Technical Program: 1. Day – July 29

1. Day – July 29:	Plenary sessions	Fowler Hall
09:00 – 09:50	**Opening ceremony**	
09:50 – 10:30	**Plenary talk** Chair: Shucong Li / Georgia Inst of Technology, US	
09:50	Nano robots enabled manufacturing systems **Ning Xi** / Univ of Hong Kong, S.A.R., CN	
16:30 – 17:50	**Plenary talks** Chair: Sreenath Balakrishnan / Indian Inst of Techn, IN	
16:30	Can we 3D print tiny robots? **Sarah Bergbreiter** / Carnegie Mellon Univ, US	
17:10	Manipulation at small scales: From in situ control to stochastic force fields **Quan Zhou** / Aalto Univ, FI	

1. Day – July 29:	Parallel technical sessions	11:00 – 13:00
Special session **Room 1**	**Bio-inspired sensing and agile locomotion in miniature robots** Organized by **Yufeng (Kevin) Chen** / Massachusetts Inst of Technology, US **Cameron Aubin** / Univ of Michigan, US	
11:00	Electronically integrated microscopic robots **Itai Cohen** / Cornell Univ, US	
11:20	Multimodal jumping microrobots **Ryan St. Pierre** / Univ at Buffalo, US	
11:40	Agile miniature robots for 3D navigation in challenging environments **Sean Huang** / Univ of Michigan, US	
12:00	Long endurance and acrobatic flight in sub-gram aerial robots **Yufeng (Kevin) Chen** Massachusetts Inst of Technology, US	
12:20	Skating on water: High speed locomotion using interfacial flight **E. Farrell Helbling** Cornell Univ, US	
Special session **Room 2**	**Avatar cells - Designed cell-cell communication** Organized by **Yoko Yamanishi** / Kyushu Univ, JP **Takeshi Hayakawa** / Chuo Univ, JP	
11:00	The potential of avatar cells in promoting human health **Akiko Takahashi** / Cancer Institute Hospital of JFCR, JP	
11:20	Designed cell-cell communication for avatar cell **Satoshi Yotsumoto** Tokyo Univ of Pharmacy and Life Sciences, JP	
11:40	Safety functions for avatar cells **Kan Shoji** / Nagaoka Univ of Technology, JP	
12:00	Integrated knowledge platform for data-driven engineering of cell-cell communication **Atsushi Hijikata** / Tokyo Univ of Pharmacy and Life Sciences, JP	
12:20	Chemically-triggered communication **Kosuke Dodo** / RIKEN CSRS, JP	
12:40	Designed cell-cell communication harnessing orthogonal gene switches **Sugano Shigeo** National Inst of Advanced Industrial Science and Technology, JP	

1. Day – July 29:	**Parallel technical sessions**	**11:00 – 13:00**
Special session	**Active colloidal swarms: Collective dynamics**	
Room 3	Organized by **Igor S. Aronson** & **Ayusman Sen** / Penn State Univ, US	
11:00	Aggregation and fragmentation of active superparamagnetic colloids under strong magnetic fields **Ubaldo M. Córdova-Figueroa**[a], R. Delacruz-Araujo[b], I. Kretzschmar[c], L.Y. Rivera-Rivera[a]; [a]Univ of Puerto Rico at Mayagüez, PR; [b]National Auton Univ of Tayacaja Daniel Hernández Morillo, PE; [c]City Univ of New York, US; [d]Univ of Michigan, US	
11:20	Dynamic collective assembly and motility of soft magnetic micro-rotators: Colloidal gears, caterpillars and cartwheels A. Basu, **Orlin Velev** / North Carolina State Univ, US	
11:40	Wall-climbing magnetic colloidal swarms **Igor Aronson**[a], S. Yang[b], M. Sun[b], D. Zhao[b], X. Ji[b], C. Yang[b], L. Zhang[b] [a]Penn State Univ, US; [b]Chinese Univ of Hong Kong, S.A.R., CN	
12:00	Optoelectronic control of active Janus particles: Trajectory reconfiguration, directed self-assembly and mobility reversals S. Das[a], P. García-Sánchez[b], A. Ramos[b], **Gilad Yossifon**[a] [a]Tel-Aviv Univ, IL; [b]Univ of Seville, ES	
12:20	Particle swarms with collective memory **Alexey Snezhko** / Argonne National Laboratory, US	
12:40	Acoustically energized active liquid crystals: From undulation instabilities to topological droplet transformations **Andrey Sokolov**, T. Emersic, J. Katuri, A. Snezhko / Argonne National Laborat, US	
Special session	**Biological automation and actuation for improving human health**	
Room 4	Organized by **Warren Ruder** / Univ of Pittsburgh, US **Mark DeAngelis** / Carnegie Mellon Univ, US	
11:00	Designing a high-throughput platform for assessing microbial dynamics in defined microenvironments **Tagbo Niepa** / Carnegie Mellon Univ, US	
11:20	Injectable and wearable neural interfaces for restoring motor function in people with severe paralysis **Douglas Weber** / Carnegie Mellon Univ, US	
11:40	Toward autonomous cell-based devices for monitoring and controlling human physiology; **Caleb Bashor** / Rice Univ, US	
12:00	De novo engineering of a bacterial lifestyle program **Ting Lu** / Univ of Illinois Urbana-Champaign, US	
12:20	Automating discovery of plant physiology with robotic technologies **Mark DeAngelis** / Carnegie Mellon Univ, US	

1. Day – July 29:	**Parallel technical sessions**	**11:00 – 13:00**
Regular session	**Measurement and characterization (I)**	
Room 5	Chair: **Dipak Bhowmik** / Univ of Oldenburg, DE	
11:00	Bioinspired micro-scale flexible air flow sensor for wireless portable spirometer **Tak Nok Douglas Yu**, H. Ren, Y. Shen Hong Kong Univ of Science and Technology, S.A.R., CN	
11:20	Controlled AFM stage cooling enables nanomechanical characterization of intracellularly assembled coiled-coil hydrogels **Muhammedin Deliorman**[a], P. Sukumar[a], M. Meleties[b], A.L. Wang[b], J.K. Montclare[b], M.A. Qasaimeh[a,b] [a]New York Univ Abu Dhabi, AE; [b]New York Univ, US	
11:40	Probing primary and mechanically degraded nanoplastic particles via Atomic Force Microscopy **Dipak Bhowmik**, S. Fatikow Univ of Oldenburg, DE	
12:00	Dynamic mechanical characterisation of zebrafish eggs with a micro-robotic system using quartz tuning forks with tungsten probes **Mehdi Zenine**, S. Régnier, S. Haliyo, M. Boudaoud Sorbonne Université, FR	
12:20	Investigating temperature, strain, and force generation in nanorobotic microgels via Finite Element Modeling **Chen Wang**, Z. Deng, B. Özkale Technical Univ of Munich, DE	

1. Day – July 29:	**Parallel technical sessions**	**14:00 – 16:00**
Special session **Room 1**	**Dynamic robot locomotion at the centimeter scale** Organized by **Cameron Aubin** / Univ of Michigan, US **Yufeng (Kevin) Chen** / Massachusetts Inst of Technology, US **Xiaoguang Dong** / Vanderbilt Univ, US **Siyi Xu** / Univ of Illinois Urbana-Champaign, US	
14:00	Highly agile flat swimming robots at the insect-scale **Florian Hartmann** / Max Planck Inst for Intelligent Systems, DE	
14:20	Increasing agility of insect robots through body shape morphing **Heiko Kabutz /** Univ of Colorado, Boulder, US	
14:40	Advancing miniature aerial robotics through bio-inspired design **Pakpong Chirarattananon** / Univ of Toronto, CA	
15:00	Amphibious insect-scale robots traverse granular and fluidic media **Cameron Aubin** / Univ of Michigan, U	
15:20	Biomimetic magnetic soft robots inspired to marine worms **Arianna Menciassi** / Scuola Super. Sant'Anna Pisa, IT	
Special session **Room 2**	**Avatar cells - Pioneering technologies in the design framework** Organized by **Yoko Yamanishi** / Kyushu Univ, JP **Takeshi Hayakawa** / Chuo Univ, JP	
14:00	Separation of target white blood cells from whole blood for the production of avatar cells **Naotomo Tottori** / Kyushu Univ, JP	
14:20	Avatar cells production based on electromechanical poration by electrically-induced bubbles **Yoko Yamanishi** / Kyushu Univ, JP	
14:40	Avatar cells production based on cell-self-motivated eating of nanoparticles **Niko Kimura** / Tokyo Univ of Agriculture and Technology, JP	
15:00	3D in vitro models for evaluation of Avatar cells' function **Yu Xueping** / Chuo Univ, JP	
15:20	Visualization of cell-cell communication **Yoshitaka Shirasaki** / Univ of Tokyo, JP	
15:40	Guide to selecting avatar cells: High-speed and/or high-resolution **Shinya Sakuma** / Kyushu Univ, JP	

1. Day – July 29:	**Parallel technical sessions**	**14:00 – 16:00**
Special session	**Active colloidal swarms: Functional behaviors**	
Room 3	Organized by **Ayusman Sen** & **Igor S. Aronson** / Penn State Univ, US	
14:00	Multifunctional magnetic microrobots for cellular manipulation **Sambeeta Das** / Univ of Delaware, US	
14:20	Ferroic phase transition in synthetic active colloidal swarm **Jinyao Tang** / Univ of Hong Kong, S.A.R., CN	
14:40	Enzyme-regulated non-thermal fluctuations enhance ligand diffusion and receptor-mediated endocytosis **Krishna Kanti Dey** Indian Inst of Technology Gandhinagar, IN	
15:00	Trienzyme-in-One nanoparticle making multifunctional synergistic nanorobot for tumor therapy **Zhixue Gao**, M. Luo, J. Guan / Wuhan Univ of Technology, CN	
15:20	Active doping drives the self-assembly of patchy particle gels under confinement M. Puthenpurayil, D. Friedenberg, **Stewart Mallory** Penn State Univ, US	
Regular session	**Micro/Nano robots (I)**	
Room 4	Chair: **Shogo Hamada** / Inst of Science Tokyo, JP	
14:00	Single-atom colloidal nanorobotics enhanced stem cell therapy for corneal injury repair **Xiaohui Ju**[a], E. Javorková[b], J. Michalička[c], M. Pumera[c] [a]Mendel Univ, Brno, CZ; [b]Academy of Sci, CZ; [c]CEITEC Brno Univ of Techn, CZ	
14:20	Comparison of flagellar motion of micro-gel robot and microorganisms **Kanon Hama**[a], Y. Yokoyama[b], T. Hayakawa[a] [a]Chuo Univ, JP; [b]Toyama Industrial Technology R&D Center, JP	
14:40	Smart sampling capsule with bacterially-triggered polymer coating for targeted colonic microbiome analysis **Devendra Sarnaik**, A. Krishnakumar, S. Nejati, R. Rahimi / Purdue Univ, US	
15:00	ModSoftBot: Design, modeling and control of a modular pneumatic serial soft robot J. Yi, **Wissem Haouas**, K. Rabenorosoa FEMTO-ST Inst, FR	
15:20	Quasi-phototaxis in slime-type molecular robots **Shogo Hamada**[a], S. Kumagai[b], S.-I.M. Nomura[b], S. Murata[b] [a]Inst of Sci Tokyo, JP; [b]Tohoku Univ, JP	

1. Day – July 29:	**Parallel technical sessions**	**14:00 – 16:00**
Regular session	**Design and fabrication (I)**	
Room 5	Chair: **Tianlu Wang** / Univ of Hawaii at Manoa, US	
14:00	Rapid prototyping of metallic cantilevers for high-Q-value Micro-Mechanical Oscillators (MMOS) **Liyuan Tan**[a,b], F. Fischer[a,c], T. Qiu[a,b] [a]German Cancer Research Center (DKFZ), Dresden, DE; [b]Dresden Univ of Tech, DE; [c]Heidelberg Univ, DE	
14:20	General approach for creating strong ultra-tough gels by exploring dipolar aprotic solvents **Jiazheng Bao**, D. Fan Univ of Texas at Austin, US	
14:40	Case studies of multiphysics AI-driven inverse design of multifunctional nano products **Dima Abuoliem**[a], V. Rossmanith[b], J. Cho[b] [a]Iowa State Univ, US; [b]National Science Foundation high school internship	
15:00	Humidity-responsive bilayer microstructures fabricated via theta-pipette printing **Xiao Huan**[a], D. Wang[b], X. Tang[b] [a]Univ of Illinois Urbana-Champaign, US; [b]Univ of Hong Kong, S.A.R., CN	
15:20	Miniaturization of soft pouch bending actuators D. Roy, **Tianlu Wang** Univ of Hawaii at Manoa, US	

Technical Program: 2. Day – July 30

2. Day – July 30:	**Plenary sessions**	**Fowler Hall**
09:00 – 09:10	Welcome by the mayor of West Lafayette, IN	
09:10 – 10:30	**Plenary talks** Chair: Shinya Sakuma / Kyushu Univ, JP	
09:10	New fabrication method for microneedles **Yuen K. Yong** / Univ of Newcastle, AU	
09:50	Lean robotic micromanufacturing with the Nexus **Dan Popa** / Univ of Louisville, US	
16:30 – 17:50	**Plenary talks** Chair: Hao Zeng / Tampere Univ, FI	
16:30	Microfluidic control technologies based on mechanical vibrations for various cell manipulation **Takeshi Hayakawa /** Chuo Univ, JP	
17:10	On bots and bugs: Ingestible technologies for diagnosis and therapy **Khalil Ramadi** / New York Univ Abu Dhabi, AE	

2. Day – July 30:	**Parallel technical sessions**	**11:00 – 13:00**
Special session **Room 1**	**Intelligent miniature soft machines merging sensing and actuation** Organized by **Xiaoguang Dong** / Vanderbilt Univ, US **Siyi Xu** / Univ of Illinois Urbana-Champaign, US	
11:00	Contrast-enhanced robotic capsule tracking in ultrasound using a dynamic acoustic retroreflector **Ann Ping**[a], G. Faoro[b], V. Iacovacci[b], A. Menciassi[b], E. Diller[a] [a]Univ of Toronto, CA; [b]Scuola Super. Sant'Anna Pisa, IT	
11:20	Miniature multi-modal continuum robots for the brain and spine **Yash Chitalia** / Univ of Louisville, US	
11:40	Wireless miniature soft robots for fluidic sensing and manipulation **Xiaoguang Dong** / Vanderbilt Univ, US	
12:00	Skin-like soft sensors and inflatable actuators for soft robots **Yong-Lae Park** / Seoul National Univ, KR	
12:20	Electrical actuation and control of soft robots **Siyi Xu** / Univ of Illinois Urbana-Champaign, US	
Special session **Room 2**	**Frontiers in living and compliant soft robotics** Organized by **Maria Guix Noguera** / Univ of Barcelona, ES	
11:00	Lessons learned from small scale biohybrid systems – potentials and challenges **Taher A. Saif** Univ of Illinois Urbana- Champaign, US	
11:20	Compliant mechanisms for force enhancement and modularity in biohybrid muscle-based actuators **Victoria Webster- Wood** / Carnegie Mellon Univ, US	
11:40	Tissue engineering biological actuators for soft robotics **Ritu Raman** / Massachusetts Inst of Technology, US	
12:00	Enhanced maneuverability of biohybrid robotic jellyfish **Nicole W. Xu** / Univ of Colorado Boulder, US	
12:20	Navigating the body: Locomotion of bacterial biohybrids in mucus and interstitial spaces **Bahareh Behkam** / Virginia Tech, US	
12:40	Inchworm-inspired groove-guided soft-robot locomotion **Hari Prakash Thanabalan** / Univ of Gothenburg, SE	

2. Day – July 30:	Parallel technical sessions	11:00 – 13:00
Regular session	**Measurement and characterization (II)**	
Room 3	Chair: **Wael Othman** / New York Univ Abu Dhabi, AE; New York Univ, US	
11:00	Impact of time window in time domain Scanning Microwave Microscopy **Muhammad Yasir** / Univ of Oldenburg, DE	
11:20	Differential quantitative phase imaging using Hadamard encoded illumination D. Sun, **Yongliang Yang**, L. Liu / Shenyang Inst of Automation, CAS, CN	
11:40	Real-time estimation of drag coefficients of a magnetically driven microprobe in aqueous solutions near 3D objects T.-M. Meng[a], **Chia-Hsiang Menq[b]** [a]Caterpillar, US; [b]National Tsing Hua Univ, TW	
12:00	Microfluidic non-stationary process for live cell imaging of triggered cell death **Makoto Saito[a]**, R. Kurogi[a], S. Yoshimoto[b], N. Kiyama[a], Y. Yamanishi[a], K. Dodo[b], T. Kamatani[c], Y. Shirasaki[d], S. Sugano[e], S. Yotsumoto[f], S. Sakuma[a] [a]Kyushu Univ, JP; [b]RIKEN, JP; [c]Inst of Sci Tokyo, JP; [d]Univ of Tokyo, JP; [e]National Inst of Adv Industrial Sci &Techn, JP; [f]Tokyo Univ of Pharmacy and Life Sci, JP	
12:20	Soft teeth-patterned microfluidic force sensor for laparoscopic graspers **Wael Othman[a,b]**, L. Alkasaji[a], M.A. Qasaimeh[a,b] [a]New York Univ Abu Dhabi, AE; [b]New York Univ, US	
Regular session	**Manipulation (I)**	
Room 4	Chair: **Wissem Haouas** / FEMTO-ST Inst, FR	
11:00	Hydrodynamics of microfluidic multipoles toward tunable and contactless microparticle manipulation **Ayoub Glia[a]**, A. Al Tahhan[a,b], M.A. Qasaimeh[a,b] [a]New York Univ Abu Dhabi, AE; [b]New York Univ, US	
11:20	Silver ink-based electromagnetic coils for magnetic actuation in microrobotics **Yuvaraj Kamble**, S. Murudkar, A. Thakur Indian Inst of Technology Patna, IN	
11:40	Soft human-machine interface for multi-scale-controlled nanorobotic manipulation **Bin Lian**, J. Bao, D. Fan / Univ of Texas at Austin, US	
12:00	Chip-level surface patterning solutions towards high-throughput, parallel surface modulation of 1D nanomaterials B. Ali, U. Kerimzade, **B. Erdem Alaca** / Koç Univ, TR	
12:20	Microvibration-based active adhesion control of PDMS/Silicon for robotics manipulation J. Yi, **Wissem Haouas,** K. Rabenorosoa / FEMTO-ST Inst, FR	

2. Day – July 30:	**Parallel technical sessions**	**14:00 – 16:00**
Special session **Room 1**	**Emerging materials systems for microrobotics and active matter** Organized by **Abdon Pena-Francesch** / Univ of Michigan, US	
14:00	Synthetic DNA as building blocks for highly programmable cell-interacting nanorobots **Tania Patiño Padial** / Eindhoven Univ of Technology, NL	
14:20	Emergent and controllable behaviors of microrobot collectives **Steven Ceron** / Univ of Michigan, US	
14:40	3D-printed microrobots for magnetic actuation, imaging, and hyperthermia **Jinxing Li** / Michigan State Univ, US	
15:00	There is plenty of room in the middle **Albert Liu** / Univ of Michigan, US	
15:20	Coffee ground derived microbots **Jeffrey Moran** / George Mason Univ, US	
15:40	Microrobotic behavior of hierarchical self-propelled flexicles: From single to collective dynamics **Philipp Schönhöfer** / Univ of Michigan, US	
Special session **Room 2**	**Light assisted manufacturing for micro robotics** Organized by **Hao Zeng** / Tampere Univ, FI **Wan Shou** / Univ of Arkansas, US	
14:00	Microscopic robots with microscopic computers **Marc Miskin** / Univ of Pennsylvania, US	
14:20	Self-regulated motions in slender microstructures and collectives of photoresponsive liquid crystalline elastomers **Shucong Li** / Georgia Tech, US	
14:40	4D microfabrication for sensors and actuators **Colm Delaney** / Trinity College Dublin, UK	
15:00	Multi-material additive manufacturing of functional materials and devices **Yayue Pan** / Univ of Illinois Chicago, US	
15:20	Design and 3D printing of piezoelectric metamaterials for custom micro-transducers **Saurav Sharma** / TU Delft, NL	
15:40	Light-controlled electric manipulation of nanoparticles and molecules for reconfigurable motors, swarms, and ultra-enhanced biosensing **Donglei (Emma) Fan** / Univ of Texas at Austin, US	

2. Day – July 30:	**Parallel technical sessions**	**14:00 – 16:00**
Regular session	**Micro/Nano robots (II)**	
Room 3	Chair: **Eric Diller** / Univ of Toronto, CA	
14:00	Novel multiple-shot milli-scale magnetic robot for cargo delivery T. Srymbetov, A. Menciassi, **Veronica Iacovacci** Scuola Super. Sant'Anna Pisa, IT;	
14:20	MagPrint: Direct fabrication method for embedded-magnet microrobots **Yang Yang**, A.C. Davis, B.M. Schmidt, D.J. Cappelleri / Purdue Univ, US	
14:40	Design of a lab-based graduate mobile microrobotics course **David J. Cappelleri**, I. Gong / Purdue Univ, US	
15:00	Magnetic microcapsule robots for biofilm disruption via surface-driven mechanical actuation **Hong Huy Tran**[a], M.J. Oh[a], A. Babeer[b], N. Jaruchotiratanasakul[a,c], D. Lee[a], H. Koo[a], E. Steager[a] [a]Univ of Pennsylvania, US; [b]King Abdulaziz Univ, SA; [c]Mahidol Univ, TH	
15:20	Magnetic capsule for stable collection of large GI tract microbiome samples **Taeyoung Lee**, E. Diller / Univ of Toronto, CA	
Regular session	**Design and fabrication (II)**	
Room 4	Chair: **Andrew Bickerdike** / Univ of Exeter, UK	
14:00	Sensor and controller integration for a compact, 1D-addressable thin-film piezoelectric scanning mirror **Yiwei Yang**, J. Yu, T. Wang, K. Oldham / Univ of Michigan, US	
14:20	FilMBot: Towards 100-Euro DIY-friendly high-speed robotic micromanipulator **Jiangkun Yu**, H. Bettahar, Q. Zhou / Aalto Univ, FI	
14:40	Magni-DOME: An open platform for high-resolution light-based and magnetic contactless fabrication of active microstructures **Nitirak Rayabphand**[a], N. Wijewardhane[a], N.-J. Prendergast[a], J.P.K. Armstrong[a], D. Zhang[b], S. Hauert[a] [a]Univ of Bristol, UK; [b]Imperial College London, UK	
15:00	High-fidelity 3D printing of programmable magnetic soft robots **Siwen Xie**, K. Clancy, O. Onaizah / McMaster Univ, CA	
15:20	Soft robotic colon simulator as a test platform for ingestible robots and endoscopic training **Andrew Bickerdike**, Y. Liu, B. Tian, X. Fang, L. Adams, J. Shen, Z. Wang Univ of Exeter, UK	

2. Day – July 30:	**Parallel technical sessions**	**14:00 – 16:00**
Regular session	**Automation**	
Room 5	Chair: **Artur Kopitca** / Aalto Univ, FI	
14:00	Dithering based actuation of a miniaturized active ball-and-socket joint **Sagnik Acharya**, G. R. Jayanth Indian Inst of Science, Bangalore, IN	
14:20	Microporous magnetic soft materials with programmable locomotion and on-demand liquid cargo release **Youyi Zhou**, F. Kocabas, Y. Alapan University of Wisconsin-Madison, US	
14:40	Dataset and benchmarks for Deep Learning-based optical microrobot pose and depth perception **Lan Wei**, D. Zhang Imperial College London, UK	
15:00	Automated magnetic micro-robot assembly system **Oliver Shindell**, D.J. Cappelleri Purdue Univ, US	
15:20	Application of Large Language Models in magnetically manipulated microrobots **Artur Kopitca**, U. Sattar, Q. Zhou Aalto Univ, FI	

Technical Program: 3. Day – July 31

3. Day – July 31:	Plenary sessions	Fowler Hall
09:00 – 09:10	Introduction of the agenda / MARSS2025 General Chair	
09:10 – 10:30	**Plenary talks** Chair: Sambeeta Das / Univ of Delaware, US	
09:10	Bioinspired microrobots engineered from living and synthetic materials **Maria Guix Noguera** / Univ of Barcelona, ES	
09:50	Catalytic antimicrobial robots for biofilm treatment **Edward Steager** / Univ of Pennsylvania, US	
16:30 – 17:50	**Plenary talk** Chair: Kenn Oldham / Univ of Michigan, US	
16:30	Flexible magnetic robots for the gut and brain **Eric Diller** / Univ of Toronto, CA	
17:10	Advances in precision and ultimate miniaturization of robotics with integrated actuation for industrial and environmental applications **Cédric Clevy** / FEMTO-ST Institute, FR	
17:50 – 18:30	**Closing & Awards ceremony**	
18:30 – 21:30	**Conference banquet**	

3. Day – July 31:	**Parallel technical sessions**	**11:00 – 13:00**
Special session **Room 1**	**Acoustics for targeted therapeutic approaches** Organized by **Paul Wrede** / ETH Zurich, CH	
11:00	RENAL: Robot Enhanced Navigation And Localization **Ethan Luk**, B. Wong, L. Gonzalez-Serracin, A. Trieu, A. Marie Tondat, A. Laing, V. Magdanz Univ of Waterloo, CA	
11:20	Imaging-guided bioresorbable acoustic hydrogel microrobots **Hong Han** / Caltech, US	
11:40	Nanoflowers as novel agent for *in vivo* acoustic micromanipulation **Paul Wrede** / ETH Zurich, CH	
12:00	Cyclic jetting enables microbubble-mediated drug delivery **Marco Cattaneo** / ETH Zurich, CH	
12:20	Microparticle dynamics in acoustically driven viscoelastic fluids **Khemraj Gautam Kshetri**, N. Nama Univ of Nebraska-Lincoln, US	
Special session **Room 2**	**Advances in magnetic and soft robotics for targeted medical interventions** Organized by **Onaizah Onaizah** / McMaster Univ, CA	
11:00	Soft and continuum medical robots across actuation modes **James Chandler** / Univ of Leeds, UK	
11:20	Magnetic carrier robots for targeted cargo delivery **Veronica Iacovacci** / Scuola Superiore Sant'Anna Pisa, IT	
11:40	Techniques on magnetization patterning for flexible magnetic robots towards complex motion **Amanda De Oliveira Barros** / Univ of Texas at El Paso, US	
12:00	Progress in microrobotic control and interventions for vitreous hemorrhage recovery **Elizabeth Fox /** Applied Research Associates, Inc. (ARA), US	
12:20	Hyperelastic hydrogel microrobot **Jinxing Li** / Michigan State Univ, US	
12:40	Magnetically actuated tools for medical applications **Onaizah Onaizah** / McMaster Univ, CA	

3. Day – July 31:	**Parallel technical sessions**	**11:00 – 13:00**
Regular session	**Measurement and characterization (III)**	
Room 3	Chair: **Anwarul Hasan** /Qatar Univ, QA; King Fahd Univ of Petr & Min, SA	
11:00	Electromagnetic manipulation of single particles for studying cell adhesion dynamics and viscoelastic properties **Houari Bettahar**, Q. Zhou / Aalto Univ, FI	
11:20	Passive electrical network for reducing current requirement while driving piezo-actuators with periodic waveforms **Abhishek Panchal**, A.K Mohanty, G.R. Jayanth / Indian Inst of Sci, Bangalore, IN	
11:40	Adhesion characterisation of nanowires via Kendall peeling under the optical microscope; **James Mead**[a], S. Wang[b], L. Ma[a], H. Huang[c], S. Fatikow[a] [a]Univ of Oldenburg, DE; [b]Central South University, CN; [c]Univ of Queensland, AU	
12:00	Scalable, non-destructive, and non-contact probing of nanostructure electrical properties via electro-rotation in water Y. Huang[a], K. Xu[b], Z. Liang[a], W. Zhu[b], **Donglei Emma Fan**[a] [a]Univ of Texas at Austin, US; [b]Univ of Illinois Urbana-Champaign, US	
12:20	Microneedle array with sustained delivery of oxygen and nitric oxide for expedited diabetic wound healing A. Ullah[a], F.A. A Alsaffar[b], **Anwarul Hasan**[a,b] [a]Qatar Univ, QA; [b]King Fahd Univ of Petroleum & Minerals, SA	
Regular session	**Positioning and control**	
Room 4	Chair: **Sinwook Park** / Tel Aviv Univ, IL	
11:00	Capture of cancer cells within an open microfluidic system of microfluidic probe and decoupled interdigitated electrodes **Waqas Waheed**[a], P. Sukumar[a], D.S. Ali[a], M.A. Qasaimeh[a,b] [a]New York Univ Abu Dhabi, AE; [b]New York Univ, US	
11:20	Three-dimensional motion control of magnetically actuated droplet robot swarm X. Fan, W. Ge, **Qinkai Chen** / Soochow Univ, CN	
11:40	Electromagnetic objective lens scanner: Design, modeling and characterization **Yuen Yong**, B. Routley, A. Fleming / Univ of Newcastle, AU	
12:00	Understanding the wall accumulation of 3D suspended active colloids under external electric field **Sandeep Ramteke**[a], J. Dehmel[b], J.E. Schiffbauer[b], A. Boymelgreen[a] [a]Florida International Univ, US; [b]Colorado Mesa Univ, US	
12:20	Versatile 2.5D motion control with magnetically and electrically powered Janus microrobots; I. Rachbuch, **Sinwook Park**, G. Yossifon / Tel Aviv Univ, IL	

3. Day – July 31:	Parallel technical sessions	14:00 – 16:00
Special session	**Mechanical manipulation of cells and unicellular organisms**	
Room 1	Organized by **Sreenath Balakrishnan** / Indian Inst of Technology Goa, IN	
14:00	Wavy structure control of cell mechanobiology S.-A. Huang, Z.-H. Lin, **Pen-hsiu Grace Chao** / National Taiwan Univ, TW	
14:20	Towards shearing of diatoms: Design and testing of a compliant mechanism R. Vishwakarma, **Sreenath Balakrishnan** / Indian Inst of Technology Goa, IN	
14:40	Cell-actuated micromachined compliant grippers **Vishwanath R**, G. K. Ananthasuresh / Indian Inst of Sci, Bangalore, IN	
15:00	Dielectrophoresis-based cell stretching device for micromechanical phenotyping **Safieh Almahmoud[b]**, W. Waheed[a], P. Sukumar[a], M.A. Qasaimeh[a,b] [a]New York Univ Abu Dhabi, AE; [b]New York Univ, US	
15:20	Microfluidic pathways with viscosity gradients for sperm separation based on intrinsic motility **Kunal Patil**, Shweta Hegde, Nishchal H.L., Kishor Bharadwaj K.S., Shilpa R., Nargis S., Ethan C., Ramnath Babu T.J., Santosh Bhargav D.B. SpOvum Technologies, IN	
Regular session	**Manipulation (II)**	
Room 2	Chair: **Ashis Banerjee** / Univ of Washington, US	
14:00	Paper-based microfluidic assay for gingipain detection using fluorescent quantum dots **Pavithra Sukumar[a]**, M. Elbeh[a,b], Z. Bak[a], M. Abdelhameed[a], K.B. Ramadi[a,b], M.A. Qasaimeh[a,b] [a]New York Univ Abu Dhabi, AE; [b]New York Univ, US	
14:20	Independent actuation of multiple microrobots via copper foil-based electromagnet grid **Yuvaraj Kamble**, S. Murudkar, A. Thakur / Indian Inst of Technology Patna, IN	
14:40	Curriculum based reinforcement learning for 3D control of magnetic microrobot swarms; **Myungjin Park[a,b]**, M. Sitti[a,c], J. Yoon[b] [a]Max Planck Inst for Intell Systems, Stuttgart, DE; [b]Gwangju Inst of Sci & Techn, KR; [c]Koç Univ, Istanbul, TR	
15:00	FEM exploration of a poly-articulated silica microstructure with embedded electrothermal actuation for nanomanipulation tasks **Adesuwa Ebuehi**, C. Ndiritu, F. Romero Leiro, J.-Y. Rauch, C. Clévy / FEMTO-ST, FR	
15:20	Scalable phase mask generation for holographic optical tweezers using a U-Net model; T. Zhang, **Ashis Banerjee** / Univ of Washington, US	

3. Day – July 31:	**Parallel technical sessions**	**14:00 – 16:00**
Regular session	**Micro/Nano robots (III)**	
Room 3	Chair: **Mahmut Yorulmaz** / Univ of Stuttgart, DE	
14:00	Mobile microrobot grippers with force feedback for safe biomanipulation **Aaron Davis**, I. Gong, D.J. Cappelleri / Purdue Univ, US	
14:20	Multi-layer 3D-printed sacrificial molding for miniature low-pressure monolithic soft pneumatic actuators; M. Khalid, **James Chandler** / Univ of Leeds, UK	
14:40	Cathode-modulated planar vacuum electron tube by employing polysilicon as cathode; **Ziyi Lai**[a], M. Wang[a], W. Ying[b], H. Xu[a], Q. Ye[a], S. Zhu[a], Z. Fang[a], J. Liu[b], Y. Wang[a] / [a]Shaoxing Univ, CN; [b]Shanghai Jiao Tong Univ, CN	
15:00	Neuro-sliding mode formation control for small-scale robotic platforms **Haci Mehmet Guzey** / Sivas Univ of Sci and Techn, TR	
15:20	Locomotion behavior of magnetic microrollers in confined tubular geometries containing shear-thinning fluids; **Mahmut Yorulmaz**[a], U. Bozuyuk[b], M. Park[c], B. Arslan[d], H. Ozturk[e], A. Aghakhani[a], M. Sitti[f] [a]Univ of Stuttgart, DE; [b]Max Planck Inst for Intell Systems, DE; [c]ETH Zurich, CH; [d]Bilkent Univ, TR; [e]Amazon, UK; [f]Koç Univ, TR	
Regular session	**Design and fabrication (III)**	
Room 4	Chair: **Abdenbi Mohand Ousaid** / FEMTO-ST Inst, FR	
14:00	Multi-material 2-photon-printing of a rigid and a compliant material using high-precision in situ exchange; P. Yemulwar, J. Zscheile, M.-H. Wong, T. Saxena, **Michael Karst**, R. Kirchner / HETEROMERGE GmbH, DE	
14:20	Magnetically actuated capsule mechanism for drug delivery, sampling and cargo transport in the gastrointestinal tract S. Gupta, **Veerash Palanichamy**, O. Onaizah / McMaster Univ, CA	
14:40	3-DoF magnetically actuated robotic manipulator for precision soft tissue resection; M. Roshanfar[a], C. He[b], L. Huang[c], Z. Li[d], L. Cheng[b], D.J. Podolsky[a], T. Looi[a], **Eric Diller**[d] / [a]Hospital for Sick Children, CA; [b]Univ of Newcastle, AU; [c]Changsha Univ of Sci and Techn, CN; [d]Univ of Toronto, CA	
15:00	Polymer-reinforced on-chip thin-film PZT unimorph arrays for millimeter-scale actuation; S. Lei[a], A. Valenzuela Garzon[b], S. Zachary[c], J. Yu[a], **Kenn Oldham**[a] [a]Univ of Michigan, US; [b]Univ of Monterrey, MX; [c]Univ of the District of Columbia, US	
15:20	Impact of volume constraint and weighting factors of the electric field on topology optimization of electrodes: application to dielectrophoresis (DEP)-based devices **Abdenbi Mohand Ousaid**, A. Abdelraheem, A. Homayouni-Amlashi, A. Bolopion FEMTO-ST Inst, FR	