3rd International Conference on Advances in Control and Optimization of Dynamical Systems 2014

Kanpur, India
13-15 March 2014

Volume 1 of 2

Editor:

Laxmidhar Beyhera

ISBN: 978-1-63266-294-1
## Technical Program for Thursday March 13, 2014

### ThaT1

**Advances in Guidance, Navigation and Control of Aerospace Systems** (Regular Session)

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Sonawane, Ramdas  
Kumar, Anil  
Nimse, S.B.  
KAANMS Arts, Comm. and Science Coll. Satana, Dist. - Nashik  
Birla Inst. of Tech. & Science, Pilani-K K Birla Goa Ca  
Univ. of Lucknow

ThaT2.6

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Indian Inst. of Tech. Bombay  
Indian Inst. of Tech. Bombay

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Coll. of Engineering, Pune  
Coll. of Engineering, Shivajinagar, Pune INDIA  
Coll. of Engineering, Pune

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IIT Bombay  
Indian Inst. of Tech. Bombay

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IIT Bombay  
IIT Bombay

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Co-Chair: Deb, Alok Kanti  
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IIT Kharagpur

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Indian Inst. of Science

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National Inst. of Tech.
Kuruvinashetti, Kiran
National Inst. of Tech.
B, Hariprasad
National Inst. of Tech.
Peddapatyi, Sankar
National Inst. of Tech.
Nayak, P. Srinivasa Rao
National Inst. of Tech.
V, Vigneshkumar
National Inst. of Tech.

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NATIONAL Inst. OF Tech. SILCHAR, ASSAM

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Defence Inst. of Advanced Tech. Girinagar, Pune-411 02
Kolhe, Jaywant
R&DE (E)
Parlikar, Venkatesh
R&DE(E)
Talole, Sanjay
Defence Inst. of Advanced Tech. Girinagar, Pune-411 02

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Beni Suef Univ.

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Jee, Gopal
Vikram Sarabhai Space Centre
Yalagach, Akash
VSSC, ISRO
Brinda, V.
Indian Space Res. Organisation
Vr, Lalithambika
ISRO
Mv, Dhekane
ISRO

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Phd Scholar
Sengupta, Aparajita
Associate Professor

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Manickam, Chidambaram
Indian Inst. of Tech. Madras

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Indian Inst. of Space Science and Tech.
Chander, Naveen
Indian Space Res. Organization
Kurian, Thomas
Indian Inst. of Space science and Tech.

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ThaT5.3

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Vr, Lalithambika
Mv, Dhekane

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Narayanan, Vignesh
Halder, Pulak

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Pandiyan, Ramalingam

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Chikkala Venkata Sirisha, Sirisha
Sarkar, A K

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Hablani, Hari B.

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Control, Navigation and Communication of Space Vehicles (Invited Session)

Chair: Kumar, Vinod

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Pandiyan, Ramalingam

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Narayanan, Vignesh
Swarup, Akhilesh
Haldar, Pulak
NIT Kurukshetra
National Inst. of Tech. Kurukshetra
Res. Centre Imarat

16:10-16:30


Chatterjee, Saurabh
Hablani, Hari B.
Indian Inst. of Tech. Bombay
Indian Inst. of Tech. Bombay

ThbT2.6

ThbT3

Chaotic and Stochastic Systems and Control (Regular Session)

Chair: Deo, Brahma
Co-Chair: Ayyagari, Ramakalyan
Hall of Fame
IIT Kanpur
National Inst. of Tech. Tiruchirappalli

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Singh, Piyush Pratap
Singh, Jay Prakash
Roy, Binoy Krishna
NATIONAL Inst. OF Tech. SILCHAR
NATIONAL Inst. OF Tech. SILCHAR
National Inst. of Tech. Silchar

14:50-15:10

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Singh, Jay Prakash
Singh, Piyush Pratap
Roy, Binoy Krishna
NATIONAL Inst. OF Tech. SILCHAR
NATIONAL Inst. OF Tech. SILCHAR
National Inst. of Tech. Silchar

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Bansal, Kamal
Singh, Arun Kumar
Univ. of petroleum and energy studies dehradun, VNIT Nagpur
Univ. of petroleum and energy studies dehradun
vnit nagpur

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Sen, Shaunak
Indian Inst. of Tech. Delhi
Indian Inst. of Tech. Delhi

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Pandey, D. N.
IIT Roorkee
IIT Roorkee
IIT Roorkee

16:10-16:30


Monsingh, Jerome Moses
Ayyagari, Ramakalyan
National Inst. of Tech. Tiruchirappalli
National Inst. of Tech. Tiruchirappalli

ThbT4

Advances in Estimation Techniques (Regular Session)

Co-Chair: Kurode, Shailaja
Auditorium
I.I.T. Bombay

14:30-14:50


Gupta, Meenakshi
Kejriwal, Nishant
Behera, Laxmidhar
Subramanian, Venkatesh K.
IIT Kanpur
IIT Roorkee
Indian Inst. of Tech. Kanpur
IIT Kanpur

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Das, Manasi
Sadhu, Smita
Ghoshal, T.K.
Jadavpur Univ.
Jadavpur Univ. Kolkata
Jadavpur Univ.
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              |              |                                                                      | Ghosh, Ratna
              |              |                                                                      | Goswami, Bhaswati |
| 15:30-15:50  | ThbT4.4      | In-Situ Bias Estimation of Low Grade Gyroscopes for Ship Launched Flight Vehicles | Gurram, Murali Krishna
              |              |                                                                      | G, Satheesh Reddy
              |              |                                                                      | Muthukrishnan, Kannan
              |              |                                                                      | Vadloori, Vidyakrishna |
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              |              |                                                                      | Mujumdar, Amruta |
| 16:10-16:30  | ThbT4.6      | Gaussian Sum Unscented Gaussian Sum Filter - an Improvement in GS-UKF | Kottakki, Krishna Kumar
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| 14:50-15:10  | ThbT5.2      | Theoretical and Numerical Issues Concerning Temporal Stabilisability and Detectability | Van Willigenburg, L.G. |
| 15:10-15:30  | ThbT5.3      | On Observability of Irregular Descriptor Systems | Gupta, Mahendra Kumar
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| 15:50-16:10  | ThbT5.5      | Review of Five Sets of Piecewise Constant Orthogonal Functions for Function Approximation, Integration and Solution of First Order Differential Equation Using These Function Sets | Ganguly, Anindita
              |              |                                                                      | Basu, Himadri |
| 16:10-16:30  | ThbT5.6      | Subspace Identification of Unstable Transfer Function Model for a Magnetic Levitation System | Chinta, Sankar Rao
              |              |                                                                      | Manickam, Chidambaram |

**Outreach Extension**

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              |              |                                                                      | Goswami, Bhaswati |
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              |              |                                                                      | Mujumdar, Amruta |
| 16:10-16:30  | ThbT4.6      | Gaussian Sum Unscented Gaussian Sum Filter - an Improvement in GS-UKF | Kottakki, Krishna Kumar
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**Systems Theory (Regular Session)**  

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              |              |                                                                      | Mamnatharajan, Shambavi |
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| 15:10-15:30  | ThbT5.3      | On Observability of Irregular Descriptor Systems | Gupta, Mahendra Kumar
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| 15:50-16:10  | ThbT5.5      | Review of Five Sets of Piecewise Constant Orthogonal Functions for Function Approximation, Integration and Solution of First Order Differential Equation Using These Function Sets | Ganguly, Anindita
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| 16:10-16:30  | ThbT5.6      | Subspace Identification of Unstable Transfer Function Model for a Magnetic Levitation System | Chinta, Sankar Rao
              |              |                                                                      | Manickam, Chidambaram |
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**Robotics and Control Part III (Regular Session)**

**Chair:** Sukavanam, N.  
**Co-Chair:** K. Dhanalakshmi

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                      Ghose, Debasish  
                      Indian Inst. of Science, Bangalore  
                      Indian Inst. of Science  
                      Arvind, Achal  
                      Ghose, Debasish  
                      Prathyush, Purushothama Menon  
                      Indian Inst. of Science  
                      Daingade, Sangeeta  
                      Sinha, Arpita  
                      Indian Inst. of Tech. Bombay  
                      Kumar, Vinod  
                      Hablani, Hari B.  
                      Pandiyan, Ramalingam  
                      Indian Space Res. Organization, Bangalore  
                      Indian Inst. of Tech. Bombay  
                      Indian Space Res. Organisation, Bangalore  
            5. **Canopy Clustering Based Multi Robot Area Exploration (I)**, pp. 505-510.  
                      Shukla, Anupam  
                      Sharma, Sanjeev  
                      Atal Bihari Vajpayee Indian Inst. of Information Tech.  
                      ABV-IIITM, Gwalior  
                      Shukla, Anupam  
                      Sur, Chiranjib  
                      Atal Bihari Vajpayee Indian Inst. of Information Tech.  
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                      Chakraverty, S.  
                      Singh, V. P.  
                      Thapar Univ. Patiala, Punjab, India.  
                      Department of Mathematics, National Inst. of Tech. Rour  
                      Department of Computer Science, Thapar Univ. Patiala, Punj  
                      Nayak, Sukanta  
                      National Inst. of Tech. Rourkela, Odisha, India  |
                      Kucherov, Alexander  
                      Kurenkov, Vladimir  
                      Yakischik, Artem  
                      S.P.Korolev Samara State Aerospace Univ. (National Res.  
                      S.P.Korolev Samara State Aerospace Univ. (National Res.  
                      S.P. Korolev Samara State Aerospace Univ. (National Res.  
                      VIT Univ.  
                      VIT Univ.  
                      VIT Univ.  
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                      Medarametla, Praveen kumar  
                      Varshney, Mayank  
                      Choudhary, Dhanesh  
                      VIT Univ.  
                      VIT Univ.  
                      VIT Univ.  |
11:50-12:10  Frcaudi.5

Husek, Petr  Czech Tech. Univ. in Prague

12:10-12:30  Frcaudi.6

Venkata, Santhosh K  Manipal Inst. of Tech.
Roy, Binoy Krishna  National Inst. of Tech. Silchar

Frcoe  Room T5

Emerging Control Systems (Regular Session)
Co-Chair: K, Dhanalakshmi  NATIONAL Inst. OF Tech. TIRUCHIRAPPALLI

10:30-10:50  Frcoe.1

Automatic Generation Control of Single Area Thermal Power System with Fractional Order PID (PI\textsubscript{\lambda}D\textsubscript{\mu}) Controllers, pp. 552-557.
C., Ismayil  National Inst. of Tech. Calicut,India
R., Sreerama Kumar  King Abdulaziz Univ. Jeddah, Saudi Arabia
T.K., Sindhu  National Inst. of Tech. Calicut

10:50-11:10  Frcoe.2

Kamal, Shyam  Indian Inst. of Tech. Bombay, India
Bandyopadhyay, Bijnan  IIT Bombay

11:10-11:30  Frcoe.3

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Baburaj, P  INDIAN Inst. OF Tech. BOMBAY
Bandyopadhyay, Bijnan  IIT Bombay
Bartoszewicz, Andrzej  Tech. Univ. of Lodz

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Krishnan, Ramakrishnan  Indian Inst. of Tech. Kharagpur
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D, Josephine Selvarani Ruth  NIT Tiruchy
S, Sunjai Nakshatharan  National Inst. of Tech.
K, Dhanalakshmi  NATIONAL Inst. OF Tech. TIRUCHIRAPPALLI

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Garg, Abhinav  Indian Inst. of Tech. Madras
Tangirala, Arun K.  Indian Inst. of Tech. Madras

Fresh1  Room T1

Model Predictive Control (Regular Session)

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Mejar, Manas  Veermata Jeejabai Tech. Inst.
Gupta, Ankit  VJTI
Ketkar, Vishwanath  Veermata Jeejabai Tech. Inst.
Datar, Mandar  Veermata Jeejabai Tech. Inst.
Kazi, Faruk  Indian Inst. of Tech. Bombay

14:20-14:40  Fresh1.2

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George, Koshy  PES Inst. of Tech.

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Bhartiya, Sharad
Indian Inst. of Tech. Bombay
IIT Bombay

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Bhabha Atomic Res. Centre

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Kannan, Kalpana
Balasubramaniam, Meenakshipriya
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Chair: Ghose, Debasish
Indian Inst. of Science

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Hablani, Hari B.
Indian Inst. of Tech. Bombay

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Pal, A
ABV-Indian Inst. of Information Tech. and Management

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Muralidharan, Vijay
Ekbote, Anup
Mahindrakar, Arun
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Indian Inst. of Tech. Madras

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Indian Inst. of Science

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Prathyush, Purushothama Menon
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Indian Inst. of Science
Univ. of Exeter

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Agrawal, Anuj
Behera, Laxmidhar
Saxena, Anupam
Indian Inst. of Tech. Kanpur
Indian Inst. of Tech. Kanpur
Indian Inst. of Tech. Kanpur
Indian Inst. of Tech. Kanpur

Frehof
Intelligent Systems and Control: Part II (Regular Session)
Chair: Subudhi, Bidyadhar
Co-Chair: Datta, Rituparna
National Inst. of Tech. Rourkela
IIT Kanpur

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M, Vijay  
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Das, Kedar Nath  
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T, Sathiyararayanan  
National Inst. of Tech.  
M, Sydulu  
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Inst. of Tech. Nirma Univ.

**Nataraj, P.S.V.**
Indian Inst. of Tech.

**Trikande, Mukund**
VRDE DRDO

**Jagirdar, Vinit**
VRDE DRDO

**Muralidharan, Sujithkumar**
VRDE DRDO

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| Chair: Bhattacharya, Bishakh | Professor |
| Co-Chair: Datta, Rituparna | IIT Kanpur |

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| Anderson, Sean | Univ. of Sheffield |
| Aram, Parham | The Univ. of Sheffield |
| Bhattacharya, Bishakh | Professor |
| Kadirkamanathan, Visakan | Univ. of Sheffield |

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| Chakrapani Rao, Arun | Rolls-Royce Univ. Tech. Centre in Control and Monitoring |
| Liu, Jun | Univ. of Sheffield |

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| Pope, Simon Alexander | Univ. of Sheffield |
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| Kadirkamanathan, Visakan | Univ. of Sheffield |

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| Wu, Nan | Waseda Univ. 2-7 Hibikino,Wakamatu-ku ,KitakyusyuCity |
| Ogai, Harutoshi | Waseda Univ. |
| Ohshiro, Masakuni | Waseda Univ. |
| Kamata, Seiichiro | Waseda Univ. |
| Tateno, Shigeyuki | WASEDA Univ. |
| Uchida, Akira | Kitakyusyu City Univ. |
| Kai, Masahiko | Kitakyusyu Foundation for Advancement of Industry Science and Tec |
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| Panikkaveettil, Harikrishnan | IIT Kanpur |
| Roy, Koushik | IIT Kanpur |
| Ray Chaudhuri, Samit | Assistant Professor, IIT Kanpur |

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| Bhattacharya, Bishakh | Professor |

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Indian Inst. of Tech. Madras

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National Inst. of Tech. Tiruchirappalli

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Kulkami, Samidha
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Veermata Jijabai Tech. Inst.

VJTI, Univ. of Mumbai
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Inst. of Tech. Nirma Univ.

Patel, Keyurkumar
Nirma Univ.

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IIT Kanpur

Behera, Laxmidhar
Indian Inst. of Tech. Kanpur

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Prasad, Lal Bahadur
Indian Inst. of Tech. Roorkee

Gupta, Hari Om
IIT Roorkee

Tyagi, Barjeev
IIT Roorkee

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Padhi, Radhakant
Indian Inst. of Science

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DRDO

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IISC

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Andrade, Gustavo
Federal Univ. of Maranhão

Fonseca Neto, João Viana da
Federal Univ. of Maranhão

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State Univ. of Maranhão

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Shah, Hitesh
G H Patel Coll. of Engineering & Tech.

Goapl, Madan
School of Engineering, Shiv Nadar Univ.

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Mohamed, Majeed
Flight Mechanics and Control Div. CSIR-National Aerospace Lab

**Author Index**

Shah, Hitesh
G H Patel Coll. of Engineering & Tech.

Goapl, Madan
School of Engineering, Shiv Nadar Univ.