Technical Programme

Technical Session -1 July 4th 2013 12:00 – 13:30 Leonardo Da Vinci Auditorium

Chair: Prof. Subir Kumar Saha , IIT Delhi

Track:Kinematics, dynamics, control, and simulation of robots and autonomous intelligent systems

Paper no. Title:

5: Observer - Assisted Adaptive Tracking Control of an Underactuated Autonomous Underwater Vehicle.
Gaurav Parchani (IIT Indore) ,Akshat Kumar (IIT Indore), ShanmukhSantoshChintakula (IIT Indore), Santhakumar Mohan (IIT Indore).

23: Software for Modelling and Analysis of Rover on Terrain.
Gaurav Sharma (ISRO Satellite Centre), Srividhya G. (ISRO Satellite Centre), Sureshakumar H.N. (ISRO Satellite Centre), Nagesh G. (ISRO Satellite Centre), Sridhara C.D. (ISRO Satellite Centre).

29: Robust Reactive Mobile Robot Navigation with Modified DWA+CG.
AsimKar (BARC), ManojitBandopadhyay (BARC), D N Badodkar (BARC), Manjit Singh (BARC).

Technical Session -2 **July 4th 2013** **14:30 – 16:10** **Leonardo Da Vinci Auditorium**

Chair: Dr. P.K. Pal, BARC

Track: Kinematics, dynamics, control, and simulation of robots and autonomous intelligent systems

& Design of robotic mechanisms.

Paper no. **Title:**

39: Multi Robot Collision Avoidance with Continuous Curvature Manoeuvres.
Arun Singh (IIIT-Hyderabad), Tejas Parekh (IIIT-Hyderabad), Madhava Krishna K (IIIT Hyderabad)

40: Control Strategies for Reactionless Capture of an Orbiting Object using a Satellite Mounted Robot.
AdityaGattupalli (IIIT) Suril Shah, (IIIT Hyderababd) Madhava Krishna K (IIIT Hyderabad) ArunMisra (McGill University Canada)

43: Design of Nonlinear State Feedback Control Law for Underactuated Two-Link Planar Robot: A Block Backstepping Approach.
ShubhobrataRudra (Jadavpur University), RanjitBarai (Jadavpur University), MadhubantiMaitra (Jadavpur University)

55: Identification of Denavit-Hartenberg Parameters of an Industrial Robot.
Abdullah Hayat (IIT Delhi), rajeevlochanaChittawadigi (IIT Delhi), ArunUdai (IIT Delhi), SubirSaha (IIT Delhi)

108: Exoskeleton for tele-operation of Industrial Robot.
Sudipto Mukherjee (IIT Delhi) SACHIN KANSAL (IIT DELHI) ,Md. Zubair (IIT Delhi) ,BhivrajSuthar (IIT Delhi)

Short oral presentation and Poster - I July 4th 2013 16:30 – 18:00 Leonardo Da Vinci Auditorium

Chair: Prof. Santanu Chaudhury, IIT Delhi

Page no: Title:

93: Studies on effect of pitch and roll variations on quadrotors's thrust generated.
Umesh Patkar (CMERI Durgapur), Somajyoti Majumder (CMERI), Sabari Datta (CMERI)

95: Virtual Stretched String: An Optimal Path Planning Technique over Polygonal Obstacles.
Agniva Sengupta (BESU, Shibpur), Ranjit Ry (CSIR-CMERI), Shome S. N. (CSIR-CMERI)

96: Design and Implementation of a Smart Wheelchair.
Amit Trivedi (Indian Institute of Technology Jodhpur), Abhash Singh (Indian Institute of Technology Jodhpur), Tejaswi Digumarti (Indian Institute of Technology Jodhpur), Deepak Fulwani (Indian Institute of Technology Jodhpur), Swagat Kumar (Tata Consultancy Services)

97: Stochastic Analysis And Behavior Modelling Of Errors Associated With Global Positioning Sensor.
Vishal Singh (Drdo), Durga Idiwal (Drdo)

105: Design and Development of Robotic Fish Swarm Based Coast Monitoring System.
Pratap Solanki (IIT Kanpur), Atulya Shree (IIT Kanpur), Vikas Singh (IIT Kanpur), Dr. Laxmidhar Behera (IIT Kanpur)

109: Closed Loop Autonomous Calibration of Tele-operation Exoskeleton.
Sudipto Mukherjee (IIT Delhi), Sachin Kansal(IITDelhi), Md. Zubair (IIT Delhi), Bhivraj Suthar (IIT Delhi)

Technical Session -3 **July 5th 2013** **10:00 – 11:40** **Leonardo Da Vinci Auditorium**

Chair : Prof. Tomohiro Shibata, Nara Institute of Science and Technology

Track: Kinematics, dynamics, control, and simulation of robots and autonomous intelligent systems

Paper no. **Title:**

38: UGV-MAV Collaboration for Augmented 2D Maps.
AravindhMahendran (RRC,IIIT,Hyderabad), AyushDewan (RRC,IIIT,Hyderbad) Nikhil Soni (RRC,IIIT,Hyderabad), Madhava Krishna K (IIIT Hyderabad).

64: Trajectory Tracking of Quadrotor with Bounded Thrust using Model Predictive Control.
ManasMejari (V.J.T.I.), Ankit Gupta (V.J.T.I), Navdeep Singh (V.J.T.I.), FarukKazi (V.J.T.I.).

67: Finger Gaiting For Rotation Of Sphere By Multi Fingered Robot Hand.
Mohd Suhaib (Mech Engg Deptt, JMI New Delhi).

75: SMART-HexBot: a Simulation, Modeling, Analysis and Research Tool for Hexapod Robot in Virtual Reality and Simulink.
RanjitBarai (Jadavpur University), PankajSaha (Tata Consultancy Services), AnirbanMandal (Tata Consultancy.

102: Formation Control of Multiple Groups of Nonholonomic Wheeled Mobile Robots.
SoumicSarkar (IIT Delhi), Indra Narayan Kar (IIT Delhi).

Technical Session -4 **July 5th 2013** **12:00 – 13:30** **Leonardo Da Vinci Auditorium**

Chair : Prof. G. Obinata, Nagoya University

Track: Vision and other non-contact sensory systems & Active sensory processing and control.

Paper no. **Title:**

49: Mobile Robot Localisation with Kinect RGB-D Sensor.
Gurjap Singh (HBNI), Sanjeev Sharma (BARC), Prabir Pal (BARC).

53: Cylindrical Pellet Pose Estimation in Clutter using a Single Robot Mounted Camera.
Punit Tiwan (IIT DELHI) Riby B (IIT Delhi), Sumantra Dutta Roy (IIT Delhi), Santanu Chaudhury (IIT Delhi), Subir Saha (IIT Delhi)

17: Development of a Force Sensitive Robotic Gripper.
Amar Banerji (BARC)

70: An Intelligent Indirect-Hybrid Force/Position Controller for Smooth and Accurate Tracking of Unknown Contours.
Kamal Sharma (BARC), VarshaShirwalkar (BARC), Prabir Pal (BARC**)**

Technical Session -5 **July 5th 2013** **14:30 – 16:10** **Leonardo Da Vinci Auditorium**

Chair: Prof. Seth Hutchinson, **University of Illinois at Urbana-Champaign**

Track: Machine learning and artificial intelligence for robotics & Robotics-related computer hardware, software, and architectures

Paper no. **Title:**

13: Detection of target gases and optimal selection of SAW sensors for E-Nose applications.
Sunil TT (IIT Bombay), SubhasisChaudhuri (IIT Bombay)

72: Unmanned Vehicles Conversion Kits - a minimally invasive system for the conversion of regular vehicles into tele-operable and autonomous platforms.
RaresAmbrus (Hitech Robotic Systemz Ltd), AkashVibhute (Hitech Robotic Systemz Ltd), Geetesh Dubey (Hitech)

76: Shock Reduction for Autonomous Navigation on Rough Terrain: A Difference of Normals Approach.
Geetesh Dubey (Hitech Robotic Systemz), Pradyot V N Korupolu (Hitech Robotic Systemz Ltd), AnujKapuria (Hitech Robotic Systemz Ltd.), Ritukar Vijay (Hi-Tech Robotic Systemz Ltd)

98: Enhancing The Z-Width Of Haptic Interfaces Through Dual-Rate Sampling.
MajidKoul (IIT Delhi), M Manivannan (IIT Madras), SubirSaha (IIT Delhi)

104: Mapping a network of roads for an on-road navigating robot.
PiyooshMukhija (IIIT Hyderabad), Madhava Krishna K (IIIT Hyderabad)

Technical Session -6 **July 6th 2013** **10:00 – 11:30** **Leonardo Da Vinci Auditorium**

Chair: Prof. Ashish Dutta , IIT Kanpur

Tracks: Medical and Assistive Robotics & Tactile and other contact sensory technology

Paper no. **Title:**

14: Hand Tremor Analysis Using Rigid Body Manipulation in a Dynamic Virtual Haptic Environment.
Sajith K (IIT Bombay), VikasDarade (IIT Bombay), SubhasisChaudhuri (IIT Bombay)

18: Towards Cognitive Medical Robotics in Minimal Invasive Surgery.
Oliver Weede (KIT), Andreas Bihlmaier (KIT),Jessica Hutzl (KIT) Beat Müller-Stich (Heidelberg University Hospital)

30: An Analog Computer for a 6-axes Force-Torque Sensor.
Amar Banerji (BARC), T. Dwarakanath (BARC), GauravBhutani (BARC)

44: Friction Compensation for Sensor-Less Force Reflection in Servo Manipulators for High Radiation Areas.
Surendra Singh Saini (BARC)

Short oral presentation and Poster – II **July 6th 2013** **12:00 – 13:30** **Leonardo Da Vinci Auditorium**

Chair: Subir Kumar Saha, IIT Delhi

45: Optimisation of an Active Remote Centre of Motion Mechanism for Minimal Extracorporeal Workspace for Robotic Surgery.
Suraj Parameswaran (IITM), Karthik Chandrasekaran (IIT Madras), Sourav Chandra (IIT Madras), Asokan Thondiyath (IIT Madras)

46: Constrained Motion and Obstacle Avoidance based on Assistive Forces for Tele-operation in Hotcells.
Ushnish Sarkar (Bhabha Atomic Research Centre)

47: Homography based Monocular Dense Reconstruction for a Mobile Robot.
Laxit Gavshinde (IIIT-H), Madhava Krishna K (IIIT Hyderabad)

48: An analytical formulation for finding the proximity of two arbitrary cylinders in space.
Rangaprasad Arun Srivatsan (Indian Institute of Technology Madras), Sandipan Bandyopadhyay (IIT Madras)

57: Development of A Biomimetic Prosthetic Finger.
Tulika Bhuyan (Tezpur University), Trishna Barman (Tezpur University), Prem Vedi (Tezpur University), Nayan Kakoty (Tezpur University), Shyamanta Hazarika (Tezpur University)

111: Design of a Remotely Operated Vehicle for Confined Space Application.
Mridukant Pathak (DRDO), Purnanand S (DRDO), Anupam Bansal (DRDO)

112: Manipulator arm for handling of objects in confined spaces.
Mridukant Pathak (DRDO), Purnanand S (DRDO), Anupam Bansal (DRDO)

Technical Session -7 July 6th 2013 14:30 – 16:40 Leonardo Da Vinci Auditorium

Chair: Mr. Anuj Kapuria, Hi-Tech Robotic Systemz Ltd., India

Track: Man-machine interface and integration & Bio-mimetic and Bio-inspired Robotic Systems

Paper no. Title:

19: On Rendering Emotions on a Robotic Face.
SourabhPrajapati (IIT Guwahati), ShrinivasaNaika C.L. (IIT Guwahati), ShashiShekharJha (IIT Guwahati), Shivashankar Nair (IIT Guwahati)

20: Development of Prototype Four Piece Servo Manipulator: A Novel Remote Handling Technology for Nuclear Facilities.
Ushnish Sarkar (BARC)

69: A Speech Recognition Client-Server Model for Control of Multiple Robots.
NishantSinghal (IIT Guwahati), KunalShrivastava (IIT Guwahati), Pradip Das (IIT Guwahati), Shivashankar Nair (IIT Guwahati)

82: Autonomous Mobile Robot Navigation using Artificial Immune System.
KunalShrivastava (IIT Guwahati), ShashiShekharJha (IIT Guwahati), Shivashankar Nair (IIT Guwahati)

110: Estimation of Mechanical Impedance of a Flexible Transmission using Partial Knowledge of Elastic Characteristic and its Validation.
SanandaChatterjee (BESU), SoumenSen (CSIR-Central MechEng Res Inst), Sambhunath Nandy (CMERI)

114: Development of a Test Rig for the study of Musculoskeletal Actuation of Human finger.
SahilKalra (NITJ)