

Message from the Conference Chairs

We are greatly delighted to welcome you to the 8th IEEE International Symposium on Instrumentation and Control Technology (ISICT 2012) that is organized by the School of Electronic and Computer Science, University of Westminster with co-sponsorship with Beihang University and IEEE Instrumentation and Measurement Society.

The IEEE ISICT 2012 provides an established forum for scientists and engineers on the field of Instrumentation and Control Technology to exchange ideas and information about novel and emergent development, applications in Measurement, Sensors, Instrumentation and Control Technology areas. This conference also represents an unique opportunity for meeting colleagues and friends in exciting city of London, the first city to officially host the modern Olympic Games three times. Like the celebration of the Olympic Games encompasses many rituals and symbols, the ISICT 2012 is following the tradition of bringing together top specialists in the broad area of Measurement, Sensors, Instrumentation, Control, Communication and Networking Technology and allow participants from all over the world to celebrate and enjoy the incomparable platform for knowledge mining, idea exchanging and collaboration discussions .

The IEEE ISICT 2012 has a very exciting program in research presentation of great diversity, on topics such as Sensors and Instruments; Signal Acquisition, Analysis and Processing; Measurement Theory and Technology; Opto-electronics Technology/Instruments; Measurement Systems, Control Theory and Automation; Simulation, Modeling, Networking; Artificial Intelligence and Expert System; Space Exploration and many others. The event of IEEE ISICT 2012 is the premier international meeting in the field of Instrumentation and Control Technology, which is aimed to show the state of the art of research and enrich the educational and industry experience in these fields. The conference proceeding includes 68 research papers that were selected by the Program Committee from contributions submitted from all over the world.

We wish to express our sincere gratitude to all people who contributed their valuable time and effort to make this conference possible, all of the authors who submitted papers, reviewers, invited speakers, and the IEEE organizing committee and program committee members. We are also very grateful to the IEEE LLC who did active work and made tremendous contribution for the conference. With the considerable support of world-renowned experts and researchers from university, laboratories and industry, we believe the IEEE ISICT 2012 is a showcase of remarkable success and a celebration for great achievement in research.

We look forward to welcoming you in London on 11th -13th July of the year 2012.

Wei Huang, IEEE ISICT 2012 Conference Organizing Committee Chair
and General Co-Chair

Graham Megson, IEEE ISICT 2012 Conference General Chair
Panagiotis Chountas, IEEE ISICT 2012 Publications Chair

Conference Committees

Honorary Chair

Richard Holdaway, Professor, Rutherford Appleton Laboratory (UK)

General Chairs

Graham Megson, Professor, University of Westminster (UK)
Izzet Kale, Professor, Chairman of IEEE UK&RI I&M Chapter (UK)
Jiancheng Fang, Professor, Beihang University (China)

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Organizing Committee

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Ping Jia, Changchun Institute of Optics, Fine Mechanics and Physics (China)
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Shulin Tian, University of Electronic Science and Technology (China)
George Fraser, University of Leicester (UK)
Maiying Zhong, Beihang University (China)
Richard Stobart, University of Loughborough (UK)
Dongsheng Li, China Jiliang University (China)
Hui Zhao, Shanghai Jiaotong University (China)
Wei Huang, University of Westminster (UK)

Keynote Speakers

Wednesday, 11 July

1. Professor Izzet Kale

Topic: GNSS Systems: an integral part of modern living- past, present and the future

Abstract:

Navigation and finding ones way through the unknown lands, oceans and territories has been a necessity and inevitable quest for mankind, since day one of their existence on earth. Navigating from one point to another, finding their way home in the open seas they deployed what nature presented them in the first instance; in their most primitive forms the sun, and the magnetic compass.

The quest to be able to position accurately, and the developments in the Space, Electronic Instrumentation, Measurements and Control technologies has meant that the need for precise positioning and navigation was no longer a desire but a reality, that in its current form has widely infiltrated our daily lives.

At the heart of these positioning and navigation aids are the Global Navigation Satellite Systems (GNSS) that started life in the late fifties and early sixties as a by-product of the Soviet and US Space programmes. Since then there have been many developments and deployments in the field of GNSS, which one might think of as one of the miracle technologies of our day.

This talk will provide a brief overview of the history of GNSS, briefly looking at the journey from the start to the state of the art work by different countries and groups working and operating positioning system, their brief histories, advantages, disadvantages and vulnerabilities alongside their modern-day applications and deployments.

The talk will conclude with a brief exposition of the University of Westminster's home developed Digitally Configurable Radio (DCR) multi-constellation, multi-frequency and multi-standard GNSS system, that is a fast prototyping and evaluation platform for next generation GNSS Systems, developed as part of a UK wide research project supported by the EPSRC and UK industry.

Biography:

Professor Izzet Kale joined the staff of the University of Westminster in 1984 and he has been with them since. He is currently Professor of Applied DSP and VLSI Systems, and Director of the Applied DSP and VLSI Research Group, which he founded in the late eighties at the University of Westminster, where he has undertaken numerous next generation product oriented applied research and development projects/contracts for European, US and Japanese corporations, leading to a number of consumer electronic ICs/products. His research, teaching and industrial knowledge transfer activities include digital and analog signal processing, instrumentation and measurement, mixed-signal silicon circuit and system design, digital filter design and implementation, A/D and D/A discrete as well as continuous-time sigma-delta converters and reduced complexity low-power multi-standard GNSS receivers along with efficient Biomedical Image processing techniques. He is currently working on the efficient implementation of, low-power DSP algorithms, architectures, processors and Sigma-Delta modulator structures for use in the communications, GNSS and biomedical industries.

He has served and continues to serve on the IEEE UK&RI Section Committee for a number of years, and is currently the Chapter Chair for the CAS and I&M Chapters as well as being the UK&RI Section's Chapter Co-ordinator. He has also served on a number of IEEE International Conference/Workshop organizing committees, as well as undertaking

Associate Editor, Reviewer and Special Session Organizer duties for these IEEE events and publications.

He has co-authored and published over 300 refereed conference and Journal publications, holds 4 patents in the areas of Sigma-Delta and Efficient Communication Receiver Structures and is co-author of three books, in the areas of "Oversampled Delta-Sigma Modulators", "DSP System Design: Complexity Reduced Implementations for Practical Applications", and "CMOS Single Chip Fast Frequency Hopping Synthesizers for Wireless Multi-Gigahertz Applications.

2. Prof Sarah Spurgeon

Topic: On discontinuous observers: from basic properties to a robust fault detection and condition monitoring tool

Abstract:

Historically the sliding mode technique developed as a robust control method being characterised by a suite of feedback control laws and a decision rule. The decision rule, termed the switching function, has as its input some measure of the current system behaviour and produces as an output the particular feedback controller which should be used at that instant in time. The concept of sliding mode observers came later. These observers have unique properties, in that the ability to generate the so-called sliding motion on the error between the measured plant output and the output of the observer ensures that a sliding mode observer produces a set of state estimates that are precisely commensurate with the actual output of the plant. It is also the case that analysis of the average value of the applied observer injection signal, the so-called equivalent injection signal, contains useful information about the mismatch between the model used to define the observer and the actual plant. These unique properties, coupled with the fact that the discontinuous injection signals which were perceived as problematic for many control applications have no disadvantages for software-based observer frameworks, have generated a ground swell of interest in sliding mode observer methods in recent years. This lecture presents an overview of the sliding mode observer paradigm. The use of the equivalent injection signal in problems relating to fault detection and condition monitoring is demonstrated.

Biography:

Professor Sarah Spurgeon FREng, FIET, FInstMC, FIMA, CEng, CMath

Professor Sarah Spurgeon is the Professor of Control Engineering and Head of the School of Engineering and Digital Arts at the University of Kent. She is a Fellow of the Royal Academy of Engineering, the Institution of Engineering and Technology, the Institute of Measurement and Control and the Institute of Mathematics and its Applications.

Sarah Spurgeon's research interests are in the area of systems modelling and analysis, robust control and estimation in which areas she has published over 270 refereed research papers. She was awarded the Honeywell International Medal for 'distinguished contribution as a control and measurement technologist to developing the theory of control' in 2010 and an IEEE Millenium Medal in 2000.

She is currently an IEEE Distinguished Lecturer and Chairs the IEEE Technical Committee on Variable Structure and Sliding Mode Control. She is immediate past Chair of the UK Automatic Control Council, the national member organisation of the International Federation of Automatic Control, a member of the HEFCE REF sub-panel 15 General Engineering and an independent member of the Defence Scientific Advisory Council (DSAC) which provides independent advice to the Secretary of State for Defence on matters of concern to the Ministry of Defence in the fields of Science, Engineering, Technology and Analysis (SETA).

Thursday, 12 July 2012

1. Professor Richard Holdaway

Topic: How does the Space Programme affect our everyday life?

Abstract:

The Space programme fascinates children and adults alike. Whether it is the search for other forms of life in the universe, the recent transit of Venus across the Sun, or looking down on planet Earth from Space, there is something mystical about the heavens above us. But "Space" touches our lives every single day, from direct broadcast TV to the satellite navigation systems now becoming the standard accessory in most new cars. This lecture outlines some of the attractions, the facts and the myths of space and what we know of our place within it.

Biography:

Professor Richard Holdaway FREng

Director RAL Space

STFC Rutherford Appleton Laboratory

Prof Holdaway obtained his B.Sc & Ph.D in Aeronautics & Astrodynamics at the University of Southampton. Following a period working on the design of the Harrier VTOL aircraft at Hawker Siddeley, he joined the Appleton Lab in 1974 and RAL in 1980. He was appointed Director of Space Science & Technology at RAL in 1998. He has 40 years of experience in Space Programmes, having worked on numerous missions in Space Science and Earth Observation with NASA, ESA, China, Russia and the UK National Programme.

He is a Fellow of the Royal Academy of Engineering, A Fellow of the American Institute of Aeronautics & Astronautics, a Visiting Professor and Member of Council of the University of Southampton and also a Visiting Professor at both the University of Kent and University of Aeronautics & Astronautics in Beijing. He is a regular lecturer at public events, and is a member of numerous National and International Committees, Boards and Councils.

2. Professor Yong Yan

Topic: Advanced measurement and monitoring techniques for coal and biomass fired power plant optimization

Abstract:

Despite the growing deployment of other energy sources, coal and biomass use is increasing worldwide to meet the rising global demand for electricity, which is predicted to rise by 2.6% per annum in the next 20 years. Global fluctuations in coal price and logistic uncertainties in coal supply mean that many power stations are burning a diverse range of coals (indigenous and imported) and the type and quality of coal being fired at any moment is often unknown for various practical reasons. Although biomass can be used to generate energy in different ways, co-firing with coal at existing power stations remains a practical option available to power plant operators, and is widely adopted as one of the main technologies for reducing greenhouse gas emissions from power generation. Biomass originates from a diverse range of sources in a wide variety of forms. In general, biomass has a higher moisture content and higher volatile matter than coal, but its density and calorific value are lower than coal. The inherent differences in combustion properties between biomass and coal and the unknown changes in the type and quality of coals and fluctuations in electricity demand have posed significant challenges to the power generation industry. Measurement and monitoring techniques have an important part to play in tackling the challenges.

This presentation reviews the recent advances in the development and applications of measurement and monitoring techniques to optimize the operation of coal and biomass fired power plants. The techniques that are covered in this presentation include pulverized fuel flow metering, on-line particle sizing, flame imaging, flame stability monitoring, and on-line fuel tracking. Fundamental principles of the measurement and monitoring techniques along with the design and implementation of prototype sensors and instruments will be introduced. Results from recent practical evaluations on industrial-scale combustion test facilities and demonstration trials on full-scale power plants will be reported.

Biography:

Yong Yan is a professor of electronic instrumentation and Head of Instrumentation, Control and Embedded Systems Research Group at School of Engineering and Digital Arts, the University of Kent, Canterbury, U.K. He received the B.Eng. and M.Sc. in instrumentation and control from Tsinghua University, Beijing, China in 1985 and 1988, respectively, and the Ph.D. degree in particle flow measurement from the University of Teesside, Middlesbrough, U.K., in 1992. He started his academic career as an assistant lecturer at Tsinghua University in 1988. He worked as a lecturer with Teesside during 1993-1996, and then as a senior lecturer, reader and professor, respectively, with the University of Greenwich during 1996-2004. His research interests include sensors, instrumentation, measurement and condition monitoring for the power generation and healthcare industries. He has published in excess of 270 papers in journals and conference proceedings in addition to 12 research monographs. He was awarded the Achievement Medal by the IEE in 2003 and the Engineering Innovation Prize by the IET (IEE) in 2006, and the Rushlight Commendation Award in 2009. In recognition of his contributions to particle flow metering and flame imaging he was named an IEEE Fellow in 2011. He has been teaching electronic instrumentation and related courses at both undergraduate and postgraduate levels for more than 20 years.

3. Professor Lijun Xu

Topic: Topographic LiDAR: Recent developments and its future

Abstract:

In traditional LiDAR (Light Detection And Ranging) system, narrow-beam laser pulse is emitted onto the target and the reflected waveform is received by the sensor to calculate the round-trip time. Using a precision GPS (Global Positioning System) coupled with the on-board IMU (Inertial Measurement Unit), LiDAR system is able to make highly accurate range measurements. Through post-processing, a series of topographic LiDAR products can be produced. Since 2004, new commercial systems called 'full-waveform' LiDAR have appeared with the ability to record the complete waveform of the backscattered laser pulse. 'Full waveform' LiDAR is used for scanning and measurement in three different platforms: spaceborne, airborne and terrestrial. In this talk, the following will be discussed: (1) Precise measurement of LiDAR platform attitude and on-line compensation of attitude deviations; (2) Data processing and clustering; (3) Feature extraction and target characterization using full waveform LiDAR.

Biography:

Lijun Xu is a professor of Instrumentation and measurement and Head of Measurement and Control Department, School of Instrument Science and Opto-electronic Engineering, Beihang University, Beijing, China. He is a Senior Member of IEEE (SM'04-) and a board member of China Energy Society. He received B.Sc., M.Eng., and Ph.D. in electrical engineering and instrumentation from Tianjin University, Tianjin, China, in 1990, 1993, and 1996, respectively. From 1997 to 2001, he was an Associate Professor with the School of Electrical Engineering and Automation, Tianjin University, China. From 2002 to 2004, he was a Research Fellow with the University of Greenwich at Medway, and the University of Kent, U.K. From 2004 to 2006, he was a Higher Scientific Officer with the Institute of Cancer Research, University of London, U.K. He has 15 inventions patented and authored or coauthored more than 170 publications. Dr. Xu was the recipient of the Tianjin Natural Science Award and the Sixth Tianjin Youth Science and Technology Award. He was nominated as an Outstanding Lecturer in Higher Education and one of New Century Excellent Talents in University by the Ministry of Education, China, in 2000 and 2007, respectively.

Wednesday, July 11, 2012

- 8:30 AM - 9:15 AM** **Registration**
- 9:15 AM - 9:30 AM** **Welcome/Opening Ceremony (Location: AUD)**
Professor Graham Megson, University of Westminster (UK)
Professor Jiancheng Fang, Beihang University (China)
- 9:30 AM -10:30 AM** **Plenary (Location: AUD)**
- 9:30 AM - 10:00 AM** **Topic: GNSS Systems: an integral part of modern living- past, present and the future**
Professor Izzet Kale, Chairman of IEEE UK&RI Instrumentation and Measurements Chapter and University of Westminster, United Kingdom
- 10:00 AM - 10:30 AM** **Topic: On discontinuous observers: from basic properties to a robust fault detection and condition monitoring tool**
Professor Sarah Spurgeon, University of Kent, United Kingdom
- 10:30 AM - 11:00 AM** **Coffee Break**
- 11:00 AM - 1:00 PM** **Parallel Sessions**

Sensors and Instruments
Room: AUD
Chair: Professor Jiang Fang

- 11:00 AM** **Disturbance torque rejection for magnetically suspended flywheel based state observer**
Gang Liu (Beihang University, P.R. China)
Cong Zhang (Beihang University, P.R. China)
Jie Qin (Beihang University, P.R. China)
- 11:15 AM** **The Internal Model Control Design of Three-axis Inertially Stabilized Platform for Airborne Remote Sensing**
Shusheng Li (Beijing University of Aeronautics and Astronautics, P.R. China)
Maiying Zhong (Beijing University of Aeronautics and Astronautics, P.R. China)
Jie Qin (Beihang University, P.R. China)
- 11:30 AM** **Correction for Remaining Effects in Push-Broom Hyperspectral Radiance Data**
Cheng Jiang (Beihang University, P.R. China)
Huijie Zhao (Beihang University, P.R. China)
Guorui Jia (Beihang University, P.R. China)

11:45 AM **Design and Analysis of Micromechanical Resonant Accelerometer**
Jing Li (Beihang University, P.R. China)
Shangchun Fan (Beihang University, P.R. China)
Cheng Li (Beihang University, P.R. China)
Guo Zhanshe (Beihang University, P.R. China)
Jing Li (North University of China, P.R. China)
Gao Shi Qiao (Beijing Institute of Technology, P.R. China)
Liu Hai Peng (Beijing Institute of Technology, P.R. China)

12:00 PM **Development of characteristic test system for GMR sensor**
Jixi Lu (Beihang University, P.R. China)
Shanshan Huang (Beihang University, P.R. China)
Kaikai Pan (Beihang University, P.R. China)
Zheng Qian (Beihang University, P.R. China)
Niya Chen (Beihang University, P.R. China)

12:15 PM **Experimental Design of a Dual Axis Atomic Spin Gyroscope**
Jie Qin (Beihang University, P.R. China)
Fang Jiancheng (Beihang University, P.R. China)
Shuangai Wan (Beihang University, P.R. China)

12:30 PM **Quaternion Optimization based In-flight Calibration Approach for POS**
Taizhong Kang (Beihang University, P.R. China)
Fang Jiancheng (Beihang University, P.R. China)
Wei Wang (Beijing Aerospace Times Optical Electronic Technology Corporation, P.R. China)

12:45 PM **Experimental Study of POS Lever-arm Error Compensation**
Liu Zhanchao (Beihang University, P.R. China)
Fang Jiancheng (Beijing University of Aeronautics and Astronautics, P.R. China)

Signal Acquisition, Analysis and Processing

Room: LT1

Chair: Professor Xiaolin Ning

11:00 AM **Human Detection Algorithm for Doppler Radar Using Prediction Error in Autoregressive Model**
Masatoshi Sekine (Oki Electric Industry Co., Ltd., Japan)
Kurato Maeno (Oki Electric Industry Co., Ltd., Japan)
Toshinari Kamakura (Chuo University, Japan)

11:15 AM **Derivative-free distributed filtering for MIMO nonlinear systems under delays and packet drops**
Gerasimos Rigatos (Harper-Adams University College, United Kingdom)

11:30 AM **Autonomous navigation for mobile robot based on a sonar ring and its implementation**
Kui Qian (Southeast University, P.R. China)
Aiguo Song (Southeast University, P.R. China)

- 11:45 AM** **A New Concept for the Distributions of Wavelet Packet Decomposition Coefficients in Detail Subbands**
Deming Kong (Beihang University, P.R. China)
Lijun Xu (Beihang University, P.R. China)
Xiaolu Li (Beihang University, P.R. China)
Xiangrui Tian (Beihang University, P.R. China)
- 12:00 PM** **The Tracking Approach for Small Target with Complex Background Based on Spectral Features**
Hui Cai (Beihang University, P.R. China)
Na Li (Beihang University, P.R. China)
Huijie Zhao (Beihang University, P.R. China)
- 12:15 PM** **Application of CORDIC in Capacitive Rotary Encoder Signal Demodulation**
Dezhi Zheng (Beijing University of Aeronautics and Astronautics, P.R. China)
Shaobo Zhang (Beihang University, P.R. China)
Yuming Zhang (Beihang University, P.R. China)
Chen Fan (Beihang University, P.R. China)
- 12:30 PM** **Analysis and Comparison of Feature Detection and Matching Algorithms for Rovers Vision Navigation**
Xinbei Bai (Beihang University, P.R. China)
Xiaolin Ning (Beihang University, P.R. China)
Longhua Wang (Beihang University, P.R. China)
- 12:45 PM** **Motorized Stereomicroscopy and Auto-focusing in Computer**
Dongxue Wang (Beihang University, P.R. China)
Weiwei Xing (Beihang University, P.R. China)
Shangchun Fan (Beihang University, P.R. China)
Weiming Wang (Beihang University, P.R. China)

Measurement Theory and Technology

Room: LT2

Chair: Professor Wen Xiao

- 11:00 AM** **Automatic Calibration of Multi-camera Networks**
Qian Sun (Beihang University, P.R. China)
Dong Xu (Beihang University, P.R. China)
Zhong Wu (Beihang University, P.R. China)
- 11:15 AM** **Preliminary Study On the Quantitative Analysis of Tooth Preparation for Crown Based on Digital Model**
Sixuan Liu (Peking University, P.R. China)
Peijun Lv (Peking University, P.R. China)
Yong Wang (Peking University, P.R. China)
- 11:30 AM** **Analysis of Contributing Factors in Coupling from Laser Diode into Optical Fiber**
Ke He (Beihang University, P.R. China)
Jieqin Shi (Beihang University, P.R. China)
Xinwei Yuan (Beihang University, P.R. China)
Xiangchao Cong (Beihang University, P.R. China)

- 11:45 AM** **High precision measurement technology for beat length of birefringence optical fiber**
Weiqian Duan (Beihang University, P.R. China)
Yuanhong Yang (Beihang University, P.R. China)
Miao Ye (Beihang University, P.R. China)
Mingwei Yang (Beihang University, P.R. China)
- 12:00 PM** **Simulation on Measuring of Nonuniform Temperature Distribution Based on Line-of-sight TDLAS by Using Tikhonov Regularization Method**
Chang Liu (Beihang University, P.R. China)
Lijun Xu (Beihang University, P.R. China)
Zhang Cao (Beihang University, P.R. China)
Zheng Qian (Beihang University, P.R. China)
- 12:15 PM** **An Adaptive Algorithm for Cross-correlation Velocity Measurement**
Yujia Liu (Beihang University, P.R. China)
Yumei Zhang (Beihang University, P.R. China)
Zhang Cao (Beihang University, P.R. China)
Lijun Xu (Beihang University, P.R. China)
- 12:30 PM** **Measure and Redress of Mode Field Diameter of Polarization Maintaining Photonic Crystal Fibers**
Miao Ye (Beihang University, P.R. China)
Yuanhong Yang (Beihang University, P.R. China)
Weiqian Duan (Beihang University, P.R. China)
Mingwei Yang (Beihang University, P.R. China)

1:00 PM – 2:00 PM Lunch Break

2:00 PM - 3:15 PM

Sensors and Instruments

Room: AUD

Chair: Professor Zheng Qian

- 2:00 PM** **A New algorithm for High Accuracy Conical Scan Infrared Earth Wave**
Xianbin Hu (Beihang University, P.R. China)
Jianhui Zhao (Beihang University, P.R. China)
Fan Li (Beihang University, P.R. China)
Zhao Yan (Beihang University, P.R. China)
- 2:15 PM** **Dynamic scene recognition with a monocular moving camera for industrial robotics**
Robert Schmitt (RWTH Aachen University, Germany)
Yu Cai (RWTH Aachen University, Germany)
Luiz Tomelin (RWTH Aachen University, Germany)
Dongdong Chen (RWTH Aachen University, Germany)
- 2:30 PM** **Smart Cruise Control System with Stop&Go and Predictive Road Mapping**
Adil EL Rharbali (Al Akhawayn University, Morocco)
Hamza Bousfiha (Al Akhawayn University, Morocco)
Manal Hasri (Al Akhawayn University, Morocco)
Yassine Salih-Alj (Al Akhawayn University, Morocco)

2:45 PM **Fast response lock-in amplifier**
Miguel Angel Banuelos-Saucedo (University of Manchester, United Kingdom)
Krikor Ozanyan (The University of Manchester, United Kingdom)

3:00 PM **Development of Smart Transducers Compliant with the IEEE 1451.4 Standard**
Nenad Jevtic (University of Belgrade, Serbia)
Vujo Drndarevic (University of Belgrade, Serbia)

Signal Acquisition, Analysis and Processing

Room: LT1

Chair: Professor Yan Zhao, Dr. Weiquan

2:00 PM **The analysis of multivariate nonlinear regression on section pressure of the pipeline outlet**
Xiaodong Zhao (Beihang University of Measurement Technology and Instrument, P.R. China)
Qiaoxu Chong (Beihang University, P.R. China)
Zheng Qian (Beihang University, P.R. China)
Niya Chen (Beihang University, P.R. China)

2:15 PM **A new generalized affine moment invariants for shape retrieval and object recognition**
Hao Ding (Beihang University, P.R. China)
Xudong Li (Beihang University, P.R. China)
Huijie Zhao (Beihang University, P.R. China)
Wen Xiao (Beihang University, P.R. China)

2:30 PM **Design of IIR filter in capacitive rotary position sensor based on FPGA**
Yuming Zhang (Beihang University, P.R. China)
Dezhi Zheng (Beijing University of Aeronautics and Astronautics, P.R. China)
Weiwei Xing (Beihang University, P.R. China)
Shangchun Fan (Beihang University, P.R. China)

2:45 PM **Research and Implementation of Amplitude Ratio Calculating System for Coriolis Mass Flowmeter**
Chun Hu (Beihang University, P.R. China)
Dezhi Zheng (Beijing University of Aeronautics and Astronautics, P.R. China)
Shangchun Fan (Beihang University, P.R. China)
Jingjie Gong (Beihang University, P.R. China)

3:00 PM **Non-destructive Testing of Solid Wood Plate using Variable Permittivity Plate Capacitor**
Zhiling Zhao (Beihang University, P.R. China)
Shangchun Fan (Beihang University, P.R. China)
Dezhi Zheng (Beijing University of Aeronautics and Astronautics, P.R. China)

Measurement Theory and Technology

Room: LT2

Chair: Professor Yuanhong Yang

- 2:00 PM** **Imbalance Torque Compensation for Three-axis Inertially Stabilized Platform using acceleration feedforward**
Quanqi Mu (Beihang University, P.R. China)
Gang Liu (Beihang University, P.R. China)
Maiying Zhong (Beijing University of Aeronautics and Astronautics, P.R. China)
Zhongyi Chu (Beihang University, P.R. China)
- 2:15 PM** **A Communication Network Based on IEEE1394 and UPnP Technology**
Xiangchao Cong (Beihang University, P.R. China)
Shi Jieqin (Beihang University, P.R. China)
Ke He (Beihang University, P.R. China)
- 2:30 PM** **Optimised Link State Routing Protocol as Enabler of Cooperative Transmission for Emergency Communications**
Michal Wodczak (Ericsson, Poland)
- 2:45 PM** **Experimental Research on Polarization Maintaining Fibers Using Optical Coherence Domain Polarimeter**
Jingming Song (Beihang University, P.R. China)
Shuai Li (Beihang University, P.R. China)
Pan Ma (Beihang University, P.R. China)
Ningfang Song (Beihang University, P.R. China)
- 3:00 PM** **An Investigation on the Effects of Wireless Instruments on Cascaded Robots Operation**
Halit Eren (Curtin University of Technology, Australia)
Jinhua Luo (Taiyuan Iron and Steel Co. Ltd., P.R. China)
Meghdad Salimpour (Curtin University, Australia)
- 3:15 – 3:45 PM** **Coffee Break**

3:45 PM - 5:30 PM

Sensors and Instruments

Room: AUD

Chair: Professor Zhanshe Guo

- 4:00 PM** **Dither signal removal of ring laser gyro POS based on combined digital filter**
Ansheng Chen (Beihang University & Shandong University, P.R. China)
Jianli Li (Beihang University, P.R. China)
Zhongyi Chu (Beihang University, P.R. China)
- 4:15 PM** **The Model of Multi-level Lever-arm in Position and Orientation System**
Yanhai Ma (Beihang University, P.R. China)
Fang Jiancheng (Beihang University, P.R. China)
Cheng Junchao (Beihang University, P.R. China)
- 4:30 PM** **Comparison of Compensation Methods on RLG Temperature Error and Their Application in POS**
Cheng Junchao (Beihang University, P.R. China)
Fang Jiancheng (Beihang University, P.R. China)
- 4:45 PM** **Influence of Installation Angle of Electromagnetic Flowmeter on Measurement Accuracy**
Zhicong Peng (Beihang University, P.R. China)
Zhang Cao (Beihang University, P.R. China)
Lijun Xu (Beihang University, P.R. China)
Zheng Qian (Beihang University, P.R. China)
- 5:00 PM** **Cell culture and observation system platform design**
JinHao Sun (Beihang University, P.R. China)
Shangchun Fan (Beihang University, P.R. China)
Weiwei Xing (Beihang University, P.R. China)
Manguo Huang (Beihang University, P.R. China)
- 5:15 PM** **The design and simulation study of the electro-thermal excitation resonant beam based on slit- structure stress concentration effect**
HuiChao Shi (Beihang University, P.R. China)
Shangchun Fan (Beihang University, P.R. China)
Weiwei Xing (Beihang University, P.R. China)
Jinhao Sun (Beihang University, P.R. China)

Space Exploration

Room: LT1

Chair: Profesor Peiling Cui

- 3:45 PM** **Three-Aperture Inverse Synthetic Aperture Radar Moving Targets Imaging Processing Based on Compressive Sensing**
Liechen Li (IECAS, P.R. China)
Daojing Li (Chinese Academy of Sciences, P.R. China)
Bo Liu (Chinese Academy of Sciences, P.R. China)
Qingjuan Zhang (Chinese Academy of Sciences, P.R. China)
Lideng Wei (Chinese Academy of Sciences, P.R. China)

- 4:00 PM** **In-situ measurement of the deformation of the off-axis parabolic mirror with large aperture**
 Baiying Zou (Beihang University, P.R. China)
 Huijie Zhao (Beihang University, P.R. China)
 Ying Zhang (Beihang University, P.R. China)
- 4:15 PM** **A Study on The Influence of The Satellite Attitude Accuracy on TDICCD Imaging**
 Hao Wang (Beihang University, P.R. China)
 Zhaohua Yang (Beihang University, P.R. China)
 Chen Yang (Beihang University, P.R. China)
 Wei Quan (Beihang University, P.R. China)
- 4:30 PM** **Robust Attitude Controller for Spacecraft with Magnetically Suspended Flywheels**
 Cong Peng (Beihang University, P.R. China)
 Fang Jiancheng (Beihang University, P.R. China)
 Xiangbo Xu (Beihang University, P.R. China)
- 4:45 PM** **Design and Adaptive Control of a Deployable Manipulator for Space Detecting Payload Supporting**
 Dan Li (Beihang University, P.R. China)
 Zhongyi Chu (Beihang University, P.R. China)
 Jing Cui (Beijing University of Technology, P.R. China)

Measurement Theory and Technology

Room: LT2

Chair: Professor Wei Huang

- 3:45 PM** **A New Result on Practically Output Tracking Control of Nonlinear Systems That May Not Be Linearizable at the Origin**
 Keylan Alimhan (Tokyo Denki University, Japan)
 Naohisa Otsuka (Tokyo Denki University, Japan)
- 4:00 PM** **A Collaborative Agent System Architecture for Cloud-based Community Care Services Control and Management**
 Wei Huang (University of Westminster, United Kingdom)
- 4:15 PM** **An Improved Six-Position Hybrid Calibration for RLG POS in Full Temperature**
 Feng Jiao (Beihang University, P.R. China)
 Jianli Li (Beihang University, P.R. China)
 Zhongyi Chu (Beihang University, P.R. China)
- 4:30 PM** **Anti-disturbance cooperative control for configuration and attitude of satellite formation**
 Ke Sun (Beihang University, P.R. China)
 Jiancheng Fang (Beihang University, P.R. China)
 Peiling Cui (Beihang University, P.R. China)
- 4:45 PM** **Analysis of Positioning Errors Caused by Platform Vibration of Airborne LiDAR System**
 Ma Hongchao (Wuhan University, P.R. China)
 Wu Jianwei (Wuhan University, P.R. China)

Thursday, July 12, 2012

- 9:00 AM – 10:30 AM** **Plenary (Location: AUD)**
- 9:00 AM - 9:30 AM** **Topic: How does the Space Programme affect our everyday life?**
Professor Richard Holdaway, Director *RAL Space*, STFC Rutherford Appleton Laboratory, United Kingdom
- 9:30 AM - 10:00 AM** **Topic: Advanced measurement and monitoring techniques for coal and biomass fired power plant optimization**
Professor Yong Yan, University of Kent, United Kingdom
- 10:00 AM - 10:30 AM** **Topic: Topographic LiDAR: Recent developments and its future**
Professor Lijun Xu, Beihang University, China
- 10:30 AM - 11:00 AM** **Coffee Break**
- 11:00 AM - 1:00 PM** **Parallel Sessions**

Opto-electronics Technology/ Instruments
Room: AUD
Chair: Professor Yuanhong Yang

- 11:00 AM** **Application of Harmony Search Algorithm on the Optimization of Fiber Bragg grating Reflection Spectrum**
Zhao Xiaomeng (Beihang University, P.R. China)
Dezhi Zheng (Beijing University of Aeronautics and Astronautics, P.R. China)
Wu Fei (Yanshan University, P.R. China)
- 11:15 AM** **Crystal Geometry Measurement of an Acousto-optic Tunable Filter Using the Tested Tuning Curves**
Chongchong Li (Beihang University, P.R. China)
Huijie Zhao (Beihang University, P.R. China)
Ying Zhang (Beihang University, P.R. China)
Pengwei Zhou (Beihang University, P.R. China)
- 11:30 AM** **High Dynamic Synergetic Control Method of High Precision Position Servo System**
Jia Liu (Beijing University of Aeronautics and Astronautics, P.R.China)
Wang Zhiqiang (Beijing University of Aeronautics and Astronautics, P.R.China)
- 11:45 AM** **Elastooptic Stress Multiplier Using Two High-Birefringence Polarization Maintaining Fibers**
Changsheng Li (Beihang University, P.R. China)
Bo Wei (Beihang University, P.R. China)
- 12:00 PM** **A FEM-Based Method Dynamic Analysis of a Thrust Magnetic Bearing with Permanent Magnet Bias**
Bangcheng Han (Beihang University, P.R. China)
Shiqiang Zheng (Beihang University, P.R. China)
Yingguang Wang (Beihang University, P.R. China)
Cheng Junchao (Beihang University, P.R. China)

- 12:15 PM** **Research on Methods for Weak Signal Detection of Atomic Magnetometers**
 Yang Liu (Beihang University, P.R. China)
 Wei Quan (Beihang University, P.R. China)
 Tao Wang (Beihang University, P.R. China)
- 12:30 PM** **New Electromagnetic Induction System for Soil Conductivity Measurement with Improved Drift Correction**
 Achim Mester (Forschungszentrum Jülich GmbH, Germany)
 Egon Zimmerman (Forschungszentrum Jülich GmbH, Germany)
 van Der Kruk (Research Center Juelich, Germany)
 Harry Vereecken (Research Center Juelich, Germany)
 Stefan van Waasen (Forschungszentrum Jülich GmbH, Germany)

Measurement Systems /Control Theory and Automation

Room: LT2

Chair: Professor Lijun Xu

- 11:00 AM** **Measurement of Airborne Platform Attitude by Using Aerial Images**
 Xiangrui Tian (Beihang University, P.R. China)
 Lijun Xu (Beihang University, P.R. China)
 Xiaolu Li (Beihang University, P.R. China)
 Lili Jing (Beihang University, P.R. China)
 Wanlu Zhou (Beihang University, P.R. China)
- 11:15 AM** **Stability Analysis and Imbalance Compensation for Active Magnetic Bearing With Gyroscopic Effects**
 Xiangbo Xu (Beihang University, P.R. China)
 Fang Jiancheng (Beihang University, P.R. China)
 Tong Wei (Beihang University, P.R. China)
- 11:30 AM** **Simulation of Double Closed-loop FLC for The Compensating Platform of LiDAR**
 Chaozeng Zhang (Beihang University, P.R. China)
 Lijun Xu (Beihang University, P.R. China)
 Xiaolu Li (Beihang University, P.R. China)
- 11:45 AM** **Real-time Micro-vibration Measurement Based on Digital Holographic Interferometry**
 Lin Cong (Beihang University, P.R. China)
 Wen Xiao (Beihang University, P.R. China)
 Feng Pan (Beihang University, P.R. China)
 Jianyi Li (Beihang University, P.R. China)
 Fanjing Wang (Beihang University, P.R. China)
 Yanyan Zhao (Beihang University, P.R. China)
- 12:00 PM** **Online coal calorific value prediction from mutiband coal/air combustion radiation characteristics**
 Yanting Cheng (Beihang University, P.R. China)
 Lijun Xu (Beihang University, P.R. China)
 Xiaolu Li (Beihang University, P.R. China)
 Guo Zhanshe (Beihang University, P.R. China)
- 12:15 PM** **Optimal Phase Compensation Control and Experimental Study of Flexible Rotor Supported by Magnetic Bearing**
 Yingguang Wang (Beihang University, P.R. China)

Fang Jiancheng (Beijing University of Aeronautics and Astronautics,
P.R. China)
Shiqiang Zheng (Beihang University, P.R. China)

12:30 PM

An adjustable control for inertia momentum wheel with disturbance compensation

Cong Zhang (Beihang University, P.R. China)

Gang Liu (Beihang University, P.R. China)

Jie Qin (Beihang University, P.R. China)

12:45 PM

Adaptive Double-Loop PID control method of DC motor based on the GA-FNC Algorithm

Yang Hui (Beihang University, P.R. China)

Zhao Yan (Beihang University, P.R. China)

Wang Zhi Long (Beihang University, P.R. China)

Ye Chao (Beihang University, P.R. China)

1:00 PM - 2:00 PM

Lunch Break

7:30 PM - 10:00 PM

Conference Best Papers Award/ Banquet at Comfort Hotel Harrow