ADDVERB
Human | Robot | Possibilities

ADVANCES IN ROBOTICS 2023

SCHEDULE

5th July, 2023

Time	08:00 AM - 09:00 AM	09:00 AM - 1:00 PM		01:00 PM - 02:00 PM	02:00 PM -03:00 PM	03:00 PM - 04:30 PM	04:30 PM- 04:45 PM	04:45 PM - 06:15 PM	07:00 PM - 12:00 AM
Venue	**Auditorium**	**Senate Hall**							**Auditorium**
Sessions	Registration	Workshop – 2				Doctoral Symposium – 1	Tea Break	Doctoral Symposium – 2	ADDVERB Hackathon
		Seminar Hall (Satish Dhawan Block)							
		Workshop – 1		Lunch		Workshop – 3			

Workshop – 1	**Design of Reconfigurable Robot using Smorphi** (Dr. Prabakaran Veerajagadheswar, SUTD, Singapore)
Workshop – 2	**Rehabilitation Robotics and Assistive Technologies** (Prof. Ashish Dutta, IIT Kanpur and Dr. Vineet Vashista, IIT Gandhinagar)
Workshop – 3	**Development of Robotic System using ROS and MATLAB** (MATHWORKS)

6th July, 2023

Time	08:00 AM - 09:00 AM	09:00 AM - 10:15 AM	10:15 AM - 11:00 AM	11:00 AM - 11:45 AM	11:45 AM - 1:00 PM	01:00 PM -02:00 PM	02:00 PM - 02:45 PM	02:45 PM - 04:15 PM	04:15 PM -04:30 PM	04:30 PM - 06:00 PM	07:00 PM - 12:00 AM
Venue	**Auditorium**										**Auditorium**
Sessions	Registration	Inauguration	Plenary Talk 1	High Tea	Technical Session – 1	Lunch	Keynote Address 1	Technical Session – 2	Tea Break	Technical Session – 3	ADDVERB Hackathon

Plenary Speaker	**Prof. G.Chirikjian,** NUS, Singapore
Keynote Speaker	**Prof. Dinesh Manocha,** UMD, USA

7th July, 2023

Time	08:00 AM - 09:00 AM	09:00 AM - 09:45 AM	09:45 AM - 11:00 AM	11:00 AM - 11:45 AM	11:45 AM - 1:00 PM	01:00 PM -02:00 PM	02:00 PM - 02:45 PM	02:45 PM - 03:45 PM	03:45 PM -04:00 PM	04:00 PM - 05:00 PM	05:00 PM - 06:00 PM	06:00 PM - 10:00 PM
Venue	**Auditorium**									**Senate Hall**		**Hotel Grand Orchard**
Sessions	Registration	Plenary Talk 2	Technical Session – 4	Tea Break Poster Session – 1	Technical Session – 5	Lunch	Keynote Address 2	Technical Session – 6	Tea Break	Panel Discussion	**TRS GBM**	Cultural Programme and Banquet Dinner

Plenary Speaker	**Prof. Pietro Valdastri,** University of Leeds UK
Keynote Speaker	**Dr. N.C. Murmu,** Director, CMERI, Durgapur

8th July, 2023

Time	08:00 AM - 09:00 AM	09:00 AM - 09:45 AM	09:45 AM - 11:15 AM	11:15 AM - 12:15 AM	12:15 AM - 01:00 PM	01:00 PM -02:00 PM	02:00 PM -. 03:15 PM	03:15 PM - 04:00 PM	04:00 PM - 04:30 PM	
Venue	**Session 7 & 9: Auditorium , Session 8(H) & 10(H): Senate Hall**									
Sessions	Registration	Plenary Talk 3	Technical Session – 7 / Technical Session – 8 (H)	Tea Break Poster Session – 2	Keynote Address 3	Lunch	Technical Session – 9 / Technical Session – 10 (H)	Tea Break Poster Session – 3	Valedictory	

Plenary Speaker	**Prof. Gursel Alici**, UOW, Australia
Keynote Speaker	**Mr. Sangeet Kumar,** Co-Founder and CEO, ADDVERB Technologies

Sessions	Paper ID	Title	Authors
ML and AI for Robotics (Technical Session – 1) (July 6, 11:45-13:00)	**18**	OnE: An EEG-based Passive BCI framework for Monitoring Cognitive States During online learning	Upasana Talukdar, Prasun Paul
	77	Realizing Linear Controllers for Quadruped Robots on Planetary Terrains	Aditya Shirwatkar, Somnath Sendhil Kumar, Bharadwaj Amrutur, Shalabh Bhatnagar, Ashitava Ghosal, Shamrao Garur, Vinod Kumar, Shishir N Y Kolathaya
	87	Maze Solving Using Deep Q-Network	Anushtup Nandy, SUBASH SESHATHRI, Abhishek Sarkar
	138	Low Level Grasp Controller for Slippage and Deformation Prevention exploiting Deep Reinforcement Learning	Hirakjyoti Basumatary, Shyamanta Hazarika
	143	Chasing the Intruder: A Reinforcement Learning Approach for Tracking Unidentified Drones	shivam kainth, Subham Sahoo, Rajtilak Pal, Dr. Shashi Shekhar Jha

Sessions	Paper ID	Title	Authors
Rehabilitation, Assistive Devices and Humanoids (Technical Session – 2) (July 6, 14:45-16:15)	**63**	Gait Generation of 6-DOF Biped Robot on Inclined Deformable Terrain Using Nonlinear Inverted Pendulum	Sunil Gora, Shakti Gupta, Ashish Dutta
	78	Electroencephalogram based Control of Prosthetic Hand using Optimizable Support Vector Machine	Maibam Pooya Chanu, Nayan M. Kakoty, Ramana Vinjamuri, Parthan Olikkal, Dingyi Pei
	84	Estimation of Ground Reaction Force for Coupled Dynamic Modeling and Control of the Lower Limb Exoskeleton	Sekar Anup Chander, Ashutosh Mukherjee, Ashish Singla
	113	Push Recovery Control of a Bipedal Robot Standing on Two Offset Planes in Double Leg Stance	Vyankatesh Ashtekar, Ashish Dutta
	139	Improved Fast Terminal Sliding Mode Control for a Pediatric Gait Exoskeleton System: Theory and Experimental Results	Jyotindra Narayan, Mohamed Abbas, Bhavik M. Patel, Sanchit Jhunjhunwala, Santosha K Dwivedy
	141	Torque amplification using a cable driven multi-pulley mechanism for ankle foot orthosis	Akshayraj B Shinde, Neel Parimal Gandhi, Siddharth Bhardwaj, Vineet Vashista

Sessions	Paper ID	Title	Authors
Mechanisms Design and Reconfigurable Robotics (Technical Session – 3) (July 6, 16:30-18:00)	**31**	A Comparative Study of Five Methods for Numerical Scanning in R^3 towards Identifying Singularity-free Spheres in the Constant-orientation Workspace of Stewart Platform Manipulators	BIBEKANANDA PATRA, Sandipan Bandyopadhyay
	80	Development of a QDD Actuator based Robotic Leg	Guru Narayanaswamy Nara, Abhishek Sarkar
	96	Metaheuristic Optimization of Smorphi Morphologies for Area Coverage task	Abdullah Dr. Hayat, Manivannan Kalimuthu, Mohan Rajesh Elara, Prabakaran Veerajagadheswar, Thejus Pathmakumar
	125	Design and Development of a Shopping Assistance Robot	Niranjan Kumar Ilampooranan, Gokula Vishnu Kirti Damodaran, Prabhu Rajagopal, Shankar Narasimhan, Anutosh Maitra, Senthilkumar Sriram
	136	Extending the workspace of parallel manipulators by crossing singularities	Sasanka Sekhar Sinha, Rajesh Kumar
	172	Modular Serial-Chain Robot with Plug-and-Play Architecture for Effective Teaching and Learning	Ashwin S Kumar, Gaurav Shankar, Manjunath Sakthivel, Rajeevlochana G Chittawadigi

Sessions	Paper ID	Title	Authors
Manipulation and Grasping (Technical Session – 4) (July 7, 09:45-11:00)	**41**	Grasp Synergies in Activities of Daily Living: A Cross-sectional Study using a Multi-sensory Data Glove	Subhash Pratap, Kazuaki ITO, Shyamanta Hazarika
	59	The design of a gripper device with screw and gear gears in a robotic fruit picking system	Artem Voloshkin, Larisa Rybak, Dmitry Malyshev, Giuseppe Carbone, Santhakumar Mohan, Elena Gaponenko
	65	Vibration suppression of flexible beams for robotic assembly using vision and wrist motion	Chetan Jalendra, Bijay Kumar Rout
	73	Mobile Robotic Manipulator Based Harvesting Inside Vertical Farms	Rohith Poola, Thejonath Mamidi, SAI MANOJ AKONDI, Sudheer AP
	179	Deep Learning-based 6D pose estimation of textureless objects for Industrial Cobots	Charan Vikram, Kishore P, Aswin R, Karthik R, Dr. R. Menaka Radhakrishnan, Thillaivasan Veeranathan

Sessions	Paper ID	Title	Authors
Virtual Reality and Haptics (Technical Session – 5) (July 7, 11:45-13:00)	**48**	Effectiveness of Haptics Gloves for Learning Motor Skills in Virtual Reality Scaffolding Simulator	Ramakrishnan K, Deepu D Sasi
	54	Towards Gaze-contingent Visualization of Real-time 3D Reconstructed Remote Scenes in Mixed Reality	Yonas T Tefera, Dario Mazzanti, Sara Anastasi, Darwin Caldwell, Paolo Fiorini, Nikhil Deshpande
	72	Design and Evaluation of Wearable Haptics Device for Weight Perception in Vocational Trade	Deepu D Sasi
	89	A Novel Virtual Reality Paradigm to Assess Gait Response to Visuospatial Perturbation during Walking	Smriti Saini, Yogesh Singh, Vineet Vashista
	114	Investigating Teleoperation of UR5 Robot Using Haptic Device for Different Network Configuration	Deepak Kumar, Aayush Sharma, John Rebeiro, Amit Dr. Bhardwaj, Suril V Shah

Sessions	Paper ID	Title	Authors
Localization and SLAM (Technical Session – 6) (July 7, 14:45-15:45)	**40**	Low-Cost Domain Adaptive Experience Based Localization for Autonomous Robots	Utkarsh Kumar, Rahul Kala, G C Nandi
	52	Multi-Objective Optimization Approaches for Coverage Path Planning of a Mobile Robot	Monex Sharma, Hari K Voruganti
	90	Robust and Scalable Indoor Robot Localization Based on Fusion of Infrastructure Camera Feeds and On-Board Sensors	Poornima J D, Raghu Krishnapuram, Mukunda Bharatheesha, Bharadwaj Amrutur, Suresh Sundaram
	118	Development of an Autonomous Ground Robot Using a Real-Time Appearance Based (RTAB) Algorithm for Enhanced Spatial Mapping	Jerin Peter, Mervin Joe Thomas, Santhakumar Mohan

Sessions	Paper ID	Title	Authors
Soft Robotics and Bio-Inspired Systems (Technical Session – 7) (July 8, 09:45-11:15)	**29**	Towards Trajectory Tracking Control of a Flexible Tube Manipulator	Nisha Bhatt, Ashish Singla, Sanjeev Soni
	49	Mathematical modeling and control of Biomimetic Autonomous Underwater Vehicle (BAUV) based on flapping propulsion	Pramod Jadhav, Vignesh D, Siddhant Panigrahi, Asokan Thondiyath, Parameswaran Krishnankutty
	53	Cellular cargo manipulation using magnetically steerable microrobots in dense environments	Max Sokolich, Sudipta Mallick, Zameer Shah, Yanda Yang, Sambeeta Das
	70	Design and analysis of compliant prosthetic finger using stage-flexure systems	Priyam Chakravarty, Vivek Mehta, Nayan M. Kakoty
	127	Take-off analysis and pre-take-off stance control of a simple hopping leg mechanism	Vignesh Ramakrishnan, Sujay D Kadam, Harish Palanthandalam-Madapusi
	148	Virtual Tendon-Based Inverse Kinematics of Tendon-Driven Flexible Continuum Manipulators	Modassir Firdaus, Madhu Vadali

Sessions	Paper ID	Title	Authors
Intelligent Sensor, Actuator and System (Technical Session – 8) (July 8, 09:45-11:15) (Hybrid Mode)	**33**	Design and Fabrication of an Active Camouflaging Robotic Device	Vishal Agrawal , Prabhat Agnihotri, Ekta Singla
	38	Localization of a Mobile Fastening Robot Based on a Single Camera and two Ultrasonic Sensors	Jiefeng Jiang, Fengfeng Xi
	51	Bond Graph Modeling and LQR Based Neuro-Fuzzy Control of Spatial Inverted Pendulum	Ishan Chawla, Vitalram Rayankula, Vikram Chopra, Ashish Singla
	149	Vision based Navigation, Guidance and Control of 6 DOF Robotic manipulator for Space Berthing application	Jayanta laha

Sessions	Paper ID	Title	Authors
Control of Robotic Systems (Technical Session – 9) (July 8, 14:00-15:15)	**20**	Variable Impedance Learning Control with Faster Re-learning and Reduced Initial Errors in Re-perturbation for Robots Operating in Divergent Force Fields	SHAIL V JADAV, Shubhankar Riswadkar, Sujay D Kadam, Harish Palanthandalam-Madapusi
	91	Minimum Gain Requirements for Trajectory Tracking of Compliant Robots in Divergent Force Fields	BARAT S, Shubhankar Riswadkar, Harish Palanthandalam-Madapusi
	94	Modelling and Robust Control of Hybrid Unmanned Aerial-Underwater Robot in the Presence of Uncertainty	Jay H Khatri, sandeep gupta, Jayant K Mohanta
	108	Implementation of Collision Free Path Following Maneuver for WMR Embedding Fuzzy Logic Driven Artificial Intelligence Framework	Suman Mondal, Ranjit Ray, Gaurav Kumar Verma, Sambhunath Nandy
	152	Joint Space Control of Aerial Manipulator in Flight using Optimized PD Controller	Garima Bhandari, Pushparaj Mani Pathak
	178	A Novel Control Strategy for Stance Stability of a Quadruped Robot against external disturbance	Alinjar Dan, Saniya Patwardhan, Subir Kumar Saha, Rama Krishna K

Sessions	Paper ID	Title	Authors
(Technical Session – 10) **(July 8, 14:00-15:15)** **(Hybrid Mode)**	**35**	Robotic Path Planning for direct slicing method to Minimize Support Structure in FFF Process	Sudhanshu Sharma, Ekta Singla, Ravi Kant
	173	A Locking Mechanism for a Multipurpose Gripping System for Unmanned Aerial Vehicles	Gursel ALICI
	121	Using robotic exoskeletons for reducing muscle activity of workers	Sajid Rafique, Shaikh Masud Rana, Niclas Björsell, Magnus Isaksson
	155	A Matrix-Based Approach to Unified Synthesis of Planar Four-Bar Mechanisms for Motion Generation	Anurag Purwar, Xueting Deng