Simultaneously Concentrated PSWF-Based Synchrosqueezing S-Transform and Its Application to R Peak Detection in ECG Signal (I).

Singh, Neha (IIT Roorkee), Deora, Puneesh (IIT Roorkee), Pradhan, PyariMohan (IIT Roorkee)

13:30-13:45 WeBT5.3

Continuous Higher Order Sliding Mode Control of Bevel-Tip Needle for Percutaneous Interventions (I).

Maria Joseph, Felix Orlando (Indian Institute of Technology Roorkee)

13:45-14:00 WeBT5.4

Development of an Intelligent Cane for Visually Impaired Human Subjects (I).

Maria Joseph, Felix Orlando (Indian Institute of Technology Roorkee)

14:00-14:15 WeBT5.5

Intention Detection and Gait Recognition (IDGR) System for Gait Assessment: A Pilot Study (I).

Singh, Yogesh (Indian Institute of Technology Gandhinagar), Kher, Manan (Institute of Technology, Nirma University), Vashista, Vineet (Indian Institute of Technology Gandhinagar)

14:15-14:30 WeBT5.6

Transferring Dexterous Surgical Skill Knowledge between Robots for Semi-Autonomous Teleoperation (I).

Rahman, Md Masudur (Purdue University - West Lafayette), Sanchez-Tamayo, Natalia (Purdue University), Gonzalez, Glebys (Purdue University), Agarwal, Mridul (Purdue University), Vaneet, Aggarwal (Purdue University), Voyles, Richard (Purdue University), Xue, Yexiang (Purdue University), Wachs, Juan (Purdue University)

WeCT1 Room T8

Poster Slot 1 (Poster Session)

Chair: Behera, Laxmidhar — IIT Kanpur

15:00-17:00 WeCT1.1

Learning by Collaborative Teaching: An Engaging Multi-Party CoWriter Activity.

El Hamamsy, Laila (EPFL), Johal, Wafa (École Polytechnique Fédérale De Lausanne), Asselborn, Thibault (EPFL), Nasir, Jauwairia (EPFL), Dillenbourg, Pierre (EPFL)

15:00-17:00 WeCT1.2

Trajectory Optimization of Continuum Arm Robots.

Yadav, Ritesh (BITS Pilani), Rout, Bijay Kumar (Birla Institute of Technology and Science, Pilani, India)

15:00-17:00 WeCT1.3

Playful Interaction with Humanoid Robots for Social Development in Autistic Children: A Pilot Study.

Cervera, Enric (Jaume-I University), del Pobil, Angel P. (Jaume-I University), Cabezudo, Maria-Isabel (Hospital De Manises)

15:00-17:00 WeCT1.4

Formulating User Requirements for Designing Collaborative Robots.

Macovetchi, Ana Maria (Blue Ocean Robotics), Shahabeddini Parizi, Mohammad (Blue Ocean Robotics), Kirstein, Franziska (Blue Ocean Robotics)

15:00-17:00 WeCT1.5

Dark-Room Exchange: Human Supervision of Decentralized Multi-Robot Systems Using Distributed Ledgers and Network Mapping.

Krishnamoorthy, Sai-Prasanth (NYU Tandon School of Engineering), Go, Albert (Massachusetts Institute of Technology), Tiwari, Ashlee (Indian Institute of Technology, Kanpur), Kapila, Vikram (NYU Tandon School of Engineering)

15:00-17:00 WeCT1.6

Communicating with SanTO – the First Catholic Robot.

Trovato, Gabriele (Waseda University), Pariasca, Franco (Pontificia Universidad Catolica Del Peru), Ramirez, Renzo (Pontificia Universidad Católica Del Perú), Cerna, Javier (Pontificia Universidad Catolica Del Peru), Reutskiy, Vadim (Innopolis University), Rodriguez, Laureano (Pontificia Universidad Católica Del Perú), Cuellar, Francisco (Pontificia Universidad Catolica Del Peru)

15:00-17:00 WeCT1.7

Quantitative Evaluation of Clothing Assistance Using Whole-Body Robotic Simulator of the Elderly.

Joshi, Ravi Prakash (Graduate School of Life Science and Systems Engineering, Kyushu), Shibata, Tomohiro (Kyushu Institute of Technology), Ogata, Kunihiro (National Institute of Advanced Industrial Science and Technology), Matsumoto, Yoshio (AIST)

15:00-17:00 WeCT1.8

Impression Change on Nonverbal Non-Humanoid Robot by Interaction with Humanoid Robot.

Ueno, Azumi (Tokyo University of Agriculture and Technology), Mizuuchi, Ikuo (Tokyo University of Agriculture and Technology), Hayashi, Kotaro (Toyohashi University of Technology)

15:00-17:00 WeCT1.9

MobiKa - Low-Cost Mobile Robot for Human-Robot Interaction.

Graf, Florenz (Fraunhofer IPA), Odabasi, Cagatay (Fraunhofer IPA), Jacobs, Theo (Fraunhofer IPA), Graf, Birgit (Fraunhofer IPA), Födisch, Thomas (BruderhausDiakonie)

15:00-17:00 WeCT1.10

Design and Evaluation of Expressive Turn-Taking Hardware for a Telepresence Robot.

Fitter, Naomi T. (University of Southern California), Joung, Youngseok (University of Southern California), Demeter, Marton (University of Southern California), Hu, Zijian (University of Southern California), Mataric, Maja (University of Southern California)

15:00-17:00 WeCT1.11

Study of Empathy on Robot Expression Based on Emotion Estimated from Facial Expression and Biological Signals.

Sripian, Peeraya (Shibaura Institute of Technology), Kurono, Yuya (Shibaura Institute of Technology), Yoshida, Reiji (Shibaura Institute of Technology), Sugaya, Midori (Shibaura Institute of Technology)

WeCT2 Room T2

Poster Slot 2 (Poster Session)

Chair: Behera, Laxmidhar IIT Kanpur

15:00-17:00 WeCT2.1

Does a Friendly Robot Make You Feel Better?.

Ruijten, Peter (Eindhoven University of Technology), Cuijpers, Raymond (Eindhoven University of Technology)

15:00-17:00 WeCT2.2

Brand Recognition with Partial Visible Image in the Bottle Random Picking Task Based on Inception V3.

Zhu, Chen (Waseda University), Matsumaru, Takafumi (Waseda University)

15:00-17:00 WeCT2.3

A Conditional Adversarial Network for Scene Flow Estimation.

Thakur, Ravi Kumar (Indian Institute of Information Technology Sri City, Chittoor), Mukherjee, Snehasis (Indian Institute of Information Technology Sri City, Chittoor)

15:00-17:00 WeCT2.4

Evaluating Imitation of Human Eye Contact and Blinking Behavior Using an Android for Human-Like Communication.

Tetsuya, Sano (Nara Institute of Science and Technology), Yuguchi, Akishige (Nara Institute of Science and Technology), Garcia Ricardez, Gustavo Alfonso (Nara Institute of Science and Techonology (NAIST)), Takamatsu, Jun (Nara Institute of Science and Technology), Nakazawa, Atsushi (Kyoto University), Ogasawara, Tsukasa (Nara Institute of Science and Technology)

15:00-17:00 WeCT2.5

Deep-Pack: A Vision-Based 2D Online Bin Packing Algorithm with Deep Reinforcement Learning.

Kundu, Olyvia (TCS Innovation Labs), Dutta, Samrat (TCS Research and Innovation), Swagat, Kumar (Tata Consultancy Services)

15:00-17:00 WeCT2.6

Collaborative Transportation of Cable-Suspended Payload Using Two Quadcopter with Human in the Loop.

Prajapati, Pratik (Indian Institute of Technology Gandhinagar), Parekh, Sagar (Institute of Technology, Nirma University), Vashista, Vineet (Indian Institute of Technology Gandhinagar)

15:00-17:00 WeCT2.7

Effective Human-Robot Collaboration in Near Symmetry Collision Scenarios.

da Silva Filho, José Grimaldo (University Grenoble Alpes - INRIA), Olivier, Anne-Hélène (Univ Rennes, M2S Lab, Inria, MimeTIC), Crétual, Armel (M2S Lab, University Rennes 2), Pettre, Julien (Inria - Irisa), Fraichard, Thierry (INRIA)

15:00-17:00 WeCT2.8

Establishing Human-Robot Trust through Music-Driven Robotic Emotion Prosody and Gesture.

Savery, Richard (Georgia Inst. of Technology), Weinberg, Gil (Georgia Inst. of Technology), Rose, Ryan (Georgia Inst. of Technology)

15:00-17:00 WeCT2.9

Effectiveness of Robot Communication Level on Likeability, Understandability and Comfortability.

Chatterji, Nupur (Georgia Institute of Technology), Allen, Courtney (Georgia Institute of Technology), Chernova, Sonia (Georgia Institute of Technology)

15:00-17:00 WeCT2.10

Trip Recommendation Robot Agent.

Matsui, Tetsuya (Seikei University), Yamada, Seiji (National Institute of Informatics)

15:00-17:00 WeCT2.11

Tracking Control Incorporating Friction Estimation of a Cleaning Robot with a Scrubbing Brush.

Nemoto, Takuma (Singapore University of Technology and Design), Mohan, Rajesh Elara (Singapore University of Technology and Design)

WeCT3 Room T3

Poster Slot 3 (Poster Session)

Chair: Behera, Laxmidhar IIT Kanpur

15:00-17:00 WeCT3.1

Evaluation of Robots That Signals a Pedestrian Using Face Orientation Based on Moving Trajectory Analysis.

Yamashita, Shohei (Hiroshima City University), Ikeda, Tetsushi (Hiroshima City University), Shinozawa, Kazuhiko (Advanced Telecommunications Research Institute), Iwaki, Satoshi (Hiroshima City University)

15:00-17:00 WeCT3.2

Augmented Robotics for Learners: A Case Study on Optics.

Johal, Wafa (École Polytechnique Fédérale De Lausanne), Robu, Olguta (EPFL), Dame, Amaury (Oxford University), Magnenat, Stéphane (EPFL), Mondada, Francesco (EPFL)

15:00-17:00 WeCT3.3

Incremental Estimation of Users' Expertise Level.

Carreno, Pamela (University of Waterloo), Dahiya, Abhinav (University of Waterloo), Smith, Stephen L. (University of Waterloo), Kulic, Dana (University of Waterloo)

15:00-17:00 WeCT3.4

Autonomous Chess Playing Robot.

Rath, Prabin Kumar (NIT Rourkela), Mahapatro, Neelam (NIT Rourkela), Nath, Prasanmit (NIT Rourkela), Dash, Ratnakar (National Institute of Technology Rourkela)

15:00-17:00 WeCT3.5

Human-Robot Team: Effects of Communication in Analyzing Trust.

Ciocirlan, Stefan-Dan (University Politehnica of Bucharest), Agrigoroaie, Roxana (ENSTA-ParisTech), Tapus, Adriana (ENSTA-ParisTech)

15:00-17:00 WeCT3.6

Probabilistic Obstacle Avoidance and Object Following: An Overlap of Gaussians Approach.

Bhatt, Dhaivat (IIIT-Hyderabad), Garg, Akash (Delhi Technological University), Gopalakrishnan, Bharath (IIIT HYDERABAD), Krishna, Madhava (IIIT Hyderabad)

15:00-17:00 WeCT3.7

Improving Robot Tutoring Interactions through Help-Seeking Behaviors.

Jordan, Kristin (University of Southern California), Pakkar, Roxanna (University of Southern California), Mataric, Maja (University of Southern California)

15:00-17:00 WeCT3.8

Coupling of Arm Movements During Human-Robot Interaction: The Handover Case.

Ferreira Duarte, Nuno (Instituto Superior Técnico, Lisbon), Rakovic, Mirko (University of Novi Sad, Faculty of Technical Sciences), Santos-Victor, José (Instituto Superior Técnico - Lisbon)

15:00-17:00 WeCT3.9

Towards Situational Awareness from Robotic Group Motion.

Levillain, Florent (Ensadlab-Reflective Interaction), St-Onge, David (Ecole De Technologie Superieure), Beltrame, Giovanni (Ecole Polytechnique De Montreal), Zibetti, Elisabetta (CHART-LUTIN)

15:00-17:00 WeCT3.10

Analysis of Factors Influencing the Impression of Speaker Individuality in Android Robots.

Mikata, Ryusuke (ATR), Ishi, Carlos Toshinori (ATR), Minato, Takashi (ATR), Ishiguro, Hiroshi (Osaka University)

15:00-17:00 WeCT3.11

Synthesizing Unnatural Grasping in Humanoid Robots Using Fuzzy Logic.

Dayal, Udai, Arun (Birla Institute of Technology), Biswas, Shiladitya (Birla Institute of Technology), Penisetty, Sree Aslesh (Birla Institute of Technology, Mesra, Ranchi)

WeCT4 Room T4

Poster Slot 4 (Poster Session)

Chair: Behera, Laxmidhar IIT Kanpur

15:00-17:00 WeCT4.1

Classroom Group Formation Model Based on Socion Theory Considering Communication in Social Networking Services.

Naito, Kosuke (Nagoya Institute of Technology), Kato, Shohei (Nagoya Institute of Technology)

15:00-17:00 WeCT4.2

Design of an Integrated Gripper with a Suction System for Grasping in Cluttered Environment.

Kang, Long (Hanyang University), Seo, Jong-Tae (Hanyang University), Kim, Sang-Hwa (Hanyang University), Yi, Byung-Ju (Hanyang University)

15:00-17:00 WeCT4.3

A Robust Position Estimation Algorithm under Unusual Large Range Errors.

Kim, Moonki (Korean Institute of Science and Technology), Lee, Ji Yang (Korean Institute of Science and Technology), Kim, Jung-Hee (Korea Institute of Science and Technology), Hassen, Nigatu (Korean Institute of Science and Technology), Kim, Doik (KIST)

15:00-17:00 WeCT4.4

Factors Influencing the Human Preferred Interaction Distance.

Rajamohan, Vineeth (University of Nevada, Reno), Scully-Allison, Connor (University of Nevada, Reno), Dascalu, Sergiu (University of Nevada, Reno), Feil-Seifer, David (University of Nevada, Reno)

15:00-17:00 WeCT4.5

Perception of Social Intelligence in Robots Performing False-Belief Tasks.

Sturgeon, Stephanie (University of Nevada, Reno), Palmer, Andrew (University of Nevada, Reno), Blankenburg, Janelle (University of Nevada, Reno), Feil-Seifer, David (University of Nevada, Reno)

15:00-17:00 WeCT4.6

Dynamic Calibration between a Mobile Robot and SLAM Device for Navigation.

Ishikawa, Ryoichi (The University of Tokyo), Oishi, Takeshi (The University of Tokyo), Ikeuchi, Katsushi (Microsoft)

15:00-17:00 WeCT4.7

Development of a Teach Pendant for Humanoid Robotics with Cartesian and Joint-Space Control Modalities.

Otarbay, Zhenis (Nazarbayev University), Assylgali, Iliyas (Nazarbayev University), Yskak, Asset (Nazarbayev University), Folgheraiter, Michele (Nazarbayev University)

15:00-17:00 WeCT4.8

Influencing Hand-Washing Behaviour with a Social Robot: HRI Study with School Children in Rural India.

Deshmukh, Amol (University of Glasgow), K Babu, Sooraj (AMMACHI Labs, Amrita Vishwa Vidyapeetham, Amritapuri, India), Radhakrishnan, Unnikrishnan (Amrita University), Ramesh, Shanker (AMMACHI Labs, Amrita Vishwa Vidyapeetham, Amritapuri, India), A, Parameswari (Ammachilabs, Amrita Vishwa Vidyapeetham, Amritapuri, India), Rao R, Bhavani (Amrita Vishwa Vidyapeetham University)

15:00-17:00 WeCT4.9

Aggressive Bee: A New Vision for Missile Guidance Applications.

Jada, Chakravarthi (RGUKT-NUZVID), Urlana, Ashok (RGUKT-NUZVID), Baswani, Pavan (RGUKT-NUZVID), Shaik, Gouse Basha (RGUKT-NUZVID)

15:00-17:00 WeCT4.10

Chasing and Aiming of a Moving Target.

Agarwal, Suryansh (IIT Kanpur), Hanchinal, Suraj Veerabhadra (IIT Kanpur), Chaudhary, Ashok Kumar (IIT Kanpur), Behera, Laxmidhar (IIT Kanpur)

15:00-17:00 WeCT4.11

Investigations on Gesture Holding Durations at Speech Interruptions in Dialogue Robots.

Ishi, Carlos Toshinori (ATR), Mikata, Ryusuke (ATR), Minato, Takashi (ATR), Ishiguro, Hiroshi (Osaka University)

WeCT5 Room T5

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Chair: Behera, Laxmidhar	IIT Kanpur
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Human-Robot Handovers with Signal Temporal Logic Specifications.	
Kshirsagar, Alap (Cornell University), Kress-Gazit, Hadas (Cornell University), Hoffman, Guy (Cornell University)	
15:00-17:00	WeCT5.2
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Kumar, Abhinay (IIT Jodhpur), Comandur, Venkatesan (IIT-Jodhpur)	
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A Body Contact-Driven Pupil Response Pet-Robot for Enhancing Familiarity.	
Sejima, Yoshihiro (Kansai University), Kawamoto, Hiroki (Okayama Prefectural University), Sato, Yoichiro (Okayama Prefectural University), Watanabe, Tomio (Okayama Prefectural University)	
15:00-17:00	WeCT5.4
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Ota, Shunsuke (University of Toyama), Jindai, Mitsuru (University of Toyama), Yasuda, Toshiyuki (University of Toyama)	
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Extended Hybrid Code Network for Hospital Receptionist Robot.	
Hwang, Eui Jun (The University of Auckland), Ahn, Byeong-Kyu (Sungkyunkwan University), MacDonald, Bruce (University of Auckland), Ahn, Ho Seok (The University of Auckland, Auckland)	
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Investigating the Understandability and Efficiency of Directional Cues in Robot Navigation.	
Neggers, Margot (Eindhoven University of Technology), Ruijten, Peter (Eindhoven University of Technology), Cuijpers, Raymond (Eindhoven University of Technology), IJsselsteijn, Wijnand (Technische Universiteit Eindhoven)	
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Multi-Robot Formation Control Using Reinforcement Learning.	
Rawat, Abhay (International Institute of Information Technology, Hyderabad), Karlapalem, Kamalakar (IIIT-Hyderabad)	
15:00-17:00	WeCT5.8
A Pilot Study for a Robot-Mediated Listening Comprehension Intervention for Children with ASD.	
Louie, Wing-Yue Geoffrey (Oakland University), Abbas, Ibrahim (Oakland University), Korneder, Jessica (Oakland University,)	
15:00-17:00	WeCT5.9
Contextual Non-Verbal Behaviour Generation for Humanoid Robot Using Text Sentiment.	
Deshmukh, Amol (University of Glasgow), Foster, Mary Ellen (University of Glasgow), Mazel, Alexandre (Aldebaran-Robotics)	
15:00-17:00	WeCT5.10
Towards Automatic Synthesis and Instantiation of Proactive Behaviour.	
Buyukgoz, Sera (SoftBank Robotics Europe, Sorbonne University), Chetouani, Mohamed (Sorbonne University), Pandey, Amit Kumar (Hanson Robotics)	
15:00-17:00	WeCT5.11
An Agent Model Introducing Interpersonal Sentiments for Enhancement of Friendliness.	
Fukuta, Kazuaki (Nagoya Institute of Technology), Kato, Shohei (Nagoya Institute of Technology)	

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