

## MESSAGE FROM THE CHAIRMAN

On behalf of the Technical and Local Committee of the IEEE International Conference on Imaging Systems and Techniques (IST 2010), I welcome you in the historical and beautiful city of Thessaloniki, Greece. Thessaloniki is one of the largest cities of Greece with great historical and cultural significance, and capital of the Greek region of Macedonia, owing its name to the sister of Alexander the Great named Thessaloniki. It is a major Mediterranean port city built amphitheatrically and located in the northern part of Greece in a unique geographical location surrounded by sea and mountains, in the vicinity (50 km) of the secluded peninsula of Chalkidiki, where the great Greek philosopher Aristotle was born and taught. Thessaloniki is considered a cultural, touristic, industrial, commercial and political centre and a major transportation hub for the rest of southeastern Europe.

This is the seventh consecutive year, following the successful IST events held previously in Stresa, Italy; Niagara Falls, Canada; Minori, Italy; Krakow, Poland; Chania, Greece; and Shenzhen, China. This event series has allowed scientists from all over the world to meet to explore the physical and engineering principles, development and applications of new imaging technologies, systems, measurements, and techniques. IST offers an informal setting devoted to the encouragement of broad discussion of imaging methodologies, shaping the future, and identifying emerging imaging trends. This workshop deals with the design, development, evaluation and applications of imaging systems, instrumentation, measuring techniques, and image processing algorithms, aimed at enhancing the detection process and image quality.

I would like to thank and highlight the outstanding efforts of the Local Committee Chairs and Honorary Chairs: Professor Maria Petrou (Center for Research and Technology Hellas (CERTH, Greece); Theodore Laopoulos (Aristotle University of Thessaloniki, Greece); Konstantina Nikita (National Technical University of Athens, Greece), and Wuqiang Yang (University of Manchester, UK). I would also like to extend my thanks to the Technical Co-Chairs: Professors Matteo Pastorino (University of Genoa, Italy), Dimitrios Karras (Technological Educational Institute of Chalkida, Greece), Prof. Cesare Svelto (Polytechnic of Milan, Italy), Mihalis Zervakis (Technical University of Crete, Greece), Mohd Zaid Abdullah (Universiti Sains Malaysia), Michele Ceccarelli (University of Sannio, Italy), Basil Mertzios (Democritus University of Thrace, Greece), Dr. George Zentai (Varian Medical Systems, US), Prof. Antonios Gasteratos (Democritus University of Thrace, Greece), and the Coordinator of the event Dr. Angelos Amanatiadis (Democritus University of Thrace, Greece).

Many thanks go to the dedicated reviewers which did an excellent job to preserve quality and promote academic excellence and scholarship. Special acknowledgements to the Workshop Administrator, Chris Dyer (Conference Catalysts, LLC) for his outstanding support and dedication. I hope you enjoy your stay in Thessaloniki, Greece, and find the 2010 IEEE International Workshop on Imaging Systems and Techniques (IST2010) a rewarding opportunity for advancement of knowledge and technical competencies.

George C. Giakos  
General Chairman IST 2010  
Chairman TC-19 Imaging Systems  
USA

## IST COMMITTEE

### General Chair

George C. Giakos, University of Akron, USA

### Honorary Chairs

Maria Petrou, Informatics and Telematics Institute, Centre for Research and Technology Hellas (CERTH), Greece

Konstantina Nikita, National Technical University of Athens (NTUA), Greece

Wuqiang Yang, The University of Manchester, UK

### Co-Chairs

Matteo Pastorino, University of Genoa, Italy

Cesare Svelto, Polytechnic of Milan, Italy

Michalis Zervakis, Technical University of Crete, Greece

Mohd Zaid Abdullah, Universiti Sains Malaysia

Michele Ceccarelli, University of Sannio, Italy

George Zentai, Varian Medical Systems, USA

Basil Mertzios, Democritus University of Thrace (DUTH), Greece

Dimitrios Karras, Technological Educational Institute of Chalkida, Greece

Antonios Gasteratos, Democritus University of Thrace, Greece

### International Board of Directors

Richard H. Picard, US Air Force

Vincenzo Piuri, University of Milan, Italy

Mel Siegel, Carnegie Mellon, USA

Emil Petriu, University of Ottawa, Canada

Nikolaos Bourbakis, Wright State University, USA

Huaxiang Wang, Tianjin University, China

John Oakley, The University of Manchester, UK

Christo Christodoulou, University of New Mexico, USA

Dominik Sankowski, Lodz University of Technology, Poland

George Chatzimavroudis, Cleveland State University, USA

Ioannis Gousias, Imperial College, UK

Nikolas Karakatsanis, NTUA, Greece

Ioannis Valavanis, NTUA, Greece

Hujun Yin, The University of Manchester, UK

Angelos Amanatiadis, DUTH, Greece

Kostas Fotakis, Institute of Electronic Structure and Laser (IESL), FORTH, Greece

Andrea Trucco, University of Genova, Italy

Narender Reddy, University of Akron, USA

Uwe Hampel, Forschungszentrum Dresden Rossendorf e.V, Germany

Dimitris Iakovidis, University of Athens, Greece

George Livanos, Technical University of Crete, Greece

Mohd Zaid Abdullah, Universiti Sains Malaysia

Waldemar Smolik, Warsaw University of Technology, Poland

### Local Committee

Maria Petrou, Informatics and Telematics Institute, CERTH, Greece

Konstantina Nikita, NTUA, Greece

Theodore Laopoulos, Aristotle University of Thessaloniki, Greece

**Technical Committee**

Richard H. Picard, US Air Force  
Wuqiang Yang, The University of Manchester, UK  
Maria Petrou, Informatics and Telematics Institute, Thessaloniki, Greece  
Konstantina Nikita, NTUA, Greece  
Matteo Pastorino, University of Genova, Italy  
George Panayiotakis, University of Patras, Greece  
Cesare Svelto, Polytechnic of Milan, Italy  
Michalis Zervakis, Technical University of Crete, Greece  
Chun Guan, KLA-Tencor, USA  
Stelios Siskos, Aristotle University of Thessaloniki (AUTH),  
Mohd Zaid Abdullah, Universiti Sains Malaysia  
Michele Ceccarelli, University of Sannio, Italy  
George Zentai, Varian Medical Systems, USA  
Basil Mertzios, Democritus University of Thrace (DUTH), Greece  
Dimitrios Karras, Technological Educational Institute of Chalkida, Greece  
Vincenzo Piuri, University of Milan, Italy  
Mel Siegel, Carnegie Mellon, USA  
Emil Petriu, University of Ottawa, Canada  
Christo Christodoulou, University of New Mexico, USA  
Lena Kostaridou, Medical School, University of Patras, Greece  
George Chatzimavroudis, Cleveland State University, USA  
Andrea Trucco, University of Genova, Italy  
Narender Reddy, University of Akron, USA  
Uwe Hampel, Forschungszentrum Dresden Rossendorf e.V, Germany  
Andrea Randazzo, University of Genoa, Italy  
Layia Polychronaki, NTUA, Greece  
Stefanie Marotta, University of Akron, USA  
Keerthi, Valluru, University of Akron, USA  
Samita Athawale, University of Akron, USA  
Angelos Amanatiadis, DUTH, Greece  
Ioannis Andreadis, DUTH, Greece  
George Giannakakis, NTUA, Greece  
Michele Piana, University of Verona, Italy  
George Panayiotakis, University of Patras, Greece  
John Stoitsis, NTUA, Greece  
Alexandra Nikita, Diakentro Diagnostic Center, Greece  
Antonios Gasteratos, DUTH, Greece  
George Zentai, Varian Medical Systems, USA  
Bharath Kumar Reddy Mandadi, University of Akron, USA  
Irene Karanassiou, NTUA, Greece

**Secretary**

Angelos Amanatiadis (DUTH), Greece

**Design and Art**

Zoe Giakos, Copley-Fairlawn, USA

**Conference Administrator**

Chris Dyer, Conference Catalysts, LLC, USA

**July 1, 2010**

**Ballroom A**

**7:30 Registration**

**8:00 Opening Ceremony**

Message from Prof. George Giakos, IST General Chairman (University of Akron, United States)

*"An Integrated Overview of the IST ongoing and planned Activities"*

**9:00 Keynote:** *Design of new-generation robotic Capsules for therapeutic and diagnostic Endoscopy*

Nikolaos Bourbakis, (Wright State University, United States)

George Giakos, (University of Akron, United States)

Alexandros Karargyris, (Wright State University, United States)

**Special Session: Advanced Imaging Systems and Techniques**

**Chair:** Keerthi Valluru (University of Rochester, United States)

**9:30 Optofluidic biosensors based on color imaging**

Jongwong Park (Missouri University of Science and Technology, United States)

Chang-Soo Kim (Missouri University of Science and Technology, United States)

**9:45 Fast Wavelet-based Pansharpening of Multi-Spectral Images**

Nikolaos Mitianoudis (International Hellenic University, Greece)

Georgios Tzimiropoulos (Imperial College London, United Kingdom)

Tania Stathaki (Imperial College London, United Kingdom)

**10:00 Enabling Distributed Summarization of Wireless Capsule Endoscopy Video**

Kanaris Ioannis (University of the Aegean, Greece)

Spyros Tsevas (University of Geneva, Switzerland)

Ilias Magloogiannis (University of Central Greece, Greece)

Dimitris K. Iakovidis (Technological Institute of Lamia, Greece)

**Special Session: "Nuclear Medicine systems and Techniques"**

**Chair:** Konstantina Nikita (National Technical University of Athens, Greece)

**10:15 A Spartan 3E based low-cost system for gamma-ray detection in small SPECT or PET systems**

Lefteris Fisikopoulos (National Technical University of Athens, Greece)

Maria Georgiou (Technological Educational Institution of Athens, Greece)

Nikos Efthimiou (University of Patras, Greece)

George Loudos (Technological Educational Institution of Athens, Greece)

George Matsopoulos (National Technical University of Athens, Greece)

**10:30 Tomographic Evaluation of a Dual Head PET**

Nikos Efthimiou (University of Patras, Greece)

Spyros Maistros (University of Patras, Greece)

Xristoforos Tripolitis (University of Patras, Greece)

George Panayiotakis (University of Patras, Greece)

Alexandros Samartzis (Evangelismos General Hospital, Greece)

George Loudos (Technological Educational Institution of Athens, Greece)

**10:45 Quantification of Myocardial Perfusion in 3D SPECT images- Stress/Rest volume differences**

Maria Lyra (University of Athens, Greece)

Marios Sotiropoulos (University of Athens, Greece)

Nefeli Lagopati (University of Athens, Greece)

Maria Gavrilileli (University of Athens, Greece)

11:00 AM – 11:15 AM

Coffee Break

**Special Session: “Molecular Imaging”**

**Chair:** George Livanos (Technical University of Crete, Greece)

**11:15 Targeting brain gliomas energy metabolism for classification purposes**

Michael Kounelakis (Technical University of Crete, Greece)

M.E. Zervakis (Technical University of Crete, Greece)

George Giakos (University of Akron, United States)

C. Narayan (University of Akron, United States)

S. Marotta (University of Akron, United States)

D. Natarajamani (University of Akron, United States)

G. Postma (Radboud University, Netherlands)

I.M.C. Buydens (Radboud University, Netherlands)

X. Kotsiakis (General Hospital of Chania, Greece)

**11:30 Backscattered Polarimetric Detection from Biological Tissue**

George Giakos (University of Akron, United States)

S. Marotta (University of Akron, United States)

K. Ambadipudi (University of Akron, United States)

K. Velluru (University of Akron, United States)

J. Petermann (University of Akron, United States)

C. Narayan (University of Akron, United States)

D. Natarajamani (University of Akron, United States)

D. Pingili (University of Akron, United States)

D.B. Sheffer (University of Akron, United States)

M.G. Kounelakis (Technical University of Crete, Greece)

G. Livanos (Technical University of Crete, Greece)

M.E. Zervakis (Technical University of Crete, Greece)

**11:45 On Quantifying MRS Metabolites Using a Constrained Genetic Algorithm**

Dimitrios Karras (Chalkis Institute of Technology, Greece)

G.A. Papakostas (Democritus University of Thrace, Greece)

D. van Ormondt (University of Delft, Netherlands)

B.G. Mertzios (Democritus University of Thrace, Greece)

D. Graveron-Demilly (Université Claude Bernard Lyon, France)

**MORNING SESSION - Ballroom B**

**9:10 Keynote Speaker:** Wuqiang Yang (The University of Manchester, United Kingdom)

**Topic:** *Imaging pharmaceutical fluidized beds by electrical capacitance tomography*

**Special Session: “Electric Tomography Systems”**

**Chair:** Wuqiang Yang

**9:30 Comparison of Three Electrical Capacitance Tomography Systems**

Dixiang Chen (National University of Defense Technology, China)

Wuqiang Yang (The University of Manchester, United Kingdom)

Xiang Deng (Beijing Jiaotong University, China)

- 9:45      Electrical resistance tomography(ERT) by using an ECT sensor**  
 Lijun Xu (Beihang University, China)  
 Zhang Cao (Beihang University, China)  
 Chengfeng Xu (Beihang University, China)  
 Huazing Wang (Tianjin University, China)
- 10:00      2D ECT for sensors of non-circular cross sections using the factorization method**  
 Lijun Xu (Beihang University, China)  
 Zhang Cao (Beihang University, China)  
 Wenru Fan (Tianjin University, China)  
 Huaxing Wang (Tianjin University, China)

**Special Session: “Homeland Security Systems and Techniques”**

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

- 10:15      Study of low cost continuous Gd<sub>2</sub>O<sub>2</sub>S:Pr powder scintillator screens in photon counting mode using a dedicated small nuclear imaging camera**  
 David Stratos (University of Patras, Greece)  
 George Panayiotakis (University of Patras, Greece)  
 Maria Georgiou (Technological Educational University of Athens, Greece)  
 George Loudos(Technological Educational University of Athens, Greece)  
 Ioannis Kandarakis (Technological Educational University of Athens, Greece)
- 10:30      A VLSI Implementation of a New Simultaneous Images Compression and Encryption Method**  
 Maher Jridi (ISEN, France)  
 Ayman AlFalou (ISEN, France)
- 10:45      Fast Face Recognition Approach Using a Graphical Processing Unit "GPU"**  
 Yousri Ouerhani (ISEN, France)  
 Maher Jridi (ISEN, France)  
 Aymen AlFalou (ISEN, France)

**11:00 AM – 11:15 AM      Coffee Break**

**Special Session: “Inverse Scattering and Microwave Imaging”**

**Chair:** Matteo Pastorino (University of Genoa, Italy)

- 11:15      An Iterative Multi-Scaling Scheme for the Electromagnetic Imaging of Separated Scatterers by the Inexact-Newton Method**  
 Giovanni Bozza (University of Genoa, Italy)  
 Leonardo Lizzi (University of Trento, Italy)  
 Andrea Massa (University of Trento, Italy)  
 Giacomo Oliveri (University of Trento, Italy)  
 Matteo Pastorino University of Genoa, Italy)
- 11:30      A Differential Evolution-based Iterative Multi-Scaling Algorithm for Microwave Imaging of Dielectric Structures**  
 Matteo Pastorino (University of Genoa, Italy)  
 M. Donelli (University of Trento, Italy)  
 Andrea Massa (University of Trento, Italy)  
 Giacomo Oliveri (University of Trento, Italy)  
 A. Randazzo (University of Genoa, Italy)

**11:45 Model-based image reconstruction algorithm for measurement of multiphase distributions**

Yi Li (The University of Manchester, UK)  
Wuqiang Yang (The University of Manchester, UK)  
Dimitrios Tsamakis (The University of Manchester, UK)  
Zhipeng Wu (The University of Manchester, UK)  
Chris Lenn (Schlumberger Cambridge Research Ltd., UK)  
Chenggang Xie (Schlumberger Cambridge Research Ltd., UK)  
Songming Huang (Schlumberger Cambridge Research Ltd., UK)

**12:00 NOON - 1:30 PM** Lunch

**AFTERNOON SESSION - *Ballroom A***

**1:45 Keynote:** *Human brain inspired still and moving image processing*  
George Sergiadis (Aristotle University of Thessaloniki, Greece)  
Dimitrios Alexiadis (Aristotle University of Thessaloniki, Greece)

**Special Session: "3-D Imaging Systems and Techniques"**

**Chair:** Dimitris Iakovidis (Technological Educational Institute of Lamia, Greece)

**2:15 Light-Invariant 3D Object's Pose Estimation Using Color Distance Transform**

Nikolaos Kyriakoulis (Democritus University of Thrace, Greece)  
Antonios Gasteratos (Democritus University of Thrace, Greece)

**2:30 An Environmental 3-D Scanner with Wide FoV - Geometric Parameters Set Up**

Pasquale De Ruvo (Consiglio delle Ricerche, Italy)  
G. De Ruvo (Consiglio delle Ricerche, Italy)  
A Distante (Consiglio delle Ricerche, Italy)  
M. Nitti (Consiglio delle Ricerche, Italy)  
E. Stella (Consiglio delle Ricerche, Italy)  
F. Marino (Politecnico di Bari, Italy)

**2:45 3D Object Reconstruction Using Image Scanner with Multiple Light Sources**

Yoshio Tanimoto (Kibikogen Rehabilitation Center, Japan)  
Hiroyuki Ukida (The University of Tokushima, Japan)  
Tetsuya Sano (system enterprise Co. Ltd, Japan)  
Hideki Yamamoto (Kibikogen Rehabilitation Center, Japan)

**Special Session: "Multifusion Medical Imaging"**

**Chair:** Matteo Pastorino (University of Genoa, Italy)

**3:00 Probe Design for Photoacoustic Imaging of Prostate**

Keerthi Valluru (University of Rochester, United States)  
B. Chinni (University of Rochester, United States)  
S. Bhatt (University of Rochester, United States)  
V. Dogra (University of Rochester, United States)  
N. Rao (Rochester University of Technology, United States)  
D. Akata (Hacettepe University, Turkey)

**3:15 Retinal Stroke Prediction Using Logistic-Based Fusion of Multiscale Fractal AnalysisMas**  
Mohd Zulfaezal Che Azemin (RMIT University, Australia)  
Dinesh K. Kumar (RMIT University, Australia)  
T.Y. Wong (National University of Singapore, Singapore)  
J.J. Wang (University of Sydney, Australia)  
R. Kawasaki (University of Melbourne, Australia)  
P. Mitchell (University of Sydney, Australia)

**3:30 Space variant PSF parameterization in image space using printed point source arrays on the HiRez PET/CT**  
Fotis Kotasidis (The University of Manchester, United Kingdom)  
Georgios I. Angelis (The University of Manchester, United Kingdom)  
Julian C. Matthews (The University of Manchester, United Kingdom)  
William R. Lionheart (The University of Manchester, United Kingdom)  
Andrew J. Reader (McGill University, Canada)

**3:45 PM – 4:00 PM** Coffee Break

**Special Session: “Feature Extraction, and Discrimination Techniques”**

**Chair:** Panayiotis Korfiatis (University of Patras, Greece)

**4:00 Investigation of 3D textural features' discriminating ability in diffuse lung disease quantification in MDCT**  
Panayiotis Korfiatis (University of Patras, Greece)  
I. Mariolis (University of Patras, Greece)  
L. Costaridou (University of Patras, Greece)  
C. Kalogeropoulou (University Hospital of Patras, Greece)  
D. Daoussis (University Hospital of Patras, Greece)  
T. Petsas (University Hospital of Patras, Greece)

**4:15 Investigating the Image Features Landscape for the Classification of Breast Microcalcifications**  
Argyryw Antaraki (Academy of Athens, Greece)  
I. Andreadis (National Technical University of Athens, Greece)  
K. Nikita (National Technical University of Athens, Greece)  
P. Ligomenides (Academy of Athens, Greece)  
G. Spyrou (Academy of Athens, Greece)

**4:30 Adaptive Edge Detection for Motion Estimation in H.264/AVC**  
Anand Paul (Hanyang University, Korea)  
K. Bharamitharan (Korea University, Korea)

**AFTERNOON SESSION - Ballroom B**

**1:45 Keynote Speaker:** Yong Yan (University of Kent, United Kingdom)  
**Topic:** *Recent Advances in Imaging Based Instrumentation for Combustion Plant Optimization*



**Special Session: “Digital Radiography”**

**Chair:** Dimitris Iakovidis (Technological Educational Institute of Lamia, Greece)

- 2:15 Imaging Performance of a high resolution CMOS sensor under Mammographic and Radiographic conditions**  
Christos M. Michail (University of Patras, Greece)  
Vasiliki Spyropoulou (University of Patras, Greece)  
George P. Fountos (Technological Educational Institution of Athens, Greece)  
Nektarios E. Kalyvas (Technological Educational Institution of Athens, Greece)  
Alexandros K. Mytafidis ('Pammakaristos' General Hospital)  
Ioannis G. Valais (Technological Educational Institution of Athens, Greece)  
Ioannis S. Kandarakis (Technological Educational Institution of Athens, Greece)  
George S. Panayiotakis (University of Patras, Greece)

- 2:30 Patient Specific Normalization of Chest Radiographs and Hierarchical Classification of Bacterial Infection Patterns**  
Spyros Tsevas (University of Athens, Greece)  
Dimitris K. Iakovidis (Technological Educational Institution of Athens, Greece)

- 2:45 Positioning Simulator of Radiography**  
Toshinori Maruyama (Okayama University, Japan)  
Hideki Yamamoto (Kibikogen Rehabilitation Center, Japan)

**Special Session: “Detection and Calibration Techniques”**

**Chair:** Stylianos Siskos (Aristotle University of Thessaloniki, Greece)

- 3:00 Low voltage analog median filters implementation**  
Stylianos Siskos (Aristotle University of Thessaloniki, Greece)
- 3:15 Techniques for Calibrating Differential Signals in Measurement Instruments**  
Nikos Petrellis (Analogies SA, Greece)  
Michael Birbas (Analogies SA, Greece)  
John Kikidis (Analogies SA, Greece)  
Alexios Birbas (Analogies SA, Greece)
- 3:30 Improving Processing Time for Visual Measurements of Displacements of IPMC Actuators Using CUDA**  
Kyriakos Tsiakmakis (Aristotle University of Thessaloniki, Greece)  
Theodore Laopoulos (Aristotle University of Thessaloniki, Greece)

**3:45 PM – 4:00 PM** Coffee Break

**Special Session: “Image Analysis and Processing**

**Chair:** Anna Fabijanska (Technical University of Lodz, PL)

- 4:00 The Evaluation of the Gaussian Mixture Probability Hypothesis Density Approach for Multi-target Tracking**  
Jiandan Chen (Blekinge Institute of Technology, Sweden)  
Oyekanlu Adebomi (Blekinge Institute of Technology, Sweden)  
Onidare Olusayo (Blekinge Institute of Technology, Sweden)  
Wlodek Kulesza (Blekinge Institute of Technology, Sweden)
- 4:15 Edge Detection with Sub-Pixel Accuracy in Images of Molten Metals**  
Anna Fabijanska (Technical University of Lodz, Poland)  
Dominik Sankowski (Technical University of Lodz, Poland)

**4:30 Image Processing for Surface Quality Control in Stainless Steel Production Lines**

C. Spinola (University of Málaga, Spain)  
J.M. Canero-Nieto (University of Málaga, Spain)  
M.J. Martin-Vazquez (University of Málaga, Spain)  
J.M. Bonelo (Factoria del Campo de Gibraltar, Spain)  
F. Garcia-Vacas (University of Málaga, Spain)  
G. Moreno-Aranda (University of Málaga, Spain)  
S. Espejo (University of Sevilla, Spain)  
G. Hylander (University of Málaga, Spain)  
J. Vizoso (Factoria del Campo de Gibraltar, Spain)

**July 2, 2010**

**MORNING SESSION - *Ballroom A***

**9:00 Keynote Speaker:** Matteo Pastorino (University of Genoa, Italy)  
**Topic:** *Hybrid Reconstruction Techniques for Microwave Imaging Systems*

**Special Session: *Efficient Monitoring, Inspection and Imaging Techniques***

**Chair:** Yi Li (The University of Manchester, United Kingdom)

**9:30- Accelerated Levenberg-Marquardt method With an Optimal Step Length in Electrical Capacitance Tomography**  
Waldemar T. Smolik (Warsaw University of Technology, Poland)

**9:45 An Embedded Imaging and Signal Processing System for Flame Stability Monitoring and Characterisation**  
Duo Sun (University of Kent, United Kingdom)  
Gang Lu (University of Kent, United Kingdom)  
Yong Yan (University of Kent, United Kingdom)

**10:00 Analysis of Block Matching Algorithms for the Application of Image Mosaicing to Online Surface Inspection of Steel Products**  
Silvia Rodriguez-Jimenez (University of Oviedo, Spain)  
Ignacio Alvarez (University of Oviedo, Spain)  
Ricardo Garcia (DSIplus, Spain)  
Jorge Marina (DSIplus, Spain)

**Special Session: “*Remote Sensing*”**

**Chair:** Michele Ceccarelli (University of Sannio, Italy)

**10:15 Laser Phase Shift Distance Meter for Vision Based Driver Assistance Systems**  
Jeorg Velten (University of Wuppertal, Germany)  
Judith Schmackers (University of Wuppertal, Germany)  
Albrecht Glasmachers (University of Wuppertal, Germany)

**10:30 Invariant Spatial Chromatic Processors for Region Image Description**  
Ali Al-Temeemy (University of Liverpool, United Kingdom)  
J.W. Spencer (University of Liverpool, United Kingdom)

**10:45 Highly Specific Pose Estimation with a Catadioptric Omnidirectional Camera**  
Baptiste Magnier (LIRMM University of Montpellier II, France)  
Frederic Comby (LIRMM University of Montpellier II, France)  
Oliver Strauss (LIRMM University of Montpellier II, France)  
Jean Triboulet (LIRMM University of Montpellier II, France)  
Cedric Demonceaux (MIS, France)

**11:00 AM – 11:15 AM**                      Coffee Break

**Special Session: "Ultrasound Imaging"**

**Chair:** Ioannis Gousias (Imperial College London, United Kingdom)

- 11:15 Kalman-Filter-Based Block Matching for Arterial Wall Motion Estimation from B-Mode Ultrasound**  
Aimilia Gastouniotti (National Technical University of Athens, Greece)  
S. Golemati (National & Kapodistrian University of Athens, Greece)  
J. Stoitsis (National Technical University of Athens, Greece)  
K.S. Nikita (National Technical University of Athens, Greece)
- 11:30 Panoramic Imaging of Ultrasound Videos Based on Multi-mixing Measures**  
Jing Jin (Harbin Institute of Technology, China)  
Xuemeng Li (Harbin Institute of Technology, China)  
Yan Wang (Harbin Institute of Technology, China)  
Qi Wang (Harbin Institute of Technology, China)  
Yi Shen (Harbin Institute of Technology, China)
- 11:45 Acoustic computer model for ultrasonic imaging of heavy liquid metal nuclear reactor**  
Elena Jasiuniene (Kaunas University of Technology, Lithuania)  
Rymantas Kazys (Kaunas University of Technology, Lithuania)  
Liudas Mazeika (Kaunas University of Technology, Lithuania)  
Andrei Gusarov (Belgian Nuclear Research Centre, Belgium)  
Marc Schyns (Belgian Nuclear Research Centre, Belgium)

**MORNING SESSION - Ballroom B**

- 9:00 Keynote Speaker:** George Zentai (Varian Medical Systems, United States)  
**Topic:** *Enhanced a-Se X-ray imager for mammography*

**Special Session: "Emerging Radiation Detection Techniques"**

**Chair:** George Zentai (Varian Medical Systems, United States)

- 9:30 Evaluation of the co-doped LSO:Ce,Ca scintillator crystal in the X-ray energy range from 50 to 140kVp for medical imaging applications.**  
Stratos David (University of Patras, Greece)  
Christos Michail (University of Patras, Greece)  
George Panayiotakis (University of Patras, Greece)  
Ioannis Valais (Technological Educational Institute of Athens, Greece)  
George Fountos (Technological Educational Institute of Athens, Greece)  
Costantinos Nomicos (Technological Educational Institute of Athens, Greece)  
Ioannis Kandarakis (Technological Educational Institute of Athens, Greece)
- 9:45 Initial Results on SiPM Performance for use in Medical Imaging**  
Nikos Efthimiou (University of Patras, Greece)  
Giannis Argyrooulos (University of Patras, Greece)  
George Panayiotakis (University of Patras, Greece)  
Maria Georgiou (Technological Educational Institute of Athens, Greece)  
George Loudos (Technological Educational Institute of Athens, Greece)
- 10:00 Process diagnostics and non-destructive testing using high-resolution gamma-ray tomography**  
Andre Bieberle (Forschungszentrum Dresden-Rossendorf, Germany)  
Dietrich Hoppe (Forschungszentrum Dresden-Rossendorf, Germany)  
Uwe Hampel (Forschungszentrum Dresden-Rossendorf, Germany)

**Special Session: “Security and Surveillance Systems”**

**Chair:** Angelos Amanatiadis (Democritus University of Thrace, Greece)

**10:15     **An Imaging System for Simultaneous Inspection, Authentication and Forensics****

Steven j. Simske (Hewlett Packard Labs, United States)  
Stephen B. Pollard (Hewlett Packard Labs, United Kingdom)  
Guy B. Adams (Hewlett Packard Labs, United Kingdom)

**10:30     **Light-adaptive vision system for remote surveillance using a smart vision chip****

Kyung-Hwa Choi (Kyungpook National University, Korea)  
Jae-Sung Kong (Kyungpook National University, Korea)  
Sooyeon Lee (Kyungpook National University, Korea)  
Sung-Hyun Jo (Kyungpook National University, Korea)  
Jang-Kyoo Shin (Kyungpook National University, Korea)

**10:45     **Hand Held Dyson Relay Lens for Anti-Counterfeiting****

Guy Adams (Hewlett Packard Labs, United Kingdom)

**11:00 AM – 11:15 AM             Coffee Break**

**Special Session: “Image Registration and Segmentation”**

**Chair:** Lazaros Nalpantidis (Democritus University of Thrace, Greece)

**11:15     **Bayesian Grid Matching for 2D Gel Registration****

Michele Ceccarelli (University of Sannio, Italy)  
Jens Carstensen (Technical University of Denmark, Denmark)

**11:30     **Time-Lapse Phase-Contrast Microscopy Fibroblast Automated Tracking****

Vincenzo Paduano (University of Naples "Federico II", Italy)  
L. Sepe (University of Naples "Federico II", Italy)  
C. Cantarella (University of Naples "Federico II", Italy)  
G. Paoletta (University of Naples "Federico II", Italy)  
M. Ceccarelli (University of Sannio, Italy)  
C. Sansone (University of Naples "Federico II", Italy)

**11:45     **Segmentation of Bone Structure in Sinus CT Images Using Self-Organizing Maps****

Nader Anani (Manchester Metropolitan University, United Kingdom)  
Abdel-Razzak Natsheh (Manchester Metropolitan University, United Kingdom)  
Prasad Ponnappalli (Manchester Metropolitan University, United Kingdom)  
Dalil Benchebra (Manchester Metropolitan University, United Kingdom)  
Atef El-Kholy (Trafford General Hospital, United Kingdom)  
Peter Norbum (Trafford General Hospital, United Kingdom)

**12:00 NOON - 1:30 PM Lunch**

**AFTERNOON SESSION - *Ballroom A***

**1:45 Keynote: *Atlas Selection Strategy for Automatic Segmentation of Pediatric Brain MRIs into 83 ROIs***

Dr. Ioannis S. Gousias (Imperial College, United Kingdom)  
Alexander Hammersa (Imperial College, United Kingdom)  
Rolf A. Heckemanna (Imperial College, United Kingdom)  
Serena J. Counsella (Imperial College, United Kingdom)  
Leigh E. Dyeta (Imperial College, United Kingdom)  
James P. Boardmana (Imperial College, United Kingdom)  
David Edwards (Imperial College, United Kingdom)  
Daniel Rueckert (Imperial College, United Kingdom)

**Special Session: "Medical Imaging"**

**Chair:** Claudia Sciallero (University of Genoa, Italy)

- 2:15      Improving the Diagnostic Potentiality of Contrast Enhanced Ultrasound Imaging Through the Estimation of the Concentration**  
Claudia Sciallero (University of Genoa, Italy)  
Marco Crocco (University of Genoa, Italy)  
Andrea Trucco (University of Genoa, Italy)
- 2:30      Automatic Measurement of the Artery Intima-Media Thickness with Image Empirical Mode Decomposition**  
Jing Jin (Harbin Institute of Technology, China)  
Yan Wang (Harbin Institute of Technology, China)  
Xin Gao (Harbin Institute of Technology, China)  
Yi Shen (Harbin Institute of Technology, China)  
Qi Wang (Harbin Institute of Technology, China)
- 2:45      High Resolution MR Image of Brain with Signal Attenuation of Gray Matter**  
Somojit Saha (Jadavpur University, India)  
Sarit Kumar Das (ITT Madras, India)  
Avijit Kar (Jadavpur University, India)

**Special Session: "Image Enhancement"**

**Chair:** Theodore Pachidis (Kavala Institute of Technology, Greece)

- 3:00      Towards Optimal Color Image Coding using Demosaicing**  
Evgeny Gershikov (Israel Institute of Technology, Israel)  
Moshe Porat (Israel Institute of Technology, Israel)
- 3:15      Trochlear surface reconstruction and evaluation based on laser scanner acquisition**  
Stefka Gueorguieva (LaBRI, France)  
R. Synave (LaBRI, France)  
Ch. Couture-Veschambre (LaAPP, France)
- 3:30      Moving Object Detection in the H.264 Compressed Domain**  
Spyridon K. Kapotas (Hellenic Open University, Greece)  
Athanasios N. Skodras (Hellenic Open University, Greece)

**3:45 PM – 4:00 PM                      Coffee Break**

**Special Session: "Advanced Vision and Inspection Techniques"**

**Chair:** Sotirios Diamantas (University of Southampton, United Kingdom)

- 4:00      Using Temporal Correlation for Fast and High-detailed Video Tone Mapping**  
Lino Coria (University of British Columbia, Canada)  
Panos Nasiopoulos (University of British Columbia, Canada)
- 4:15      The optimum exposure decision for the enhanced image performance using a digital camera**  
Hyung Ju Park (Chung-Ang University, Korea)  
Dong Hwan Har (Chung-Ang University, Korea)

**4:30 3D Inspection of Fabrication and Degradation Processes from X-ray (micro) Tomography Images using a Hole Closing Algorithm**  
Laurent Babout (Technical University of Lodz, Poland)  
M. Janaszewski (Technical University of Lodz, Poland)  
D. Bakavos (The University of Manchester, United Kingdom)  
S.A. McDonald (The University of Manchester, United Kingdom)  
P.B. Prangnell (The University of Manchester, United Kingdom)  
T.J. Marrow (The University of Manchester, United Kingdom)  
P.J. Withers (The University of Manchester, United Kingdom)

**4:45 Multi-camera 3D Scene Reconstruction from Vanishing Points**  
Dimitrios Chrysostomou (Democritus University of Thrace, Greece)  
Nikolaos Kyriakoulis (Democritus University of Thrace, Greece)  
Antonios Gasteratos (Democritus University of Thrace, Greece)

#### **AFTERNOON SESSION - *Ballroom B***

##### **Special Session: “NMR Measurements and Instrumentation I”**

**Chairs:** Dimitrios Karras (Chalkis Institute of Technology, Greece)  
Danielle Graveron-Demilly (Universita de Lyon, France)  
Dirk van Ormondt (Delft University of Technology, Netherlands)

**2:15 Quantification of in vivo Magnetic Resonance Spectroscopy signals with baseline and lineshape corrections**  
Diana Sima (Katholieke Universiteit Leuven, Belgium)  
Maria Garcia (Katholieke Universiteit Leuven, Belgium)  
Flemming Nielson (Katholieke Universiteit Leuven, Belgium)  
Uwe Himmelreich (Katholieke Universiteit Leuven, Belgium)  
Sabine Van Huffel (Katholieke Universiteit Leuven, Belgium)

**2:30 Incorporating in vivo and ex vivo NMR sources of information for modeling robust brain tumor classifiers**  
Anca Ramona Croitor Sava (Katholieke Universiteit Leuven, Belgium)  
T. Laudadio (Katholieke Universiteit Leuven, Belgium)  
D.M. Sima (Katholieke Universiteit Leuven, Belgium)  
Maria Garcia (Katholieke Universiteit Leuven, Belgium)  
Sabine Van Huffel (Katholieke Universiteit Leuven, Belgium)  
M.C. Martinez-Bisbal (Universidad de Valencia, Spain)  
B. Celda (Universidad de Valencia, Spain)  
A. Heerschap (Universidad de Valencia, Spain)

**2:45 Metabolite-based Wavelets for Analyzing Magnetic Resonance Spectroscopic Signals**  
Christina Lemke (Katholieke Universiteit Leuven, Belgium)  
A. Schuck (Katholieke Universiteit Leuven, Belgium)  
J-P. Antoine (Katholieke Universiteit Leuven, Belgium)  
D.M. Sima (Katholieke Universiteit Leuven, Belgium)  
Maria Garcia (Katholieke Universiteit Leuven, Belgium)

**3:00 PM – 3:15 PM** Coffee Break

### **Special Session: "NMR Measurements and Instrumentation II"**

**Chairs:** Dimitrios Karras (Chalkis Institute of Technology, Greece)  
Danielle Graveron-Demilly (Universita de Lyon, France)  
Dirk van Ormondt (Delft University of Technology, Netherlands)

#### **3:15 Handling Arbitrary Unknown Lineshape in In Vivo MRS Without Searching in Function Space**

E. Popa (Universita de Lyon, France)  
Dimitrios Karras (Chalkis Institute of Technology, Greece)  
B.G. Mertzios (Democritus University of Thrace, Greece)  
D. Sima (Katholieke Universiteit Leuven, Belgium)  
Ron de Beer (Delft University of Technology, Netherlands)  
Dirk van Ormondt (Delft University of Technology, Netherlands)  
Danielle Graveron-Demilly (Universita de Lyon, France)

#### **3:30 Simple Correction of Chemical Shift Changes in Magnetic Resonance Spectroscopy Quantitation**

A. Lazariiev (Universita de Lyon, France)  
M. Piotto (Bruker BioSpin, France)  
K. Elbayed (University Hospitals of Strasbourg, France)  
I.J. Namer (University Hospitals of Strasbourg, France)  
Dirk van Ormondt (Delft University of Technology, Netherlands)  
Danielle Graveron-Demilly (Universita de Lyon, France)

#### **3:45 Solvent, isomers and vibrational effects in DFT calculations for the NMR spin-Hamiltonian parameters of alanine**

Zeinab Atieh (Universita de Lyon, France)  
Abdul-Rahman Allouche (Universita de Lyon, France)  
Monique Auburt-Frecon (Universita de Lyon, France)  
Danielle Graveron-Demilly (Universita de Lyon, France)

#### **4:00 Content Based MRSI Image Indexing and Retrieval Involving a Fuzzy Descriptor**

Dimitrios Karras (Chalkis Institute of Technology, Greece)

### **POSTER SESSION I**

**July 1, 2010**

**2:00 PM – 5:00 PM**

**Chair:** Prof. Theodore Laopoulos (Aristotle University of Thessaloniki, Greece)

#### **Generalized Statistical Operators for Signal Processing: Sleep stages detection from 3D moves**

Dragos Falie (University Politehnica of Bucharest, Romania)  
Mihaela Ichim (University of Agronomic Science and Veterinary Medicine of Bucharest, Romania)

#### **Automatic Neutral Section Passing Control Device based on Image Recognition for Electric Locomotives**

Dixiang Chen (National University of Defense Technology, China)  
Mengchun Pan (National University of Defense Technology, China)  
Wugang Tuan (National University of Defense Technology, China)  
Wuqiang Yang (The University of Manchester, United Kingdom)



### **A Vocal User Interface Plug-in for jMRUI**

Rui Guimaraes

Theologos Athanaselis (ILSP, Greece)

Stelios Bakamidis (ILSP, Greece)

Ioannis Dologlou (ILSP, Greece)

Stavroula-evita Fotinea (ILSP, Greece)

### **Estimation of Hand Force for Analyzing Side-approach Transfer Motion**

Yoshio Tanimoto (Kibikogen Rehabilitation Center, Japan)

Kuniharu Nanba (Kibikogen Rehabilitation Center, Japan)

Akihiro Tokuhiko (Kibikogen Rehabilitation Center, Japan)

Hiroyuki Ukida (The University of Tokushima, Japan)

### **Geometric distortion correction for sinusoidally scanned atomic force microscopic images**

Xiangrui Tian (Beihang University, China)

Lijun Xu (Beihang University, China)

Xiaolu Li (Beihang University, China)

Guangyi Shang (Beihang University, China)

Junen Yao (Beihang University, China)

### **Interactive Projection System Based on a Two-Dimensional Position Sensitive Detector**

Ni Kai (Tsinghua University, China)

Zhou Qian (Tsinghua University, China)

Ma Jianshe (Tsinghua University, China)

Chen Liangjun (Tsinghua University, China)

Gao Yuan (Tsinghua University, China)

Guo Hongfeng (Tsinghua University, China)

### **Accurate Evaluation of HER-2 Amplification in FISH Images**

Alberto Del Bimbo (University of Florence, Italy)

M. Meoni (University of Florence, Italy)

P. Pala (University of Florence, Italy)

### **Unsupervised background reconstruction based on iterative median blending and spatial segmentation**

Slim Amri (SIIVA, Tunisia)

Walid Barhoumi (SIIVA, Tunisia)

Ezzeddine Zagrouba (SIIVA, Tunisia)

### **Robustness study of a new iterative Soft Bit Rate estimation**

Molka Troudi-Ghorbel (IHEC, Tunisia)

Faouzi Ghorbel (ENSI, Tunisia)

Samir Saoudi (Universite Europeenne de Bretagne, France)

### **Levy Flights for Improved Ladar Scanning**

Joseph Spencer (University of Liverpool, United Kingdom)

Ali Al-Temeemy (University of Liverpool, United Kingdom)

J.F. Ralph (University of Liverpool, United Kingdom)

### **Depth Estimation for Autonomous Robot Navigation: A Comparative Approach**

Sotirios Diamantas (University of Southampton, United Kingdom)

Anastasios Oikonomidis (University of Southampton, United Kingdom)

Richard M. Crowder (University of Southampton, United Kingdom)

## **POSTER SESSION II**

**July 2, 2010**

**9:00 AM – 12:00 NOON**

**Chair:** Prof. Theodore Laopoulos (Aristotle University of Thessaloniki, Greece)

### **Efficient Real-Time Video-in-Video Insertion into a Pre-Encoded Video Stream for the H.264/AVC**

Evgeny Kaminsky (Ben-Gurion University of the Negev, Israel)

Dan Grois (Ben-Gurion University of the Negev, Israel)

Ofer Hadar (Ben-Gurion University of the Negev, Israel)

### **Region Growing Segmentation for Textile Yarn Images**

Anna Fabijanska (Technical University of Lodz, Poland)

### **Accelerating batched 1D-FFT with a CUDA-capable computer: Calling CUDA library functions from a Java environment**

Ron de Beer (University of Technology Delft, Netherlands)

Dirk van Ormondt (University of Technology Delft, Netherlands)

Dimitrios Karras (Chalkis Institute of Technology, Greece)

F. Di Cesare (Universita de Lyon, France)

Danielle Graveron-Demilly (Universita de Lyon, France)

Z. Starcuk (Institute of Scientific Instruments of the ASCR, Czech republic)

### **A Fuzzy Multi-Sensor Architecture for Indoor Navigation**

Angelos Amanatiadis (Democritus University of Thrace, Greece)

D. Chrysostomou (Democritus University of Thrace, Greece)

D. Koulouriotis (Democritus University of Thrace, Greece)

A. Gasteratos (Democritus University of Thrace, Greece)

### **Computationally Effective Stereovision SLAM**

Lazaros Nalpantidis (Democritus University of Thrace, Greece)

Georgios Sirakoulis (Democritus University of Thrace, Greece)

Andrea Carbone (University of Rome, Italy)

Antonios Gasteratos (Democritus University of Thrace, Greece)

### **Near Optimum Local Image Watermarking Using Krawtchouk Moments**

George Papakostas (Democritus University of Thrace, Greece)

E.D. Tsougenis (Democritus University of Thrace, Greece)

D.E. Koulouriotis (Democritus University of Thrace, Greece)

### **An Edge-Preserving Interpolation in CCD Color Filter Arrays**

Yi-Hong Yang (National Chiao-Tung University, Taiwan)

Peng-Hua Wang (National Taipei University, Taiwan)

Po-Ning Chen (National Chiao-Tung University, Taiwan)

Chia-Lung Wu (National Chiao-Tung University, Taiwan)

### **Vision System-based, Grape Leaves Processing, in Real Time**

Theodore Pachidis (Kavala Institute of Technology, Greece)

John N. Lygouras (Democritus University of Thrace, Greece)

Ilias T. Sarafis (Kavala Institute of Technology, Greece)

### **Geometric shape prior to region-based active contours using Fourier-based shape alignment**

Mohamed Ali Charmi (GRIFT research Group, Tunisia)  
Mohamed Amine Mezghich (GRIFT research Group, Tunisia)  
Slim M'Hiri (GRIFT research Group, Tunisia)  
Stephane Derrode (GSM, France)  
Faouzi Ghorbel (GRIFT research Group, Tunisia)

### **A Neutron Dosemeter Based on a Stack of Two p-MOSFETs**

Vasileios Konstantakos (Aristotle University of Thessaloniki, Greece)  
M. Fragopoulou (Aristotle University of Thessaloniki, Greece)  
G. Sarrabayrousse (Université de Toulouse, France)  
S. Siskos (Aristotle University of Thessaloniki, Greece)  
Th. Laopoulos (Aristotle University of Thessaloniki, Greece)  
M. Zamani (Aristotle University of Thessaloniki, Greece)

### **Selection of Window Size for Focus Measure Processing**

Aamir S. Malik (Universiti Teknologi Petronas, Malaysia)