

# Technical Program

**Monday, July 16**

**11:30 AM - 12:00 PM**

## **Polarimetric Imaging and Remote Sensing**

Chair: George C Giakos (The University of Akron, USA)

11:30 An Automated Ladar Polarimetric System for Remote Characterization of Space Materials  
George C Giakos (The University of Akron, USA); Richard Picard (Air Force Research Laboratory, USA); Phan Dao (Air Force Research Laboratory, USA); Jeff Petermann (University of Akron, USA); Chaya Narayan (The University of Akron, USA); Stefanie Marotta (Akron University, USA)

11:45 Autonomous Robotic Ground Penetrating Radar Surveys of Ice Sheets; Using Machine Learning to Identify Hidden Crevasses  
Rebecca Williams (Dartmouth College, USA); Laura Ray (Dartmouth College, USA); James Lever (CRREL, USA)

## **Advances in Imaging**

Chair: Md. Moinul Hossain (University of Kent & IEEE Member, United Kingdom)

11:30 Three-dimensional Reconstruction of Flame Temperature and Emissivity Through Tomographic Imaging and Pyrometric Measurement  
Md. Moinul Hossain (University of Kent & IEEE Member, United Kingdom); Gang Lu (University of Kent, United Kingdom); Yong Yan (University of Kent, United Kingdom)

11:45 Automatic Informative Tissue's Discriminators in WCE  
Omid HajiMaghsoudi (Shahid Beheshti University of Tehran, Iran)

## **Image Processing**

Chair: Vaishnavi Ganesh (Sastra University, India)

11:30 Image Processing in Artificial Intelligence with Sensors  
Vaishnavi Ganesh (Sastra University, India); Sandhya Vaidyanathan (Sastra University, India); Esver K (Sastra University, India)

11:45 Using High-Speed Photography and Image Processing for Fixational Eye Movements Measurement  
Jiamao Li (Tokyo Institute of Technology, Japan); Xiaolin Zhang (Tokyo Institute of Technology, Japan)

**12:15 PM - 1:00 PM**

## **Electrical Capacitance Tomography I**

Chair: Wuqiang Yang (The University of Manchester, United Kingdom)

12:15 A Digital and Analog Mixed Electrical Capacitance Tomography System Using Combining Electrode Strategy

Yunjie Yang (Tsinghua University, P.R. China); Lihui Peng (Tsinghua University, P.R. China)

12:30 Real-time 3D Visualisation in Electrical Capacitance Tomography

Lei Ye (The University of Manchester, United Kingdom); Wuqiang Yang (The University of Manchester, United Kingdom)

12:45 Electrical Capacitance Tomography (ECT) and Gamma Radiation Meter for Comparison with and Validation and Tuning of CFD Modeling of Multiphase Flow

Chaminda Pradeep (Telemark University College & HIT, Norway); Ru Yan (Telemark University College, Norway); Sondre Vestøl (Telemark University College, Norway); Morten Melaaen (Telemark University College, Norway); Saba Mylvaganam (Telemark University College & Faculty of Technology, Norway)

## **12:15 PM - 12:45 PM**

### **Lung Cancer Detection and Discrimination Techniques**

Chair: Evaggelos Spyrou (National Technical University of Athens, Greece)

12:15 Tracking a Phantom's Lung Tumour Target Using Optical Flow Algorithm and Electronic Portal Imaging Devices

Peng Teo (University of Manitoba & CancerCare Manitoba, Canada); Roan Crow (CancerCare Manitoba, Canada); Samantha Van Nest (University of Manitoba, Canada); Stephen Pistorius (University of Manitoba & CancerCare Manitoba, Canada)

12:30 Fast and Robust Automated Segmentation of EIT Lung Images Using an Anatomically Constrained Kalman Filter

Ali Zifan (City University, United Kingdom); Panos Liatsis (City University, United Kingdom)

## **12:15 PM - 1:00 PM**

### **Signal and Image Analysis I**

Chair: Anna Fabijańska (Lodz University of Technology, Poland)

12:15 Extraction of Pulmonary Vessels From MDCT Thorax Scans  
Anna Fabijańska (Lodz University of Technology, Poland)

12:30 Image De-noising Based on Hodrick-Prescott Filtering  
Gabriel Thomas (University of Manitoba, Canada)

12:45 Frequency Selection for Compounding Synthetic Aperture Ultrasound Images

Jason R.B. Taylor (University of Manitoba, Canada); Jose Mijares Chan (University of Manitoba, Canada); Gabriel Thomas (University of Manitoba, Canada)

## **2:00 PM - 2:45 PM**

### **Electrical Capacitance Tomography II**

Chair: Lihui Peng (Tsinghua University, P.R. China)

2:00 Monitoring Solid Flow in a Circulating Fluidised Bed with External Heat Exchanger by Electrical Capacitance Tomography

Haigang Wang (University of Manchester, United Kingdom); Guizhi Qiu (Institute of Engineering Thermophysics, P.R. China); Guorong Zhao (Institute of Engineering Thermophysics, P.R. China); Xiaozhe Mou (Institute of Engineering Thermophysics, P.R. China); Yunkai Sun (Institute of Engineering Thermophysics, P.R. China); Qinggang Lu (Institute of Engineering Thermophysics, P.R. China); Wuqiang Yang (The University of Manchester, United Kingdom)

2:15 Gas/oil/water Flow Measurement by Electrical Capacitance Tomography

Yi Li (University of Cambridge, United Kingdom); Wuqiang Yang (The University of Manchester, United Kingdom); Zhipeng Wu (University of Manchester, United Kingdom); Dimitrios Tsamakis (The

- University of Manchester, United Kingdom); Cheng-gang Xie (Schlumberger Cambridge Research, United Kingdom); Songming Huang (Schlumberger Cambridge Research Ltd, United Kingdom); Chris Lenn (Schlumberger Cambridge Research Ltd, United Kingdom)
- 2:30 3D Effect of Electrical Capacitance and Resistance Tomography Sensors  
Jiangtao Sun (The University of Manchester, United Kingdom); Wuqiang Yang (The University of Manchester, United Kingdom)

## **Diagnostic Imaging Techniques**

Chair: Ioannis S. Gousias (Imperial College London & MRC Clinical Sciences Centre, United Kingdom)

- 2:00 Automatic Segmentation of Pediatric Brain MRIs Using a Maximum Probability Pediatric Atlas  
Ioannis S. Gousias (Imperial College London & MRC Clinical Sciences Centre, United Kingdom); Alexander Hammers (Imperial College London, United Kingdom); Serena Counsell (Imperial College London, United Kingdom); A. David Edwards (Imperial College London, United Kingdom); Daniel Rueckert (Imperial College London, United Kingdom)
- 2:15 Homography-Based Orientation Estimation for Capsule Endoscope Tracking  
Evaggelos Spyrou (National Technical University of Athens, Greece); Dimitris K Iakovidis (Technological Educational Institute of Lamia, Greece)
- 2:30 Ultrasound-image-based Displacement and Strain Maps of the Human Carotid Artery Using Weighted-Least-Squares Optical Flow  
Iason Zacharias Apostolakis (National Technical University of Athens, Greece); Aimilia Gastouniotti (National Technical University of Athens, Greece); Spyretta Golemati (National Kapodistrian University of Athens, Greece); Konstantina S Nikita (National Technical University of Athens, Greece)

## **Tomography for Industrial and Medical Applications**

Chair: Trevor A York (University of Manchester, United Kingdom)

- 2:00 Parameter Estimation From Tomographic Data Using Self-Organising Maps  
Trevor A York (University of Manchester, United Kingdom); Aniekeme Ukpong (University of Manchester, United Kingdom); Ru Yan (Telemark University College, Norway); Saba Mylvaganam (Telemark University College & Faculty of Technology, Norway)
- 2:15 Fan-beam TDLAS Tomography for Gas Concentration Distribution with Limited Data  
Chang Liu (Beihang University, P.R. China); Lijun Xu (Beihang University, P.R. China); Zhang Cao (Beihang University, P.R. China); Yuanhong Yang (BeiHang University, P.R. China)
- 2:30 A GPGPU Accelerated Compressed Sensing MR Imaging Reconstruction by Using the Tight Wavelet Frame Filter Technique  
Bobo Hu (Lancaster University, United Kingdom)

## **2:45 PM - 3:30 PM**

### **Hyperspectral Imaging**

Chair: Mehrube Mehrubeoglu (Texas A&M University-Corpus Christi, USA)

- 2:45 Spectral Characterization of a Hyperspectral Imaging System Using Optical Standards  
Mehrube Mehrubeoglu (Texas A&M University-Corpus Christi, USA)
- 3:00 Experimental Ultra Wide Band Imaging Using Heterogeneously Dense Breast Phantom Aimed for Early Cancer Detection  
Mohammed S Hathal (University Sains Malaysia, Malaysia); Tareq Zanoon (University Sains Malaysia, Malaysia); Mohd Ain (Universiti Sains Malaysia, Malaysia); Mohd Zaid Abdullah (Universiti Sains Malaysia & Engineering Campus, Malaysia)
- 3:15 Near-Infrared Hyper-spectral Image Analysis of Astaxanthin Concentration in Fish Feed Coating  
Martin Georg Ljungqvist (Technical University of Denmark, Denmark); Ken-ichi Kobayashi (Toyohashi

University of Technology, Japan); Stina Frosch (Technical University of Denmark, Denmark); Michael Nielsen (Technical University of Denmark, Denmark); Bjarne Ersbøll (Technical University of Denmark, Denmark); Shigeki Nakauchi (Toyohashi University of Technology, Japan)

## **Remote Sensing I**

Chair: Lijun Xu (Beihang University, P.R. China)

2:45 Super-resolution Imaging Method Based on Random Radiation Radar Array  
Yuanyue Guo (University of Science and Technology of China, P.R. China)

3:00 Influence of Optical System Distortion on LASIS Data

Juanjuan Jing (Xi'an Institute of Optics and Precision Mechanics of CAS, P.R. China); Ruyi Wei (Xi'an Institute of Optics and Precision Mechanics of CAS, P.R. China); Tao Yu (Xi'an Institute of Optics and Precision Mechanics of CAS, P.R. China); Qunbo Lv (Academy of Opto-Electronics, Chinese Academy of Sciences, P.R. China); Jinsong Zhou (Academy of Opto-Electronics, Chinese Academy of Sciences, P.R. China); Le Wang (Xi'an Institute of Optics and Precision Mechanics of CAS, P.R. China)

3:15 Studying Atmospheric Turbulence Effects on Aircraft Motion for Airborne SAR Motion Compensation Requirements

Hao Guo (Beihang University, P.R. China); Yang Li (Beihang University, P.R. China); Qiulin Qu (Beihang University, P.R. China); Peiqing Liu (Beihang University, P.R. China)

## **Feature Extraction and Recognition**

Chair: Vasilios Vonikakis (Democritus University of Thrace, Greece)

2:45 Improving the Robustness in Feature Detection by Local Contrast Enhancement

Vasilios Vonikakis (Democritus University of Thrace, Greece); Dimitrios Chrysostomou (Democritus University of Thrace & DUTH University, Greece); Rigas Kouskouridas (Democritus University of Thrace, Greece); Antonios Gasteratos (Democritus University of Thrace, Greece)

3:00 Automatic Threat Object Classification Based on Extracted Features From Electromagnetic Imaging System

Abdallah Al-Qubaa (Newcastle University, United Kingdom); Gui Yun Tian (Newcastle University, United Kingdom)

3:15 A Mini-Batch Discriminative Feature Weighting Algorithm for LBP - Based Face Recognition

Olegs Nikisins (Institute of Electronics and Computer Science, Latvia); Modris Greitans (Institute of Electronics and Computer Science, Latvia)

## **3:45 PM - 4:30 PM**

### **Imaging Techniques I**

Chair: Waldemar T Smolik (Warsaw University of Technology, Poland)

3:45 Enhancement of Color Retinal Images in Poor Imaging Conditions

Greg Russel (Health Intelligence, United Kingdom); John P Oakley (University of Manchester, United Kingdom); Niall McLoughlin (University of Manchester, United Kingdom); Vincent Nourrit (University of Manchester, United Kingdom)

4:00 Compensation of a Transmitter's Radiation Pattern for Synthetic Transmit Aperture Acoustic Imaging  
Natsuda Laokulrat (University of Tokyo, Japan); Yasushige Maeda (The Graduate University for Advanced Studies, Japan); Masanori Sugimoto (University of Tokyo, Japan); Hiromichi Hashizume (National Institute of Informatics, Japan)

4:15 Imaging Techniques for Positioning Training in Radiography

Toshinori Maruyama (Okayama university, Japan); Hideki Yamamoto (Kibikogen Rehabilitation Center, Japan)

## Remote Sensing II

Chair: Igor Bisio (University of Genoa, Italy)

3:45 Trainingless Fingerprinting-Based Indoor Positioning Algorithms with Smartphones Using Electromagnetic Propagation Models

Igor Bisio (University of Genoa, Italy); Fabio Lavagetto (University of Genoa, Italy); Mario Marchese (DIST- University of Genoa, Italy); Matteo Pastorino (University of Genoa, Italy); Andrea Randazzo (University of Genoa, Italy)

4:00 Estimation of Adjacency Effect in the Remotely Sensed Hyperspectral Data Over Rugged Scenes

Cheng Jiang (University of Beihang, P.R. China); Huijie Zhao (Beihang University, P.R. China); Guorui Jia (Beihang University, P.R. China)

4:15 Motion Error Analysis of 3D Coordinates of Airborne LIDAR Under Typical Terrains

Tao Peng (Beijing Institute of Technology, P.R. China); Tian Lan (Beijing Institute of Technology, P.R. China); Guoqiang Ni (Beijing Institute of Technology, P.R. China)

## Aerospace Imaging

Chair: Bruno Cafaro (Sapienza Università di Roma, Italy)

3:45 Real Time Nondestructive Testing of Composite Aeronautical Structures with a Self-Adaptive Ultrasonic Technique

Sébastien Robert (CEA - LIST, France)

4:00 A Novel Fresnel Based Algorithm for Robust Hiding of Medical Images

Nazeer Muhammad (Hanyang University, Korea)

4:15 X-SAR SpotLight Images Feature Selection and Water Segmentation

Bruno Cafaro (Sapienza Università di Roma, Italy); Silvia Canale (Sapienza Università di Roma, Italy); Fiora Pirri (Sapienza Università di Roma, Italy)

## 4:45 PM - 5:30 PM

## Imaging Techniques II

Chair: Andrea Salvadè (University of Applied Sciences of Southern Switzerland, Switzerland)

4:45 Imaging of Dielectric Targets with Metallic Inclusions by Means of a Prototype of Microwave Axial Tomograph

Andrea Salvadè (University of Applied Sciences of Southern Switzerland, Switzerland); Ricardo D. Monleone (University of Applied Sciences of Southern Switzerland, Switzerland); Andrea Massimini (University of Applied Sciences of Southern Switzerland, Switzerland); Samuel Poretti (University of Applied Sciences of Southern Switzerland, Switzerland); Manuela Maffongelli (University of Applied Sciences of Southern Switzerland, Switzerland); Matteo Pastorino (University of Genoa, Italy); Andrea Randazzo (University of Genoa, Italy)

5:00 Surface Defect Detection of Metal Parts: Use of Multimodal Illuminations and Hyperspectral Imaging Algorithms

Mohammed Seghir Benmoussat (Fraunhofer IIS, Germany); Klaus Spinnler (Fraunhofer-Institut für Integrierte Schaltungen IIS, Germany); Mireille Guillaume (Institut Fresnel, France)

5:15 EIT Imaging Fused with CT Slice

Chen Xiaoyan (Tianjin University, P.R. China); Jiannan Li (Tianjin University of Science and Technology, P.R. China); Huaxiang Wang (Tianjin University, P.R. China)

## Remote Sensing III

Chair: Rebecca Williams (Dartmouth College, USA)

- 4:45 Effect of Frame Size on Energy Consumption in Wireless Image Sensor Networks  
Daniel G. Costa (State University of Feira de Santana, Brazil); Luiz Affonso Guedes (Federal University of Rio Grande do Norte, Brazil); Francisco Vasques (University of Porto, Portugal); Paulo Portugal (University of Porto, Portugal)
- 5:00 A Motion Compensation Approach Integrated in the Omega-K Algorithm for Airborne SAR  
Yanlei Li (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Xingdong Liang (National Key Laboratory of Microwave Imaging Technology, Institute of Electronics, Chinese Academy of Sciences, P.R. China); Chibiao Ding (National Key Laboratory of Microwave Imaging Technology, Institute of Electronics, Chinese Academy of Sciences, P.R. China); Zhou (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Longyong Chen (National Key Laboratory of Science and Technology on Microwave Imaging, P.R. China); Wen Hong (National Key Laboratory of Microwave Imaging Technology & Institute of Electronics, Chinese Academy of Sciences, P.R. China)
- 5:15 Accurate Optical Design of an Acousto-optic Tunable Filter Imaging Spectrometer  
Pengwei Zhou (Beihang University, P.R. China); Huijie Zhao (Beihang University, P.R. China); Ying Zhang (Beihang University, P.R. China); Chongchong Li (Beihang University, P.R. China)

## Ladars and Lidars

Chair: Deming Kong (Beihang University, P.R. China)

- 4:45 Estimation of Cluster Centers on Building Roof From LiDAR Footprints  
Deming Kong (Beihang University, P.R. China); Lijun Xu (Beihang University, P.R. China); Xiaolu Li (Beihang University, P.R. China); Weiwei Xing (Beihang University, P.R. China)
- 5:00 Airborne LiDAR Strip Adjustment Based on Conjugate Linear Features  
Wang Hongchao (Beijing Institute of Technology, P.R. China); Chen Siying (Beijing Institute of Technology, P.R. China); Xu Jixian (Beijing Institute of Technology, P.R. China); Zhang Yinchao (Beijing Institute of Technology, P.R. China); Guo Pan (Beijing Institute of Technology, P.R. China); Chen He (Beijing Institute of Technology, P.R. China)
- 5:15 A Kernel-density-estimation-based Outlier Detection for Airborne LiDAR Point Clouds  
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); Zhao Yan (Beihang University, P.R. China)

## 5:30 PM - 7:00 PM

### Poster Session

Chair: Antonios Gasteratos (Democritus University of Thrace, Greece)

- An Real-Time Roadside Sign Recognition Scheme for Mobile Probing Cars with Smart Phones  
Ching-Hao Lai (Institute for Information Industry, Taiwan); Shu-Min Chuang (Institute for Information Industry, Taiwan); Po-Chia Chu (Institute for Information Industry, Taiwan); Chih-Hung Li (Institute for Information Industry, Taiwan)
- Vision-based Indoor Occupants Detection System for Intelligent Buildings  
Dixin Liu (Tsinghua University, P.R. China); Youtian Du (Xi'an Jiaotong University, P.R. China); Qianchuan Zhao (Tsinghua University, P.R. China); Xiaohong Guan (Xi'an Jiaotong University & Tsinghua University, P.R. China)
- An Efficient Fractional Motion Estimation Architecture for AVS Real-Time Full HD Video Encoder  
Fei Wang (Peking University, P.R. China); Yuan Li (Peking University, P.R. China); Huizhu Jia (Peking University, P.R. China); Xiaodong Xie (JDL, P.R. China); Wen Gao (Peking University, P.R. China)
- Infrared Image System for Microelectronic Devices: Auto Focus and Image Correlation Techniques  
Daniela Florian (KAI - Kompetenzzentrum Automobil- und Industrieelektronik GmbH, Austria); Helmut Köck (KAI - Kompetenzzentrum Automobil- und Industrieelektronik GmbH, Austria); Kathrin Plankensteiner (KAI - Kompetenzzentrum Automobil- und Industrieelektronik GmbH, Austria); Michael Glavanovics (KAI - Kompetenzzentrum Automobil- und Industrieelektronik GmbH, Austria)

Visual Odometry with Failure Detection for the Aegis UAV

Jose F. Roger-Verdeguer (Cranfield University, United Kingdom); Mikael Mannberg (Cranfield University, United Kingdom); Al Savvaris (Lecturer, United Kingdom)

Two-Pass Color Interpolation for Color Filter Array

Yi-Hong Yang (National Chiao Tung University, Taiwan); Chen Po-Ning (National Chiao Tung University, Taiwan); Peng-Hua Wang (National Taipei University, Taiwan)

Optimal Shutter Speed Sequences for Real-Time HDR Video

Benjamin Guthier (University of Mannheim, Germany); Stephan Kopf (University of Mannheim, Germany); Wolfgang Effelsberg (University of Mannheim, Germany)

Imaging of the Turn Space and Path of Movement of a Wheelchair for Remodeling Houses of Individuals with SCI

Yoshio Tanimoto (Kibikogen Rehabilitation Center, Japan); Kuniharu Nanba (Kibikogen Rehabilitation Center, Japan); Kazunari Furusawa (Kibikogen Rehabilitation Center, Japan); Hideki Yamamoto (Kibikogen Rehabilitation Center, Japan); Akihiro Tokuhiko (Kibikogen Rehabilitation Center, Japan); Hiroyuki Ukida (The University of Tokushima, Japan)

No-Reference Quality Metric Based on Fuzzy Neural Network for Subjective Image Watermarking Evaluation

Methaq Gaata (University of Babylon, Iraq); Sattar Sadkhn (Babylon University, Iraq); Saad Hasson (Babylon University, Iraq)

Visual Communication Using LED Panel and Video Camera for Mobile Object

Hiroyuki Ukida (The University of Tokushima, Japan); Masafumi Miwa (The University of Tokushima, Japan); Yoshio Tanimoto (Kibikogen Rehabilitation Center, Japan); Tetsuya Sano (System Enterprise Co., Ltd, Japan); Hideki Yamamoto (Kibikogen Rehabilitation Center, Japan)

MRI Denoising Based on Neutrosophic Wiener Filtering

Mohan J (P A College of Engineering and Technology, India); Krishnaveni V (PSG College of Technology, India); Yanhui Guo (University of Michigan, USA); Kanchana Jeganathan (King's College London, United Kingdom)

Measurement of Lens Shutter's Switching Time in Full Frame Cameras

Yanyan Zhao (Beihang University, P.R. China); Yan Yuan (Beihang University, P.R. China); Lijuan Su (Beihang University, P.R. China); Fengzhen Huang (Beihang University, P.R. China); Siyuan Zhang (Beihang University, P.R. China)

Dual-modality Data Acquisition System Based on CPCI Industrial Computer

Cong Xu (Tianjin University, P.R. China); Feng Dong (Tianjin University, P.R. China); Zhiqiang Zhang (Tianjin University, P.R. China)

Demodulated Resonance Technique in Fault Diagnosis of High Speed Line Rolling-mill Synchronmesh Gears

FengXing Zhou (Wuhan University of Science and Technology, P.R. China); Baokang Yan (Wuhan University of Science and Technology, P.R. China)

In-Situ Particle Measurement with Blurred Image Processing Using Telecentric Lenses

Xiaozhen Chen (University of Shanghai for Science and Technology, P.R. China); Wu Zhou (University of Shanghai for Science and Technology, P.R. China); Hailong Liu (University of Shanghai for Science and Technology, P.R. China); Xiaoshu Cai (University of Shanghai for Science and Technology, P.R. China); Mingxu Su (University of Shanghai for Science and Technology, P.R. China); Linhu Cheng (University of Shanghai for Science and Technology, P.R. China)

Projective Rectification of Infrared Image Based on Projective Geometry

Xiaolu Li (Beihang University, P.R. China); Tao He (Beihang University, P.R. China); Lijun Xu (Beihang University, P.R. China); Lulu Chen (Beihang University, P.R. China); Guo Zhanshe (Beihang University, P.R. China)

Grammar-Based Image Segmentation with Taking Care About Runtime and Accuracy Constraints

Salah Hamdi (Laboratory of Medical Image Processing (LTIM), Faculty of Medicine of Monastir (FMM) & University of Monastir, Tunisia); Asma Ben Abdallah (LTIM, Tunisia); Mohamed Hedi Bedoui (, Tunisia)

MIMO FMCW SAR System Using Beat-Frequency Division Waveforms

Jie Wang (National Key Laboratory of Science and Technology on Microwave Imaging & Institute of Electronics, Chinese Academy of Sciences, P.R. China); Longyong Chen (National Key Laboratory of Science and Technology on Microwave Imaging, P.R. China); Xingdong Liang (National Key Laboratory of Microwave Imaging Technology, Institute of Electronics, Chinese Academy of Sciences, P.R. China); Wen Hong (National Key Laboratory of Microwave imaging Technology & Institute of Electronics, Chinese Academy of Sciences, P.R. China); Lideng Wei (Institute of Electronics, Chinese Academy of Sciences,

P.R. China)

A Highly Efficient Mode Decision Algorithm and Architecture for AVS HD Video Encoder  
Shuai Li (Peking University, P.R. China); Chuang Zhu (Peking University, P.R. China); Fei Wang (Peking University, P.R. China); Huizhu Jia (Peking University, P.R. China); Xiaodong Xie (JDL, P.R. China); Wen Gao (Peking University, P.R. China)

Error Analysis of SAR Motion Compensation

Yong-fei Mao (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Maosheng Xiang (Institute of Electronics, Chinese Academy of Sciences, Canada); Lideng Wei (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Yinwei Li (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Wen Hong (National Key Laboratory of Microwave imaging Technology & Institute of Electronics, Chinese Academy of Sciences, P.R. China)

A Self-Calibration Procedure for a Sinusoidal Fringe Profilometer

Maurizio Bevilacqua (University of Salerno, Italy); Marco Landi (University of Salerno, Italy); Alfredo Paolillo (University of Salerno, Italy)

Optimum Multi-Camera Arrangement Using a Bee Colony Algorithm

Dimitrios Chrysostomou (Democritus University of Thrace & DUTH University, Greece); Antonios Gasteratos (Democritus University of Thrace, Greece)

OCR-Based Neural Network for ANPR

Xiaojun Zhai (University of Hertfordshire, United Kingdom); Faycal Bensaali (University of Hertfordshire, United Kingdom); Reza Sotudeh (University of Hertfordshire, United Kingdom)

Detection of Pedestrians At Night Time Using Learning-based Method and Head Validation

Qiong Liu (South China University of Technology, P.R. China); Jiajun Zhuang (South China University of Technology, P.R. China); Kong Shufeng (South China University of Technology, P.R. China)

## Tuesday, July 17

11:00 AM - 12:00 PM

### Imaging Techniques III

Chair: Maurizio Bevilacqua (University of Salerno, Italy)

11:00 Measurements on Metal-Rubber Profiles with HDR and EF Imaging Techniques

Maurizio Bevilacqua (University of Salerno, Italy); Giuseppe Di Leo (University of Salerno, Italy); Marco Landi (University of Salerno, Italy); Alfredo Paolillo (University of Salerno, Italy)

11:15 Techniques for Electrical Tree Imaging

Roger Schurch (The University of Manchester & Universidad Tecnica Federico Santa Maria, United Kingdom); Simon M Rowland (The University of Manchester, United Kingdom); Philip Withers (The University of Manchester, United Kingdom)

11:30 Machine Vision and Magnetic Imaging NDT for the On-Line Inspection of Stainless Steel Strips

Marco Ricci (University of Perugia & Polo Scientifico Didattico di Terni, Italy); Antonio Ficola (University of Perugia, Italy); Mario Luca Fravolini (University of Perugia, Italy); Luigi Battaglini (University of Perugia, Italy); Valerio Brunori (University of Perugia, Italy); Alessandro Palazzi (University of Perugia, Italy); Marco Pastorelli (University of Perugia, Italy); Pietro Burrascano (University of Perugia, Italy); Paolo Valigi (University of Perugia, Italy); Laura Appolloni (Thyssen Krupp Acciai Speciali Terni S.p.A., Italy); Sergio Cervo (Thyssen Krupp Acciai Speciali Terni S.p.A., Italy); Claudia Rocchi (Thyssen Krupp Acciai Speciali Terni S.p.A., Italy)

11:45 Hyperspectral Imaging and Analysis of Mixed Algae Species in Liquid Media

Mehrube Mehrubeoglu (Texas A&M University-Corpus Christi, USA); Ming Yang Teng (Texas A&M University-Corpus Christi, USA); Marci L Savage (Texas A&M University-Corpus Christi, USA); Alexandra Rafalski (Texas A&M University-Corpus Christi, USA); Paul Zimba (Texas A&M University-Corpus Christi, USA)

### Imaging Techniques and Devices



Chair: Edward Seppi (Varian Medical Systems, USA)

- 11:00 Establishing Low Dimensional Manifolds for 3D Object Pose Estimation  
Rigas Kouskouridas (Democritus University of Thrace, Greece); Antonios Gasteratos (Democritus University of Thrace, Greece)
- 11:15 A MEMS Ultrasonic Transducer Imager Array with Beam Width, Acoustic Power, and Frequency Modulations  
Tahereh Arezoo Emadi (University of Manitoba, Canada); Gabriel Thomas (University of Manitoba, Canada); Douglas Andrew Buchanan (University of Manitoba, Canada); Stephen Pistorius (University of Manitoba & CancerCare Manitoba, Canada)
- 11:30 Numerical Modeling of Magnetic Field for Magnetic Particle Imaging  
Waldemar T Smolik (Warsaw University of Technology, Poland); Przemysław Wróblewski (Warsaw University of Technology, Poland); Jan Szyszko (Warsaw University of Technology, Poland)
- 11:45 New Method for Breast Tumor Tracking  
Edward Seppi (Varian Medical Systems, USA); George Zentai (Varian Medical Systems, USA); Larry Partain (Varian Medical Systems, USA); Michelle Richmond (Varian Medical Systems, USA); Robert Anderson (Varian Medical Systems, USA)

## Imaging Systems Design II

Chair: Xu Kai (Tianjin University & School of Electrical Engineering & Automation, P.R. China)

- 11:00 A Novel Spiral Electromagnetic Induction Sensor for the Measurement of Phase Holdup  
Xu Kai (Tianjin University & School of Electrical Engineering & Automation, P.R. China); Guang Chen (Tianjin University, P.R. China); Jianna Hao (Tianjin University, P.R. China); Wuliang Yin (University of Manchester, United Kingdom)
- 11:15 A Dual Modality Tomography System for Particle Concentration and Charge Distribution Measurement in Dense-phase Pneumatic Conveyor of Pulverized Coal  
Jian Li (Southeast University, P.R. China); Heming Gao (Southeast University, P.R. China); Chuanlong Xu (University of Kent, United Kingdom); Shimin Wang (Southeast University, P.R. China)
- 11:30 Quality Measures for Blind Image Deblurring  
Aftab Khan (The University of Manchester, United Kingdom); Hujun Yin (The University of Manchester, United Kingdom)
- 11:45 Real-time Single FPGA-Based Multimodal Image Fusion System  
Michał Bartyś (Warsaw University of Technology, Poland); Barbara Putz (Warsaw University of Technology & Institute of Automatic Control and Robotics, Poland); Adrian Antoniewicz (Warsaw University of Technology, Poland); Łukasz Zbrzeźny (Bumar Elektronika S.A., Poland)

## 12:15 PM - 1:00 PM

### Linear and Non-linear Processing

Chair: Ru Yan (Telemark University College, Norway)

- 12:15 Interface Imaging in Multiphase Flow Based on Frame by Frame Eigenvalues of Capacitance Matrices From ECT Systems  
Ru Yan (Telemark University College, Norway); Chaminda Pradeep (Telemark University College & HIT, Norway); Joseph Muwanga (Telemark University College, Norway); Saba Mylvaganam (Telemark University College & Faculty of Technology, Norway)
- 12:30 Pose Manifolds for Efficient Visual Servoing  
Rigas Kouskouridas (Democritus University of Thrace, Greece); Angelos Amanatiadis (Democritus University of Thrace, Greece); Antonios Gasteratos (Democritus University of Thrace, Greece)
- 12:45 Ontology-based 3D Pose Estimation for Autonomous Object Manipulation  
Rigas Kouskouridas (Democritus University of Thrace, Greece); Theodora Retzepi (Democritus University of Thrace, Greece); Eleni Charalampoglou (Democritus University of Thrace, Greece); Antonios Gasteratos (Democritus University of Thrace, Greece)

## **Electrical Resistance Tomography Systems and Techniques**

Chair: Jiamin Ye (University of Leeds, United Kingdom)

12:15 Secondary Image Reconstruction Based on Associative Markov Networks for Electrical Resistance Tomography

Jiamin Ye (University of Leeds, United Kingdom); Brian S Hoyle (University of Leeds, United Kingdom)

12:30 Two Phase Flow Visualization in an Annular Tube by an Electrical Resistance Tomography

Shangjie Ren (Tianjin University, P.R. China); Chao Tan (Tianjin University, P.R. China); Feng Dong (Tianjin University, P.R. China)

12:45 Capacitively Coupled Electrical Resistance Tomography System Based on Quartz Crystal Series Resonance

Baoliang Wang (Zhejiang University, P.R. China); Sanfu Fu (Zhejiang University, P.R. China); Haifeng Ji (Zhejiang University, P.R. China); Zhiyao Huang (Zhejiang University, P.R. China); Haiqing Li (Zhejiang University, P.R. China)

## **Environmental Monitoring Systems and Flame Imaging**

Chair: Xiaolu Li (Beihang University, P.R. China)

12:15 Effect of Inclined Angle of Fuel Jet on NO<sub>x</sub> Emission in High Temperature Air Combustion

Xiaolu Li (Beihang University, P.R. China); Zhongbao Wei (Beihang University, P.R. China); Lijun Xu (Beihang University, P.R. China); YanTing Cheng (Beihang University, P.R. China)

12:30 Prediction of NO<sub>x</sub> Emissions Through Flame Radical Imaging and Neural Network Based Soft Computing

Xinli Li (North China Electric Power University, P.R. China); Duo Sun (University of Kent, United Kingdom); Gang Lu (University of Kent, United Kingdom); Jan Krabicka (University of Greenwich & University of Greenwich, United Kingdom); Yong Yan (University of Kent, United Kingdom)

12:45 A Three-Dimensional Shape Descriptor for Burner Flames

Tian Qiu (University of Kent, United Kingdom); Yong Yan (University of Kent, United Kingdom); Gang Lu (University of Kent, United Kingdom)

## **2:00 PM - 3:00 PM**

## **Object Detection and Recognition Techniques**

Chair: Ioannis Kostavelis (Democritus University of Thrace, Greece)

2:00 Enhanced Spatial Resolution for EDXRD Inspection Methods by Reconstruction From Multiple Measurements

Simon Schlesinger (University of Wuppertal, Germany); Hartwin Bomsdorf (University of Wuppertal, Germany)

2:15 Color Segmentation on FPGA Using Minimum Distance Classifier for Automatic Road Sign Detection

Benny Thörnberg (Mid Sweden University, Sweden); Jingbo Zhao (Mid-Sweden University, Sweden); Yan Shi (Mid-Sweden University, Sweden); Ashkan Hashemi (Mid-Sweden University, Sweden)

2:30 An Improved Particle Filter for Multi-feature Tracking Application

Zhelong Wang (Dalian University of Technology, P.R. China); Hongyu Zhao (Dalian University of Technology, P.R. China); Hong Shang (Technical Division, National Earthquake Response Support Service, P.R. China); Sen Qiu (Dalian University of Technology, P.R. China)

2:45 Object Recognition Using Saliency Maps and HTM Learning

Ioannis Kostavelis (Democritus University of Thrace, Greece); Lazaros Nalpantidis (Royal Institute of Technology - KTH, Sweden); Antonios Gasteratos (Democritus University of Thrace, Greece)

## **Microwave Imaging**

Chair: Claudio Estatico (University of Insubria, Italy)

2:00 Microwave Imaging of Elliptically-Shaped Dielectric Cylinders by Means of a Lp Banach-Space Inversion Algorithm

Claudio Estatico (University of Insubria, Italy); Alessandro Fedeli (University of Genoa, Italy); Matteo Pastorino (University of Genoa, Italy); Andrea Randazzo (University of Genoa, Italy)

2:15 Microwave Imaging At Resolution and Super-Resolution with Ultra-Wide Band Sensors

Tareq Zanoon (University Sains Malaysia, Malaysia); Mohammed S Hathal (University Sains Malaysia, Malaysia); Mohd Zaid Abdullah (Universiti Sains Malaysia & Engineering Campus, Malaysia)

2:30 Acceleration of Projected SIRT Algorithm for EMT Image Reconstruction

Jianna Hao (Tianjin University, P.R. China); Wuliang Yin (University of Manchester, United Kingdom); Qian Zhao (Tianjin University, P.R. China); Xu Kai (Tianjin University & School of Electrical Engineering & Automation, P.R. China); Guang Chen (Tianjin University, P.R. China)

2:45 Boundary Element Method for A Kind of 3-D PEC Magnetic Induction Problem

Qian Zhao (Tianjin University, P.R. China); Jianna Hao (Tianjin University, P.R. China); Xu Kai (Tianjin University & School of Electrical Engineering & Automation, P.R. China); Guang Chen (Tianjin University, P.R. China); Wuliang Yin (University of Manchester, United Kingdom)

### **Imaging Systems Design III**

Chair: Kavitha M (IIT Madras, India)

2:00 Characterization of Tissue Mimicking Phantoms for Acoustic Radiation Force Impulse Imaging

Kavitha M (IIT Madras, India); Machireddy Reddy (IITM, India)

2:15 A Digital Demodulation Method for Electrical Tomography Based on Sine Wave Rectification

Haili Zhou (Beihang University, P.R. China); Lijun Xu (Beihang University, P.R. China); Zhang Cao (Beihang University, P.R. China); Shangchun Fan (BeiHang University, P.R. China)

2:30 A Novel ECT-EST Combined Method for Gas-Solids Flow Pattern and Charge Distribution Visualization

Bin Zhou (Southeast University, P.R. China); Jianyong Zhang (University of Teesside, United Kingdom)

2:45 A Direct Reconstruction Algorithm for Recovering the Admittivities in 2D Electrical Tomography

Zhang Cao (Beihang University, P.R. China); Lijun Xu (Beihang University, P.R. China); Zheng Qian (Bei Hang University, P.R. China)

### **3:15 PM - 4:15 PM**

### **Electrical Capacitance Tomography III**

Chair: Zhen Ren (University of Manchester, United Kingdom)

3:15 An Electrical Capacitance Tomography System with MatLab-Simulink GUI

Zhen Ren (University of Manchester, United Kingdom); Wuqiang Yang (The University of Manchester, United Kingdom)

3:30 Total Variation Image Reconstruction for Electrical Capacitance Tomography

Thusara Chandrasekera (University of Cambridge, United Kingdom); Yi Li (University of Cambridge, United Kingdom); John Dennis (University of Cambridge, United Kingdom); Daniel Holland (University of Cambridge, United Kingdom)

3:45 Electrical Capacitance Tomography: A Compressive Sensing Approach

Hongcheng Wang (United Technologies Research Center, USA); Igor Fedchenia (United Technologies Research Center, USA); Sergey Shishkin (United Technologies Research Center, USA); Alan Finn (United Technologies Research Center, USA); Lance Smith (United Technologies Research Center, USA); Meredith Colket (United Technologies Research Center, USA)

4:00 Electric Field Simulation in Electrical Capacitance Tomography

Jacek Kryszyn (Warsaw University of Technology, Poland); Waldemar T Smolik (Warsaw University of Technology, Poland); Roman Szabatin (Warsaw University of Technology, Poland); Jacek Mirkowski (Institute of Nuclear Chemistry and Technology, Poland)

## **Imaging Systems Design I**

Chair: Zhaoyan Fan (University of Connecticut, USA)

- 3:15 Development and Application of ECT Digital System for Online Flow Measurement  
Ziqiang Cui (Tianjin University, P.R. China); Huaxiang Wang (Tianjin University, P.R. China); Chengyi Yang (Tianjin University, P.R. China); Dongfeng Zhang (Taiyuan University of Technology, P.R. China); Yide Geng (Taiyuan University of Technology, P.R. China)
- 3:30 Ultrafast Electron Beam X-ray Computed Tomography for 2D and 3D Two-Phase Flow Imaging  
Martina Bieberle (Helmholtz-Zentrum Dresden-Rossendorf, Germany); Frank Barthel (FZ Dresden-Rossendorf, Germany); Dietrich Hoppe (Forschungszentrum Dresden-Rossendorf, Germany); Manuel Banowski (Helmholtz-Zentrum Dresden-Rossendorf, Germany); Michael Wagner (Helmholtz-Zentrum Dresden-Rossendorf, Germany); Dirk Lucas (Helmholtz-Zentrum Dresden-Rossendorf, Germany); Thilo Stürzel (Stuttgart University, Germany); Uwe Hampel (Forschungszentrum Dresden-Rossendorf, Germany)
- 3:45 Ultrasound High Resolution Imaging Using a Modified Synthetic Aperture Focusing Method  
Jose Mijares Chan (University of Manitoba, Canada); Jason R.B. Taylor (University of Manitoba, Canada); Gabriel Thomas (University of Manitoba, Canada)
- 4:00 A Frequency Selection Scheme for Increased Imaging Speed in ECT  
Zhaoyan Fan (University of Connecticut, USA); Robert X. Gao (University of Connecticut, USA)

## **Signal and Image Analysis II**

Chair: Konstantinos Delibasis (Institute of Communications and Computer Systems, Greece)

- 3:15 A Generalized Thresholding Algorithm of Pedestrian Segmentation for Far-infrared Images  
Qiong Liu (South China University of Technology, P.R. China); Jiajun Zhuang (South China University of Technology, P.R. China)
- 3:30 A Fourier-based Implicit Evolution Scheme for Active Surfaces, for Object Segmentation in Volumetric Images  
Konstantinos Delibasis (Institute of Communications and Computer Systems, Greece); Simone Tassani (Institute of Communication and Computer System, Greece); Pantelis Asvestas (Technological Educational Institute of Athens, Greece); Aristides Kechriniotis (Institute of Communications and Computer Systems, Greece); George Matsopoulos (National Technical University of Athens, Greece)
- 3:45 Performance Analysis of Image Sensor Communication Over Free Space Optical Channel  
Jiang Liu (Waseda University, Japan); Zhenni Pan (Waseda University, Japan); Shigeru Shimamoto (Waseda University & Graduate School of Global Information and Telecommunication Studies, Japan)
- 4:00 Mitigating the Effect of Optical Back-scatter in Multispectral Underwater Imaging  
Halleh Mortazavi (University of Manchester, United Kingdom); John P Oakley (University of Manchester, United Kingdom); Braham Barkat (The Petroleum Institute, UAE)