Technical Programme

Day 1 (July 02, 2015)

8:30 – 9:30:   Registration

9:30 - 10:30: Inauguration Ceremony

10:30 – 11:30: Keynote Lecture 1 by _Prof Steven LaValle_ , UIUC

"Robotics Meets Virtual Reality"

11:30 – 12:00   TEA

HALL A

12:00 – 13:20   Technical Session 1A (4 papers)

- Kinematics, dynamics, control, and simulation of robots and autonomous intelligent systems

1. **12:00 - 12:20 : Robot Manipulation through Inverse Kinematics (ID:79)**
   - Abdullah Hayat* (IIT Delhi), Ratan Sadanand (Indian Institute of Technology Delhi), Subir Kumar Saha (IIT Delhi)
2. **12:20 - 12:40 : A Robust Task Space Position Tracking Control of an Underwater Vehicle Manipulator System (ID:5)**
   - Santhakumar Mohan* (Indian Institute of Technology), Jinwhan Kim (KAIST, ROK), Yogesh Singh (IIT Indore)
3. **12:40 - 13:00 :   Inverse Kinematics of Redundant Serial Manipulators using Interval Method in handling uncertainties (ID:3)**
   - **V**IRENDRA KUMAR* (CSIR-CMERI), Soumen Sen (CSIR-CMERI), Sankar Shome (CSIR-CMERI), Shibendu Roy (NIT, Durgapur)
4. **13:00 - 13:20 : Spatial Remote Center Analysis of Parallel Robots (ID:11)**
   - Dwarakanath T A* (BARC), Gaurav Bhutani (BARC), Anubhav . (IIT Kharagpur), Aditya Agrawal (IIT Kharagpur)

HALL B

12:00 – 13:20   Technical Session 1B (4 papers)

- Vision and other non – contact sensory systems (4 papers)

1. **12:00 - 12:20 : Real-time Flow-rate Control System for Cell Analysis (ID:89)**
   - Tadayoshi Aoyama* (), Zoysa Amalka (), Qingyi Gu (), Takeshi Takaki (), Idaku Ishii ()
2. **12:20 - 12:40 : Online Vision-Based Measurement of Stacks of Nuclear Fuel Pellets in a Tray (ID:75)**
   - Sanjeev Sharma* (Bhabha Atomic Research Centre), Abhishek Jaju (Bhabha Atomic Research Centre), Namita Singh (Bhabha Atomic Research Centre), Prabir Pal (BARC)
3. **12:40 - 13:00 : Automated Monocular Vision based System for picking textureless objects (ID:114)**
   - Tanya Raghuvanshi* (IIT Delhi), Shraddha Chaudhary (IIT Delhi), Varnica Jain (), Santanu Chaudhury (IIT Delhi), Sumeet Agarwal (IIT Delhi)
4. **13:00 - 13:20 : A Full-pixel Optical Flow System Using a GPU-based High-frame-rate Vision (ID:91)**
   - Qingyi Gu* (), Naoki Nakamura (), Tadayoshi Aoyama (), Takeshi Takaki (), Idaku Ishii ()

13:30 – 14:30   LUNCH

HALL A

14:30 – 15:50   Technical Session 2A (4 papers)

- Kinematics, dynamics, control, and simulation of robots and autonomous intelligent systems

1. **14:30 - 14:50 : Robust Trajectory Tracking Controller for 5 Degree of Freedom Robotic Manipulator (ID:38)**
- ANJANA K* (NIT CALICUT), Sudheer A P (NIT Calicut), Mija S J (NIT Calicut)
2. **14:50 - 15:10 : Reconfiguration of Joint Locked Hyper-Redundant Space Manipulator (ID:122)**
- Vijay Dalla* (Indian Institute of Technology), Pathak Pushparaj (IIT Roorkee)
3. **15:10 - 15:30 : Adaptive Backstepping Sliding Mode Controller with PID Sliding Surface for a Co-ordinated Links (COOL) Robotic Arm (ID:7)**
- Nabanita Adhikary* (IIT Guwahati), Chitralekha Mahanta (IIT Guwahati)
4. **15:30 -15:50 : Comparative Kinematic and Dynamic Performance Analysis of Planar Parallel Manipulators (ID:8)**
- Yogesh Singh* (IIT Indore), Santhakumar Mohan (Indian Institute of Technology)

HALL B

14:30 – 15:50   Technical Session 2B (4 papers)

- Multi agent systems, Swarms (3 papers)
1. **14:30 – 14:50   Tartarus: A Multi-Agent Platform for Integrating Cyber-Physical Systems and Robots (ID:32)**
- Tushar Semwal (IIT Guwahati), Manoj Bode (), Vivek Singh (), Shashi Shekhar Jha (), Shivashankar Nair* ()
2. **14:50 – 15:10   Design and Implementation of an efficient path planning algorithm for networked robots (ID:66)**
- Miriam Cathy Joy* (SSN College of Engineering), Jaya Parvathy R (SSN College of engineering)
3. **15:10 – 15:30   Ant Colony Based Path Planning for Swarm Robots (ID:110)**
- Aakrati Agrawal* (NIT Calicut), Sudheer A P (NIT Calicut), Ashok S (NIT Calicut)
- Other Subjects (1 papers)
1. **15:30 – 15:50   Improving Grasp Quality for 3D Objects Using Particle Swarm Optimization (PSO) and Mesh Parameterization (ID:73)**
- Venkataramani Rakesh* (IGCAR), Utkarsh Sharma (IIT Madras), B. Purna Chandra Rao (), S Venugopal (), Asokan Thondiyath (I I T Madras)

15:50 – 16:30   TEA

HALL A

16:30 – 17:50   Technical Session 3A (4 papers)

- Kinematics, dynamics, control, and simulation of robots and autonomous intelligent systems.

1. **16:30 - 16:50 : Tele-operation of Unmanned Tracked Vehicles: Modeling and Simulation of Planar Motion Dynamics (ID:18)**
- Senthilkumar Dhakshnamoorthy* (I I T Madras), Babu Natesan (DRDO), Asokan Thondiyath (I I T Madras), Shankar ram S (I I T Madras)

2. **16:50 - 17:10 : Caudal fin load characteristics with different motion patterns toward developing biorobotic fish-fin actuator (ID:30)**
- Srinivasa Reddy* (CSIR-CMERI), Soumen Sen (CSIR-CMERI), Diwakar Kumar (csir-cmeri), Sankar Shome (CSIR-CMERI)
3. **17:10 - 17:30 : ANALYTICAL APPROACH FOR OBSTACLE NEGOTIATING CAPABILITY OF STAIR CLIMBER (ID:70)**
- Sandeep Jain* (CMERI, Durgapur), Suman Char (CMERI, Durgapur), SOMAJYOTI MAJUMDER (CSIR - CMERI, DURGAPUR), Dinesh Munda (CMERI), Dip Roy (CMERI, Durgapur)
4. **17:30 - 17:50 : Design, Kinematic and Dynamic studies of a Reconfigurable parallel manipulator (ID:74)**
- Venkata Varalakshmi Kothuru* (NIT Rourkela), Dr.J. SRINIVAS (NIT ROURKELA)

HALL B

16:30 – 17:50   Technical Session 3B (4 papers)

- Robotics related hardware and software (5 papers)

1. **16:30 - 16:50 : FPGA based Hierarchical Architecture for Parallelizing RRT (ID:19)**
- Gurshaant Malik* (IIIT, Hyderabad), Krishna Gupta (IIIT-HYD), Madhava Krishna (IIIT Hyderabad), Shubhajit Roy Chowdhury (IIIT Hyderabad)
2. **16:50 - 17:10 : Rotary-Wing Aerial Robot Configuration for In-Flight Switching for Hovering (ID:48)**
- Sarbari Datta* (CSIR-CMERI), Umesh Patkar (CMERI, Durgapur), SOMAJYOTI MAJUMDER (CSIR - CMERI, DURGAPUR), Manik Majumder (NIT, Durgapur)
3. **17:10 - 17:30 : Real-time Heuristic Search Based Minimum Energy Path Planning of Wheeled Mobile Robot (ID:67)**
- PARAMITA MANDAL* (JADAVPUR UNIVERSITY), VINAY SINGH (JADAVPUR UNIVERSITY), rANJIT BARAI (JADAVPUR UNIVERSITY)
4. **17:30 -17:50 : Architecture of Autonomous Vehicle Simulation and Control Framework (ID:119)**
- Neerja Gupta (The Hitech Robotic Systemz), Ritukar Vijay* (The Hitech Robotic Systemz), Pradyot KVN (The Hitech Robotic Systemz), Jayant Bansal (The Hitech Robotic Systemz), Anuj Kapuria (The Hitech Robotic Systemz)

19:30 to 21:30 CONFERENCE DINNER AND CULTURAL SHOW

(BOGMALLO RESORT)

DAY 2 (July 03, 2015)

- **9:00 – 10:00 : Keynote Lecture 2 by Prof Jae-Bok Song, Korea University**

"Recent Trends in Collaborative Robot Arms"

HALL A

10:00 – 11:20   Technical Session 4A (4 papers)

- Kinematics, dynamics, control, and simulation of robots and autonomous intelligent systems

1. **10:00 – 10:20   Optimal Whole Body Motion Planning of Humanoid with Articulated Spine for Object Manipulation in Double Support Phase (ID:46)**
- Hari Teja* (IIIT Hyderabad), Francis James (IIIT Hyderabad), Suril Shah (IIIT Hyderabad)
2. **10:20 – 10:40   Real-Time Dynamic Singularity Avoidance while Visual Servoing of a Dual-Arm Space Robot (ID:47)**

- Mithun P* (IIIT Hyderabad), Anurag V. V (IIIT Hyderabad), Mohak Bhardwaj (IIT Varanasi), Suril Shah (IIIT Hyderabad)
3. **10:40 – 11:00   Redundancy Resolution and Control of a Nonholonomic Mobile Manipulator using Kinect mounted on UAV (ID:34)**
- Arjun Bhasin* (IIT-Kanpur), Ashish Dutta (IIT Kanpur)
4. **11:00 – 11:20   A New Dynamic Control Model with stability analysis for Omnidirectional Mobile Robot (ID:59)**
- Gossaye Mekonnen* (IIT Roorkee), Sanjeev Kumar (IIT Roorkee), Pushparaj Pathak (IIT Roorkee)

HALL B

10:00 – 11:20   Technical Session 4B (4 papers)

- Medical and Assistive Robotics (1 paper)

1. **10:00 – 10:20   Jaipur Foot Gait Control through a Predictive Controller (ID:100)**
- Nayan M Kakoty* (Tezpur University), Jitu Sarma (), Aakash Sinha (), Dewarkshi Konwar (), Shashi Bhushan Kumar (), Sushil Kumar Mishra (), Shyamanta Hazarika (Tezpur University)
2. **10:20 – 10:40   Modeling, Simulation and Control Architecture for Lower Limb Active Exoskeleton (ID:40)**
- OISHEE MAZUMDER* (IIEST,SHIBPUR), Ananda sankar Kundu (IIEST,shibpur), Ritwik Chattaraj (IIEST,shibpur), Subhasis Bhaumik (IIEST,shibpur)

- Tactile and other contact sensory technology (2 paper)

1. **10:40 – 11:00   Robotic Polishing of Pilger-Die (ID:31)**
- Kamal Sharma* (BARC), Varsha Shirwalkar (BARC), Amaren Das (BARC), Prabir Pal (BARC)
2. **11:00 – 11:20   Flex sensor based wearable gloves for Robotic gripper control (ID:127)**
- Kathika Roy* (R&DE(E)), Durga Prasad (DRDO), Annapurna Agrawal (DRDO), Bani Hazra (DRDO,Pune)

11:20 – 12:00   TEA

HALL – A

12:00 – 13:20   Technical Session 5A (4 papers)

- Vision and other non – contact sensory systems (4 papers)

1. **12:00 – 12:20   Trajectory Planning for Monocular SLAM based Exploration System (ID:43)**
- Sarthak Upadhyay* (IIIT), Ayush Dewan (Univerity of Freiburg), Arun Singh (Ben Gurion University), Madhava Krishna (IIIT Hyderabad)
2. **12:20 – 12:40   Pose Estimation of a tilted pellet using single view from Robot mounted camera (ID:93)**
- Shraddha Chaudhary* (IIT Delhi), Ratan Sadanand (Indian Institute of Technology Delhi), sumantra Roy (IIT Delhi), Santanu Chaudhury (IIT Delhi)
3. **12:40 – 13:00   Effort Cube: a real-time muscle effort visualization system (ID:64)**
- Yusuke Kishishita (Hiroshima University), Toshio Tsuji (Hiroshima University), Yuichi Kurita* (Hiroshima University)
4. **13:00 – 13:20   A Fast 3D Shape Scanner Using Two HFR Camera-projector Systems (ID:45)**
- Jun Chen* (Hiroshima University), Qingyi Gu (), Tadayoshi Aoyama (), Takeshi Takaki (), Idaku Ishii ()

HALL – B

12:00 – 13:20   Technical Session 5B (4 papers)

- Design of robotic systems (4 papers)

1. **12:00 – 12:20   Design and Development of an Earth Based Experimental Setup for Testing Algorithms on Space Robots (ID:65)**
- Francis James* (IIIT Hyderabad), Shubham Vyas (SRM University), Puneeth Bandikatla (BITS Pilani), Mithun P (IIIT Hyderabad), Suril Shah (IIIT Hyderabad)
2. **12:20 – 12:40   Design and Analysis of a Tree Climbing Robot (ID:29)**
- Bijo Sebastian* (CMERI, Durgapur), Dip Roy (CMERI, Durgapur), SOMAJYOTI MAJUMDER (CSIR - CMERI, DURGAPUR)
3. **12:40 – 13:00   Initial Population Generation Strategy for Evolution of Planar Hybrid Manipulators (ID:62)**
- Sameer Gupta (IIT Ropar), Ekta Singla* (IIT Ropar)
4. **13:00 – 13:20   An Improved Compliant Joint Design of a Modular Robot for Descending Big Obstacles (ID:123)**
- Phani Teja S* (IIIT Hyderabad), Sri Harsha Turlapati (IIIT Hyderabad), Avinash Siravuru (), Suril Shah (IIIT Hyderabad), Madhava Krishna (IIIT Hyderabad)

13:30 – 14:30   LUNCH

HALL – A

14:30 – 15:50   Technical Session 6A (4 papers)

- Machine learning and artificial intelligence for robotics (3 papers)

1. **14:30 – 14:50   Modeling occupancy grids using EDHMM for dynamic environments (ID:109)**
- Abhinav Dadhich* (NAIST), Nishanth Koganti (Nara Institute of Science and Technology), Tomohiro Shibata (Kyushu Institute of Technology)
2. **14:50 – 15:10   Monte Carlo-Based Pose Tracking on Maps Represented with Line Segments (ID:111)**
- Surojit Saha* (VECC), Biswajit Sarkar (VECC), Prabir Pal (BARC)
3. **15:10 – 15:30   Real-Time optical Image stabilization using High Frame Rate Video Sequence at 500 fps (ID:120)**
- Sushil Raut* (Hiroshima University)

- Bio- mimetic and Bio – inspired Robotics Systems(1 paper)
1. **14:50 – 15:10   Electromyography based control of robotic arm using entropy and zero crossing rate (ID:125)**
- Arlene John* (NIT Calicut), Aravind Vijayan (NIT Calicut), Sudheer A P (NIT Calicut)

HALL – B

14:30 – 15:50   Technical Session 6B (4 papers)

- Kinematics, dynamics, control, and simulation of robots and autonomous intelligent systems
1. **14:30 - 14:50 : Sliding Mode and Adaptive Sliding Mode Control Approaches of Two Link Flexible Manipulator (ID:106)**
- KSHETRIMAYUM LOCHAN* (NIT SILCHAR), Surajit Suklabaidya (NIT SILCHAR), Binoy Roy (NIT SILCHAR)
2. **14:50 - 15:10 : Modeling and Sliding Mode Control of Flexible Link Flexible Joint Robot Manipulator (ID:108)**

- Surajit Suklabaidya* (NIT SILCHAR), KSHETRIMAYUM LOCHAN (NIT SILCHAR), Binoy Roy (NIT SILCHAR)
3. **15:10 - 15:30 : Implementation of Gaits for Achieving Omnidirectional Walking in a Quadruped Robot (ID:51)**
- T komal Kumar (IIIT Hyderabad), Rishav Kumar (IIIT Hyderabad), Samyukta Mogili (IIIT Hyderabad), Divyanshu Goel (IIIT Hyderabad), Nahas Pareekutty (IIIT Hyderabad), Suril Shah* (IIIT Hyderabad), Madhava Krishna (IIIT Hyderabad)
4. **15:30 - 15:50 : Finite-time robust control of robot manipulator: A SDDRE based approach (ID:99)**
- Niladri Tripathy* (IIT DELHI), I Kar (IIT Delhi), Kolin Paul (IIT Delhi)

15:50 – 16:30   TEA

HALL – A

16:30 – 18:00   Special session (invited talks from R&D/industry)

19:00 onwards   Robotics Society of India : General Body Meeting

Day 3 (July 04, 2015)

- **9:00 – 10:00: Keynote Lecture 3 by Prof. Dr. Roland Siegwart, ETH Zurich**

"Robots that Roll, Run, Swim or Fly"

HALL – A

10:00 – 11:20   Technical Session 7A (4 papers)

- Medical and Assistive Robotics (3 papers)

1. **10:00 – 10:20   Static Balancing and Inertia Compensation of a Master Manipulator for Tele-operated Surgical Robot Application (ID:23)**
- Karthik C* (IIT Madras), sakthivel sivaraman (NIT surathkal), Asokan Thondiyath (I I T Madras)
2. **10:20 – 10:40   Development of virtual reality based robotic surgical trainer for Patient-specific deformable anatomy (ID:28)**
- Niveditha Kalavakonda* (Indian Institute of Technology), sourav Chandra (Indian Institute of Technology), Asokan Thondiyath (Indian Institute of Technology)
3. **10:40 – 11:00   Development of Series Elastic Actuator based Myoelectric Knee Exoskeleton for Trajectory generation and Load Augmentation (ID:39)**
- OISHEE MAZUMDER* (IIEST,SHIBPUR), Ananda sankar Kundu (IIEST,shibpur), Ritwik Chattaraj (IIEST,shibpur), Prasanna K Lenka (NIOH), Subhasis Bhaumik (IIEST,shibpur), Karan Gupta ()

- Tactile and other contact sensory technology (1 paper)

1. **11:00 – 11:20 IPMC Based Data Glove for Finger Motion Capturing (ID:90)**
- Srijan Bhattacharya* (RCC Institute of Information T), Siladitya Khan (RCC Institute of Information Technology), Tanmoy Sil (RCC Institute of Information Technology), Bikash Bepari (Haldia Institute of Technology), Subhasis Bhaumik (IIEST,shibpur)

HALL – B

10:00 – 11:20   Technical Session 7B (4 papers)

- Other Subjects (4 papers)

1. **10:00 – 10:20   ST-CTC: A Spanning Tree-based Competitive and Truly Complete Coverage Algorithm for Mobile Robots (ID:71)**
- K.R Guruprasad* (NITK, Surathkal), T.D Ranjitha (NITK, Surathkal)
2. **10:20 – 10:40   Segmentation of Point Cloud from a 3D LIDAR using Range Difference between Neighbouring Beams (ID:96)**
- SATISH KUMAR REDDY* (BHABHA ATOMIC RESEARCH CENTRE), Prabir Pal (BARC)
3. **10:40 – 11:00   TELE-OPERATION OF ROBOT HAND EXPLOITING HUMAN HAND SYNERGY (ID:55)**
- Ritwik Chattaraj* (IIEST,shibpur), Ananda sankar Kundu (IIEST,shibpur), OISHEE MAZUMDER (IIEST,SHIBPUR), Bikash Bepari (Haldia Institute of Technology), Subhasis Bhaumik (IIEST,shibpur)
4. **11:00 – 11:20   OPTIMAL VELOCITY TRAJECTORY GENERATION FOR SPRAY PAINTING ROBOT IN OFFLINE MODE (ID:12)**
- Mayur Andulkar* (VNIT, Nagpur), Shital Chiddarwar (VNIT, Nagpur), Anshul Paigwar (VNIT, Nagpur)

11:20 - 12:00   TEA

HALL – A

12:00 – 13:20   Technical Session 8A (4 papers)

- Design of robotic systems

1. **12:00 – 12:20   Design and Development of a Mobile Robot for Environment Monitoring in Underground Coal Mines (ID:15)**
- DIP RAY* (CSIR - CMERI, DURGAPUR), SOMAJYOTI MAJUMDER (CSIR - CMERI, DURGAPUR), ATANU MAITY (CSIR - CMERI, DURGAPUR), BIPLOB ROY (CSIR - CMERI, DURGAPUR), SANKAR KARMAKAR (CSIR - CMERI, DURGAPUR)
2. **12:20 – 12:40   Robotic Micro Assembly by Compliant Piezoelectric micro grippers in Multi Mobile Micro Manipulation System (ID:6)**
- Dr. Ravi Kant Jain* (CSIR-CMERI)
3. **12:40 – 13:00   Multi-stage and Robot Assisted Incremental Sheet Metal Forming: A Review of the State of Art and Comparison of Available Technologies (ID:14)**
- Swagatika Mohanty* (BITS Pilani), Srinavasa Prakash Regalla (BITS Pilani,hyderabad), Daseswara Rao Yendluri Venkata (BITS Pilani,hyderabad)
4. **13:00 - 13:20   Platform for Biomimetic Swarms (ID:112)**
- aNUPAMA K (BITS Pilani K K Birla Goa Campus), Meetha Shenoy* (BITS Pilani Goa Campus), Ch. S. Sankhar Reddy (BITS Pilani K. K Birla Goa Cam)

HALL – B

12:00 – 13:20   Technical Session 8B (4 papers)

- Robotics related hardware and software (2 papers)
1. **12:00 – 12:20   Kinematic Analysis of MTAB Robots and its integration with RoboAnalyzer Software (ID:41)**

- Udhayakumar (MTAB Engineers Pvt. Ltd), Rajeevlochana G. Chittawadigi (Amrita School of Engineering, Be*Ratan Sadanand* *(Indian Institute of Technology Delhi), S. Sairaman (MTAB Engineers Pvt. Ltd), P. H. Balaji Sah (MTAB Engineers Pvt. Ltd), G.* ngaluru), Subir Kumar Saha (IIT Delhi)
2. **12:20 – 12:40   Stereo vision guided telerobotics system for autonomous pick and place operations (ID:69)**
a. Pritam Shete* (BARC), Abhishek Jaju (Bhabha Atomic Research Centre), Surojit Bose (Bhabha Atomic Research Centre), Prabir Pal (BARC)
- Bio- mimetic and Bio – inspired Robotics Systems(2 papers)
1. **12:40 – 13:00   Parameter Optimization and Experimentation of the Undulating fin of a Knife Fish Robot (ID:17)**
○ Ajith A M* (NIT Calicut), Sourabh Moitra (NIT Calicut), Sudheer A P (NIT Calicut)
2. **13:00 – 13:20   Design, Fabrication and Analysis of a bio-inspired Tuna Fish Robot (ID:95)**
○ Ajith A M* (NIT Calicut), Sachin K S (NIT Calicut), Sudheer A P (NIT Calicut)

13:30 – 14:30   LUNCH

HALL- A

14:30 – 15:30   Technical Session 9A (3 papers)

- Man – machine interface and integration

1. **14:30 – 14:50   A Mobile Agents based Distributed Speech Recognition Engine for Controlling Multiple Robots (ID:44)**
▪ Mayank Gupta* (IIT Guwahati), Pulkit Verma (IIT Guwahati), Tuhin Bhattacharya (IIT Guwahati), Pradip Das (IIT Guwahati)
2. **14:50 – 15:10   Immersive environment for robotic tele-operation (ID:87)**
▪ NISHANT BUGALIA* (IIT DELHI), Arunasish Sen (Xerox Research Centre, India), Prem Kalra (Indian Institute of Technology, Delhi), Subodh Kumar (Indian Institute of Technology, Delhi)
3. **15:10 – 15:30   APPLICATION OF HUMAN ARM KINEMATICS FOR ROBOT PATH PROGRAMMING USING IMITATION (ID:25)**
▪ Abhishek Jha* (V.N.I.T. Nagpur), Shital Chiddarwar (VNIT, Nagpur), Mayur Andulkar (VNIT, Nagpur)

HALL- B

14:30 – 15:30   Technical Session 9B (3 papers)

- Misc.

   1. **14:30 – 14:50 Removal of Jittering in KUKA KR5 while tele-operation with Exoskeleton (ID:77)**
- Bhivraj Suthar (IIT Delhi), Sachin Kansal* (IIT Delhi), Md. Zubair (IIT Delhi), Siddhartha Jaitly (IIT Delhi), Sudipto Mukherjee (Indian Institute of Technology, Delhi)
   2. **15:30 – 15:50   Virtual Robots Module: An effective visualization tool for Robotics Toolbox (ID:42)**
   - Ratan Sadanand* (Indian Institute of Technology Delhi), Rajeevlochana G. Chittawadigi (Amrita School of Engineering, Bengaluru), Ravi Joshi (Indian Institute of Technology Delhi), Subir Kumar Saha (IIT Delhi)
   3. **15:10 – 15:30 Design Principles of the locomotion mechanism of a wall climbing robot (ID:22)**

- Abhijit Das* (CMERI, Durgapur), SOMAJYOTI MAJUMDER (CSIR - CMERI, DURGAPUR), Dip Roy (CMERI, Durgapur), Umesh Patkar (CMERI, Durgapur), Sandeep Jain (CMERI, Durgapur), Suman Char (CMERI, Durgapur)

16:00 – 17:00   Valedictory Session

Day 4 (July 05, 2015)

Doctoral Symposium 05 July 2015
(Presentation 20 minutes, followed by discussion 20 minutes)*

1. Kinematics for human like walk of a biped robot (**9:00 - 9:40**)

2. Rise time based characterization of sub-millimeter SMA helical actuator for sensor less displacement control (**9:40- 10:20**)

3. Parameters based Modular Design and Optimal Assembly Planning of Reconfigurable Serial Manipulators for Cluttered Environments (**10:20 - 11:00**)

4. Localization of Mobile Robots in Indoor Environments Using Laser Range Data (**11:00- 11:40**)

5. Space Robots: Dynamics and Control (**11:40- 12:20**)

6. Pneumatically Actuated Oscillating mechanism for the knee and thigh joints of Robotic exoskeleton for partially below hip paralyzed subjects (**12:20-13:00**)

LUNCH: **13:00-14:00**

7. An Experimental Investigation of Multi-Agent/Robotic Search Based On Centroidal Voronoi Configuration (**14:00 - 14:40**)

8. Emotion Recognition from Facial Expressions for Service Robots (**14:40-15:20**)

9. Navigation Techniques for Autonomous Mobile Service Robot (**15:20-1600**)

10. Visual Servoing of Satellite Mounted Robotic Systems for Capture of Tumbling Orbiting Object (**16:00-16:40**)

* NOTE: abstracts submitted for Doctoral Symposium will NOT be included in the conference proceedings nor be published in ACM digital library.