

## **WELCOME MESSAGE FROM THE CHAIRPERSONS**

The organizing committee welcomes you to the 2012 IEEE International Conference on Virtual Environments, Human-Computer Interfaces, and Measurement Systems (IEEE VECIMS 2012), held in Tianjin, China, on 2-4 July, 2012. This meeting, sponsored by the IEEE Instrumentation and Measurement Society, is the tenth of a successful series that extends its roots back to the 1996 IEEE Workshop on Emerging Technologies for Instrumentation and Measurement, as a profound evidence of the continuous and even increasing interest in this research and applications area.

The three-day conference program aims to provide a forum for the attendees to carry out presentations, information exchanges, extensive formal and informal discussions on theory, methodology and applications in the field of interest of the conference, as well as to foster networking, planning for future collaborations and new research projects that will further extend and advance the use of virtual environments and human-computer interaction in the instrumentation and measurement field. We hope the conference will foster and discuss opportunities and challenges in using virtual environment and human-computer interfacing breakthroughs aiming to the advancement of instrument performance and measurement capabilities, and related applications. To promote interaction and discussion in the audience, sufficient time is allotted to presenters not only to introduce their achievements, but also to engage in extended discussions with the participants. Subjects of discussion include, but are not restricted to, critical evaluation of approaches and results, the rationale underlying particular methodologies, experimental and theoretical examinations, practical difficulties, insights, and extensions to other application areas.

The IEEE VECIMS 2012 conference is held in parallel with the 2012 IEEE International Conference on Computational Intelligence for Measurement Systems and Applications (IEEE CIMSA 2012). Due to their many common aspects and shared technologies, this parallel organization will foster vivid and rewarding interaction among the participants of the two events, and contribute to sharing advanced knowledge and producing stimulating experiences as well as potential research synergies.

We hope you will find IEEE VECIMS 2012 a challenging and productive experience. We trust that you will also enjoy the location, the culture and the food: Tianjin will be an exciting experience!

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## Pre-Conference Registration (July 1, 2012)

Time	Program	Venue
13:00-20:00	Registration	Lobby of Tianjin Huigao Garden Hotel
18:00-20:00	Welcome Reception	Restaurant of Tianjin Huigao Garden Hotel

## Conference Day 1 (July 2, 2012)

Time	Program	Venue
08:00-12:00	Registration	Lobby of Tianjin Huigao Garden Hotel
08:30-10:00	Opening Session <ul style="list-style-type: none"><li>● Welcome Speeches</li><li>● Keynote Presentation 1</li></ul>	Huigao Grand Ball Room
10:00-10:30	Photo Taking and Tea Break	Outdoor Garden
10:30-12:00	<ul style="list-style-type: none"><li>● Keynote Presentation 2</li><li>● Keynote Presentation 3</li></ul>	Huigao Grand Ball Room
12:00-13:45	Lunch	Restaurant
14:00-16:00	Session A1 Special Session 1	Conference Room 1 in Huigao Garden Hotel
16:00-16:20	Tea Break	
16:20-18:00	Session B1	Conference Room 1 in Huigao Garden Hotel
18:00-20:00	Conference Banquet	Banquet Hall

## Conference Day 2 (July 3, 2012)

Time	Program	Venue
08:30-10:10	Session C1	Conference Room 1 in Huigao Garden Hotel
10:10-10:30	Tea Break	
10:30-12:10	Session D1	Conference Room 1 in Huigao Garden Hotel
12:10-13:45	Lunch	Restaurant
14:00-16:00	Session E1	Conference Room 1 in Huigao Garden Hotel
16:00-16:20	Tea Break	
16:20-18:00	Session F1	Conference Room 1 in Huigao Garden Hotel
16:20-18:00	Session F2	Conference Room 2 in Huigao Garden Hotel
18:00-19:30	Dinner	Banquet Hall

## Conference Day 3 (July 4, 2012)

Time	Program	Venue
08:30-10:10	Session G1	Conference Room 1 in Huigao Garden Hotel
08:30-10:10	Session G2	Conference Room 2 in Huigao Garden Hotel
10:10-11:50	Session H1	Conference Room 1 in Huigao Garden Hotel
Close ceremony with student competition award announcement		

## Sunday, July 1, 2012 - Pre-Conference Registration

- 1:00 PM - 8:00 PM      Registration
- 6:00 PM - 8:00 PM      Welcome Reception

## Monday, July 2, 2012

- 8:00 AM - 12:00 PM      Registration
- 8:30 AM - 10:00 AM      Opening Session  
Welcome Speeches  
Keynote Presentation 1
- 10:00 AM - 10:30 AM      Photo Taking and Tea Break
- 10:30 AM - 12:00 PM      Keynote Presentation 2 and Keynote Presentation 3
- 12:00 PM - 1:45 PM      Lunch

2:00 PM - 4:00 PM

Session A1

Room: Conference Room 1 in Huigao Garden Hotel

- 2:00 PM                      **4D Dynamic Simulation of Patients Undergoing Radiotherapy**  
Jun Deng (Yale University, USA)  
Ravinder Nath (Yale University, USA)
- 2:20 PM                      **A New Automatic Segmentation Method for Lung Tumor Based on SUV Threshold on 18F-FDG PET images**  
Xin Ming (Tianjin University, P.R. China)  
Yuanming Feng (Tianjin University & Tianjin Medical University Cancer Institute & Hospital, P.R. China)  
Yu Guo (Tianjin University, P.R. China)  
Chunmei Yang (Tianjin University, P.R. China)
- 2:40 PM                      **A Knowledge Based Automatic Region of Interest (ROI) segment of Cervical Cord Diffusion Tensor Imaging.. 9**  
Xiang Li (The University of Hong Kong, Hong Kong)  
Jiaolong Cui (The University of Hong Kong, Hong Kong)  
Chunyi Wen (The University of Hong Kong, Hong Kong)  
Timothy K.H. Au (The University of Hong Kong, Hong Kong)  
Keith D.K. Luk (The University of Hong Kong, Hong Kong)  
Yong Hu (The University of Hong Kong, Hong Kong)
- 3:00 PM                      **Two wavelength spectral domain optical coherence tomography systems for early stage chicken embryonic heart imaging**  
Zhenhe Ma (Northeastern University at Qinhuandao, P.R. China)  
Xu Tao (Shenzhen academy of metrology and quality inspection Shenzhen, China)

- 3:20 PM**                    **Study of Denoising Algorithm for MR Image Based on Contourlet Transform**  
 Lei Guo (Hebei University of Technology, P.R. China)  
 Guizhi Xu (Hebei University of Technology, P.R. China)  
 Lei Zhao (Harvard Medical School and Brigham & Women's Hospital, USA)  
 Ming Hu (Hebei University of Technology, P.R. China)  
 Ying Li (Hebei University of Technology, P.R. China)
- 3:40 PM**                    **A Modified Optical Flow Based Method for Registration of 4D CT Data of Hepatocellular Carcinoma Patients**  
 Hui Wang (Shandong University, P.R. China)  
 Yong Yin (Colleague, P.R. China)  
 Hongjun Wang (Shandong University, P.R. China)  
 Guanzhong Gong (Department of the Radiation Oncology, Shandong Cancer, P.R. China)
- 4:00 - 4:20 PM**        **Tea Break**
- 4:20 PM - 6:00 PM**  
**Session B1**  
**Room: Conference Room 1 in Huigao Garden Hotel**
- 4:20 PM**                    **A Human Computer Interface Driven Rehabilitation System for Upper Limb Motion Recovery**  
 Zheng Tao (University of Hong Kong, Hong Kong)  
 Chan Kit Wah (University of Hong Kong, Hong Kong)  
 Yong Hu (University of Hong Kong, Hong Kong)
- 4:40 PM**                    **Tilt-Click: One-Handed Eyes-Free Numeric and Symbol Input for Calculator Applications**  
 Chunming Gao (Michigan Technological University, USA)  
 Robert Pastel (Michigan Technological University, USA)  
 Jindong Tan (Michigan Technological University, USA)
- 5:00 PM**                    **Implementation of SSVEP Based BCI with Emotiv EPOC**  
 Yue Liu (University of Macau, Macao)  
 Jiang Xiao (University of Macau, Macao)  
 Teng Cao (University of Macau, Macao)  
 Feng Wan (University of Macau, Macao)  
 Peng Un Mak (University of Macau, Macao)  
 Pui-In Mak (University of Macau, Macao)  
 Mang I Vai (University of Macau, Macao)
- 5:20 PM**                    **On The Efficiency Issues of Virtual Keyboard Design**  
 Cihan Topal (Anadolu University, Turkey)  
 Burak Benligiray (Anadolu University, Turkey)  
 Cuneyt Akinlar (Anadolu University, Turkey)
- 5:40 PM**                    **Visual Identification of Medicine Boxes using Features Matching**  
 Xiankleber C. Benjamim (Federal University of Rio Grande do Norte, Brazil)  
 Rafael B. Gomes (Federal University of Rio Grande do Norte, Brazil)  
 Aquiles Burlamaqui (Federal University of Rio Grande do Norte, Brazil)  
 Luiz Marcos Gonçalves (Federal University of Rio Grande do Norte UFRN, Brazil)
- 6:00 PM - 8:00 PM** **Conference Banquet**

## Tuesday, July 3

8:30 AM - 10:10 AM

Session C1

Room: Conference Room 1 in Huigao Garden Hotel

- 8:30 AM**                    **Virtual Environment for 3-D Synthetic Fingerprints**  
Ruggero Donida Labati (Università degli Studi di Milano, Italy)  
Angelo Genovese (Università degli Studi di Milano, Italy)  
Vincenzo Piuri (University of Milan, Italy)  
Fabio Scotti (Università' degli Studi di Milano, Italy)
- 8:50 AM**                    **Performance Optimisation of Mobile Robots in Dynamic Environments**  
Shiu Hong Choi (The University of Hong Kong, Hong Kong)  
Wen Kai Zhu (The University of Hong Kong, Hong Kong)
- 9:10 AM**                    **Nonpassive Teleoperation Systems with Time Varying Communication Delay**  
Shafiqul Islam (University of Ottawa, Canada)  
Peter Liu (Carleton University, Canada)  
Abdulmotaleb El Saddik (University of Ottawa, Canada)
- 9:30 AM**                    **Evaluation of Synthesized Electrocardiogram on Additional Leads Based on Clinical Data**  
Yuki Yoshida (The University of Aizu, Japan)  
Xin Zhu (University of Aizu, Japan)  
Wenxi Chen (University of Aizu, Japan)  
Wei Daming (University of Aizu, Japan)
- 10:10 AM - 10:30 AM**                    **Tea Break**

10:30 AM - 12:10 PM

Session D1

Room: Conference Room 1 in Huigao Garden Hotel

- 10:30 AM**                    **A new image quality metric based on human visual system**  
Giovanni Dimauro (Università' di Bari & Dipartimento di Informatica, Italy)
- 10:50 AM**                    **Research on mental fatigue based on entropy changes in space environment**  
Xuejun Jiao (China Astronaut Research and Training Centre, P.R. China)  
Jing Bai (Tsinghua University, China)  
Shanguang Chen (China Astronaut Research and Training Centre, P.R. China)  
Qijie Li (China Astronaut Research and Training Centre, P.R. China)
- 11:10 AM**                    **Neurofeedback for the Treatment of Schizophrenia: Case Study**  
Wenya Nan (University of Macau, Macao)  
Lanshin Chang (University of Macau, Macao)  
Joao Pedro Rodrigues (I. S. R., Portugal)  
Feng Wan (University of Macau, Macao)  
Peng Un Mak (University of Macau, Macao)  
Pui-In Mak (University of Macau, Macao)  
Mang I Vai (University of Macau, Macao)  
Agostinho Rosa (I. S. R., Spain)



**11:30 AM Digital Spelling BCI Based on Visual-Auditory Associate Stimulation**

Xingwei An (Tianjin University, P.R. China)  
Baikun Wan (Tianjin University, P.R. China)  
Hongzhi Qi (Tianjin University, P.R. China)  
Dong Ming (Tianjin University, P.R. China)

**12:10 PM - 1:45 PM Lunch**

**2:00 PM - 4:00 PM**

**Session E1**

**Room: Conference Room 1 in Huigao Garden Hotel**

**2:00 PM Arm Movement Recognition for Flag Signaling with Kinect Sensor**  
Noriyuki Iwane (Hiroshima City University, Japan)

**2:20 PM Using Implicit Features for Enhancing the Immersive Object Representation in Multimodal Virtual Reality Environments**  
Stoyan Maleshkov (Technical University of Sofia & Virtual Reality Lab, Bulgaria)  
Angel Bachvarov (Technical University of Sofia, Bulgaria)  
Dimo Chotrov (Technical University of Sofia, Bulgaria)  
Jivka Ovtcharova (Karlsruhe Institute of Technology (KIT), Germany)  
Jurica Katicic (Karlsruhe Institute of Technology (KIT), Germany)

**2:40 PM Study on Virtual Coordinate Measuring Machine Based on Augmented Virtuality**  
Yizhong Wang (Tianjin University of Science and Technology, P.R. China)  
Xiaodong Guo (Tianjin University of Science and Technology, P.R. China)  
Ke Sun (Tianjin University of Science and Technology, P.R. China)  
Yonghua Chen (Hong Kong University, Hong Kong)

**3:00 PM Movement and deformation of virtual object based on argument passing method**  
Rong-chang Yuan (China Electric Power Research Institute & China Electric Power Research Institute, P.R. China)  
Zhengjiang Li (China Agricultural University, P.R. China)  
Si Chen (State University of New York at Buffalo, USA)

**3:20 PM Design of Six Degrees of Freedom Electromagnetic Tracker for Virtual Reality System**  
Juan Yin (Tianjin University, P.R. China)  
Xuemin Wang (Tianjin University, P.R. China)  
Yi Zhang (Tianjin University, P.R. China)  
Xingming Dong (Tianjin Sanitarium, China)  
Pang Zhou (Tianjin University, P.R. China)

**3:40 PM Simultaneous Quantitative Detection of Tetracyclines Derivatives by Raman Spectroscopy**  
Xiaoyun Chen (Tianjin University, P.R. China)  
Weizi Liang (Tianjin University, P.R. China)  
Chunmei Yang (Tianjin University, P.R. China)  
Wang Lin (Tianjin University, P.R. China)  
Minghai Bi (Tianjin University, P.R. China)

**4:20 PM - 6:00 PM**

**Session F1**

**Room: Conference Room 1 in Huigao Garden Hotel**

- 4:20 PM**                    **Design of a Novel Mobile Assistive Robot with Haptic Interaction**  
Huanran Wang (Carleton University, Canada)  
Xiaoping Peter Liu (Carleton University, Canada)
- 4:40 PM**                    **iFeel6-BH1500: a Large-Scale 6-DOF Haptic Device**  
ZhongYuan Chen (Beihang University, P.R. China)  
Yuru Zhang (Beihang University, P.R. China)  
Dangxiao Wang (Beihang University, P.R. China)  
Chaobin Li (Beihang University, P.R. China)  
Yaojun Zhang (Beihang University, P.R. China)
- 5:00 PM**                    **Learning and Cognitive System Using Friction Control Based Tactile Rendering**  
Yuanqing Wang (Nanjing University of Aeronautics and Astronautics, P.R. China)  
Xiaochao Zhou (Nanjing University of Aeronautics and Astronautics, P.R. China)  
Xiong Lu (Nanjing University of Aeronautics and Astronautics, P.R. China)
- 5:20 PM**                    **Influence of Mechanical Impedance of Human Arm on the Stability of Haptic Rendering**  
Hao Zhao (Nanjing University of Aeronautics and Astronautics, P.R. China)  
Chen-xi Xu (Nanjing University of Aeronautics and Astronautics, P.R. China)  
Xiong Lu (Nanjing University of Aeronautics and Astronautics, P.R. China)
- 5:40 PM**                    **A New Targets Matching Method Based On Epipolar Geometry**  
Qijie Li (China Astronaut Research and Training Centre, P.R. China)  
Tianqing Chang (The Academy of Armored Forces Engineering, China)  
Xuejun Jiao (China Astronaut Research and Training Centre, P.R. China)

**4:20 PM - 6:00 PM**

**Session F2**

**Room: Conference Room 2 in Huigao Garden Hotel**

**4:20PM**

**Near Infrared Spectroscopy Signal Processing for Interfacing Brain Function**

Xunjun Jiao (China Astronaut Research and Training Centre, P.R. China)

Jing Bai (Tsinghua University, China)

Shanguang Chen (China Astronaut Research and Training Centre, P.R. China)

Qijie Li (China Astronaut Research and Training Centre, P.R. China)

**4:40 pm**

**Development of physical workload measuring system based on multi-physiological signals from human-machine interaction**

Xunjun Jiao (China Astronaut Research and Training Centre, P.R. China)

Jing Bai (Tsinghua University, China)

Shanguang Chen (China Astronaut Research and Training Centre, P.R. China)

Qijie Li (China Astronaut Research and Training Centre, P.R. China)

**5:00 PM**

**A task ontology model for domain independent dialogue management**

Xiaobu Yuan (University of Windsor, Canada)

Guoying Liu (University of Windsor, Canada)

**5:20 PM**

**The Software Implementation of Endoscope Localization System Based on Virtual Human Model**

Zizi Ouyang (Tianjin University, P.R. China)

Xiaodong Chen (Tianjin University, P.R. China)

Sen Wang (Tianjin University, P.R. China)

Yi Wang (Tianjin University, P.R. China)

Daoyin Yu (Tianjin University, P.R. China)

**5:40 PM**

**A Hybrid Brain-Computer Interface Combining the EEG and NIRS**

Lan Ma (Tianjin University, P.R. China)

LiXin Zhang (Tianjin University, P.R. China)

Lu Wang (Tianjin University, P.R. China)

Minpeng Xu (Tianjin University, P.R. China)

Hongzhi Qi (Tianjin University, P.R. China)

Baikun Wan (Tianjin University, P.R. China)

Dong Ming (Tianjin University, P.R. China)

Yong Hu (The University of Hong Kong, Hong Kong)

**6:00 PM - 7:00 PM Dinner**

## Wednesday, July 4

8:30 AM - 10:10 AM

Session G1

Room: Conference Room 1 in Huigao Garden Hotel

- 8:30 AM**                    **Error analysis in parallel-axes binocular stereoscopic measurement system caused by the calibrated parameters**  
Qijie Li (China Astronaut Research and Training Centre, P.R. China)  
Tianqing Chang (The Academy of Armored Forces Engineering, China)  
Xuejun Jiao (China Astronaut Research and Training Centre, P.R. China)
- 8:50 AM**                    **Feature enhancement of P300 based brain computer interface through Spatially-constrained ICA**  
Suogang Wang (Tianjin Medical University, P.R. China)  
Christopher J James (University of Warwick, United Kingdom)
- 9:10 AM**                    **Research on Auditory BCI Based on Wavelet Transform**  
Miaomiao Guo (Hebei University of Technology, P.R. China)  
Guizhi Xu (Hebei University of Technology, P.R. China)  
Lei Wang (Hebei University of Technology, P.R. China)  
Jiang Wang (Hebei University of Technology, P.R. China)
- 9:30 AM**                    **3D Cell Feature Measurement with a Diffraction Imaging Method**  
Yu Zhang (Tianjin University, P.R. China)  
Yu Sa (Tianjin University, P.R. China)  
Yuanming Feng (Tianjin University & Tianjin Medical University Cancer Institute & Hospital, P.R. China)  
Xin-Hua Hu (East Carolina University, USA)
- 9:50 AM**                    **Camshift Algorithm -based Moving Target Recognition and Tracking System**  
Shujun Yao (Tianjin University, P.R. China)  
Sen Wang (Tianjin University, P.R. China)  
Zhihai Jiao (Tianjin University, P.R. China)  
Daoyin Yu (Tianjin University, P.R. China)

**8:30 AM - 10:10 AM**

**Session G2**

**Room: Conference Room 2 in Huigao Garden Hotel**

**8:30 AM**

**Measurement of Anesthesia Depth Based on Heart Rate Variability**

Xiangxin Li (Tianjin University, P.R. China)

Xuemin Wang (Tianjin University, P.R. China)

Fang Wang (College of Biomedical Engineering & Instrument Science, Zhejiang University, China)

Zhonghai Wang (Tianjin University, P.R. China)

Ranting Xue (Tianjin University, P.R. China)

Xinming Dong (Tianjin Sanitarium, China)

Peng Zhou (Tianjin University, P.R. China)

**8:50 AM**

**A portable in-vivo device of friction force and torque measurement for vascular surgery**

Dangxiao Wang (Beihang University, P.R. China)

Cailing Yang (State Key Lab of Virtual Reality Technology and Systems, Beihang University, P.R. China)

Jiangxia Shi (Beihang University, P.R. China)

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

**9:10 AM**

**Analysis of knee joint kinematics during walking in patients with cerebral palsy through human motion capture and gait model-based measurement**

Amir Ijaz (University of Dundee, United Kingdom)

Sheila Gibbs (University of Dundee, United Kingdom)

Rami Abboud (University of Dundee, United Kingdom)

Weijie Wang (University of Dundee, United Kingdom)

Dong Ming (Tianjin University, P.R. China)

Baikun Wan (Tianjin University, P.R. China)

**9:30 AM**

**The DESO Filter Based On the Template Matching Algorithm**

Qijie Li (China Astronaut Research and Training Centre, P.R. China)

Tianqing Chang (The Academy of Armored Forces Engineering, China)

Xuejun Jiao (China Astronaut Research and Training Centre, P.R. China)

**9:50 AM**

**Identification of the Seaweed Fluorescence Spectroscopy Based on the KPCA and ICA-SVM**

Jiangtao Lv (College of Control Engineering Northeastern University at Qinhuandao, P.R. China)

Zhenhe Ma (Northeastern University at Qinhuandao, P.R. China)

**9:50 AM - 10:10 AM**

**Tea Break**

**10:10 AM - 11:50 AM**

**Session H1**

**Room: Conference Room 1 in Huigao Garden Hotel**

- 10:10 AM            Fingerprint image segmentation based on a combined method**  
Juntao Xue (Tianjin University, P.R. China)  
Hongwei Li (Tianjin University, P.R. China)
- 10:30 AM            Development of High-speed Camera Circuits for Diffraction Imaging Flow Cytometer**  
He Wang (Tianjin University, P.R. China)  
Ying Zhang (Tianjin University, P.R. China)  
Yuanming Feng (Tianjin University & Tianjin Medical University Cancer Institute & Hospital, P.R. China)  
Jun Q. Lu (East Carolina University, USA)
- 10:50 AM            Extraction of Microsphere Size from Diffraction Images with an STFT Method**  
Jun Zhang (Tianjin University, P.R. China)  
Wang Lin (Tianjin University, P.R. China)  
Kenneth Jacobs (East Carolina University, USA)  
Xin-Hua Hu (East Carolina University, USA)
- 11:10 AM            Portable Environment Detection System Based on Vibrotactile Feedback**  
Chen-xi Xu (Nanjing University of Aeronautics and Astronautics, P.R. China)  
Hao Zhao (Nanjing University of Aeronautics and Astronautics, P.R. China)  
Xiong Lu (Nanjing University of Aeronautics and Astronautics, P.R. China)
- 11:30 AM            EMG-Muscle Force Estimation Model Based on Back-Propagation Neural Network**  
Usama J. Naeem (Huazhong University of Science and Technology (HUST), P.R. China)  
Caihua Xiong (Huazhong University, P.R. China)  
Asaad A. Abdullah (Huazhong University, P.R. China)
- 11:50 AM            Closing Ceremony with student award announcement**