



The Engineering in Medicine and Biology Society of the IEEE advances the application of engineering sciences and technology to medicine and biology, promotes the profession, and provides global leadership for the benefit of its members and humanity by disseminating knowledge, setting standards, fostering professional development, and recognizing excellence.

The EMBS field of interest is the development and application of engineering concepts and methods to biology, medicine and health sciences to provide effective solutions to biological, medical and healthcare problems. The field encompasses the development of mathematical theories, physical, biological and chemical principles, computational models and algorithms, devices and systems for clinical, industrial and educational applications.

Engineering in Medicine and Biology Society

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PUBLICATIONS

IEEE PULSE
Transactions on Biomedical Engineering
Transactions on Biomedical Engineering Letters
Transactions on Information Technology in Biomedicine
Transactions on Neural Systems and Rehabilitation Engineering
Transactions on Medical Imaging
Transactions on NanoBioscience
Transactions on Computational Biology and Bioinformatics
Transactions on Biomedical Circuits and Systems
Reviews on Biomedical Engineering

ELECTRONIC PRODUCTS

EMBS Electronic Resource

CONFERENCES

Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)
IEEE EMBS Special Topic Conference on Neural Engineering (NER)
International Symposium on Biomedical Imaging (ISBI)
International Conference on Biomedical Robotics and Biomechatronics (BIOROB)
International Conference on Rehabilitation Robotics (ICORR)
AMA/IEEE-EMBS Medical Technology Conference (MedTech)
Grand Challenges Conference Series (GCBE)

SUMMER SCHOOLS Technically Co-Sponsored by EMBS

International Summer School on Biomedical Imaging
International Summer School on Biomedical Signal Processing
International Summer School on Biocomplexity
International Summer School on Medical Devices and Biosensors
International Summer School on Information Technology in Biomedicine



ACADEMIC
CAREER ACHIEVEMENT

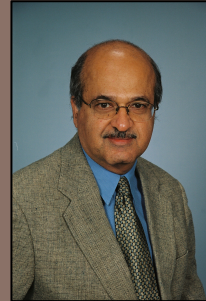


K. KIRK SHUNG

UNIVERSITY OF SOUTHERN CALIFORNIA

For outstanding contributions to biomedical ultrasonic technology and applications.

PROFESSIONAL
CAREER ACHIEVEMENT



RAHUL MEHRA

CONSULTANT TO MEDTRONIC

For outstanding contributions to the understanding and treatment of malignant heart rhythms with implantable devices for patients at risk of sudden cardiac death.

DISTINGUISHED
SERVICE



MAXIMUS A. VIERGEVER

UNIVERSITY MEDICAL CENTER UTRECHT

For outstanding service and leadership contributions to the EMBS community through editorial activities and publications.

EARLY
CAREER ACHIEVEMENT



JOSE M. CARMENA

UNIVERSITY OF CALIFORNIA, BERKELEY

For significant contributions to the development of cortical brain-machine interfaces for the restoration of sensory-motor function in neurologically impaired patients.

2011

EMBS Achievement Awards

TECHNICAL ACHIEVEMENT



LIHONG WANG

WASHINGTON UNIVERSITY IN ST. LOUIS

For seminal contributions to ultrasonically enabled biophotonic imaging and modeling of photon transport in biological tissue.

TECHNICAL ACHIEVEMENT



MICHAEL UNSER

ÉCOLE POLYTECHNIQUE FÉDÉRALE
DE LAUSANNE

For outstanding contributions to signal image processing with applications in biomedical engineering.

IEEE MEDAL FOR INNOVATIONS IN HEALTHCARE TECHNOLOGY

Sponsored by the Engineering in Medicine & Biology Society



HARRISON H. BARRETT

UNIVERSITY OF ARIZONA

For pioneering contributions to the foundations and applications of biomedical imaging science.

WILLIAM J. MORLOCK AWARD



YONGMIN KIM

UNIVERSITY OF WASHINGTON

For significant contributions to the development and application of electronic technologies for biomedical imaging and healthcare information systems.

2011

EMBS Achievement Awards



CONGRATULATIONS

2011 EMBS

CHAPTER AWARD WINNERS

EMBS sponsors local activities worldwide through its Chapters for both Students and Members. Annually we acknowledge and recognize those Chapters whose activities embody best practices for the Society and its Members.

Please join us in congratulating the following Chapters/Clubs for their excellence in providing outstanding services to their local Members.

Best New Student Branch Chapter or
Club

XIAMEN UNIVERSITY
Student Club

Outstanding Performance Award
(OPA)

CARLETON UNIVERSITY
Student Club

Outstanding Chapter Award
OTTAWA CHAPTER

2011 EMBS Student Paper Competition Finalists

Supported by partnership funds provided by National Science Foundation

Geographic Finalists

North America

Alexander Kent, Duke University, USA

Instrumentation to Record Evoked Potentials for Closed-Loop Control of Deep Brain Stimulation

Europe

Michaël Johannes Rooijackers, Eindhoven University of Technology, The Netherlands

Low-Complexity R-Peak Detection in ECG Signals: a Preliminary Step

Asia Pacific

Jonathan Mynard, Murdoch Children's Research Institute, Australia

Robustness of the P-U and lnD-U Loop Wave Speed Estimation Methods: Effects of the Diastolic Pressure

Open Finalists

Faith A. Bazley, Johns Hopkins University, USA

Plasticity Associated Changes in Cortical Somatosensory Evoked Potentials following Thoracic Spinal Cord Injury

Virgilio Bento, University of Aveiro, Portugal

Towards a Movement Quantification System Capable of Automatic Evaluation of Upper Limb Motor

Anthony Christodoulou, University of Illinois at Urbana-Champaign, USA

Four-Dimensional MR Cardiovascular Imaging: Method and Application

Brian D'Alessandro, New Jersey Institute of Technology, USA

Voxel-Based, Parallel Simulation of Light in Skin Tissue for the Reconstruction of Subsurface Skin Lesion Volumes

Chengzong Han, University of Minnesota, USA

Noninvasive Reconstruction of the Three-dimensional Ventricular Activation Sequence during Pacing and Ventric

Christina Hassler, University of Freiburg, Germany

Chronic Intracortical Implantation of Saccharose-coated Flexible Shaft Electrodes into

Sissel Juul, Aarhus University, Denmark

Microfluidics-Mediated Isothermal Detection of Enzyme Activity at the Single Molecule Level

Muammar Muhammad Kabir, The University of Adelaide, Australia

Quantification of Cardio-respiratory Interactions in Healthy Children during Night-Time Sleep using Joi

Carlos Alejandro Robles-Rubio, McGill University, Canada

Automated Unsupervised Respiratory Event Analysis

Atsushi Takano, Tokyo Denki University, Japan

On-chip Incubation System for Long-term Microfluidic Cell Culture

Nhan Tran, The University of Melbourne, Australia

A Prototype 64-Electrode Stimulator in 65 nm CMOS Process towards a High Density Epi-Retinal Prosthesis

Ning Xue, University of Texas at Dallas, USA

A SU-8-Based Compact Implantable Wireless Pressure Sensor for Intraocular Pressure Sensing Application

Special Thanks to the Student Paper Competition Reviewers

Fabio Babiloni

Catherine Chronaki

Alisa Morss Clyne

Lei Ding

Ron Leder

Guanglin Li

Mike McShane

Carmen Poon

Matthias Reumann

Masaru Sugimachi

Shanbao Tong

Toshiyo Tamura

Leslie Ying

Claudio Vinegoni

2011 IEEE EMBS Fellow Members

Stephen Boppart

University of Illinois at Urbana-Champaign
for contributions to optical biomedical imaging

Gert Cauwenberghs

University of California San Diego
for contributions to integrated biomedical instrumentation

John Fitzpatrick

Vanderbilt University
for contributions to medical image registration and surgical navigation

Craig Hartley

Baylor College of Medicine
for contributions to high frequency ultrasonic medical instrumentation

Nigel Lovell

University of New South Wales
for contributions to medical device technologies including telehealth systems and visual prostheses

Dorin Panescu

NewCardio, Inc.
for contributions to medical devices for cardiac applications

Thomas Ryan

Freefall Consulting
for applications of electromagnetic and acoustic systems and techniques for thermal therapy

Guang-Zhong Yang

Imperial College London
for contributions to medical imaging and robotic surgery

Fan-Gang Zeng

University of California Irvine
for contributions to auditory prostheses

Voicu Groza

University of Ottawa
for contributions to floating-point analog-to-digital conversion

John Moreland

National Institute of Standards and Tech
for contributions to magnetic applications of scanning probe microscopy and microsystem technologies

Niels Kuster

IT'IS Foundation
for contributions to the area of near-field exposures and dosimetry for radiofrequency fields in biomedical research

Larry Nagahara

National Cancer Institute
for leadership in nanotechnology devices and measurement applications

Paul Kinahan

University of Washington Medical Center
for contributions to positron emission tomography

Gengsheng Zeng

University of Utah
for contributions to instrumentation and image reconstruction Algorithms in single photon emission computed tomography

Yoshihiko Nakamura

The University of Tokyo
for contributions to robotics

Allison Okamura

Johns Hopkins University
for contributions to the design and control of haptic systems and medical robotics

Robert Puers

Katholieke Universiteit Leuven
for contributions to implantable microelectromechanical systems

Patrick Loughlin

University of Pittsburgh
for contributions to time-frequency analysis and nonstationary signal processing

Emad Ebbini

University of Minnesota
for contributions to ultrasound temperature imaging and dual-mode ultrasound



IEEE EMBC 2012

August 28 - September 1, 2012
Hilton San Diego Bayfront Hotel
San Diego, CA, USA

Engineering Innovation in Global Health

Proposals for organized sessions and submissions are invited in the following themes:

- Biomedical Signal Processing
- Biomedical Imaging & Image Processing
- Bioinstrumentation: Sensors, Micro, Nano and Wearable Technologies
- Bioinformatics, Computational Biology, Systems Biology, Modeling Methodologies
- Cardiovascular & Respiratory Systems Engineering
- Neural Engineering, Neuromuscular Systems & Rehabilitation Engineering
- Molecular and Cellular Biomechanics, Tissue Engineering, Biomaterials
- Bio-Robotics, Surgical Planning and Biomechanics
- Therapeutic & Diagnostic Systems, Devices and Technologies, Clinical Engineering
- Healthcare Information Systems, Telemedicine

Conference Committee

Conference Chair: Michael Khoo, USC
Program Co-Chairs: Gert Cauwenberghs, UCSD
James Weiland, USC
International Program Chair: Shu Chien, UCSD
Tutorials & Workshops Chair: Atam Dhawan, NJIT

Key Dates

Oct 1, 2011 - Jan 15, 2012 — Proposal Submission
Feb 1, 2012 - Mar 15, 2012 — Paper Submission
Jun 1, 2012 — Notification of Acceptance
Jun 15, 2012 — Author Final Submission

For more details, visit the EMBC'12 website:

<http://embc2012.embs.org>

Keynote Speakers:



William R. Brody, MD, PhD
President, Salk Institute



Eric J. Topol, MD
Vice-Chairman,
West Wireless Health Institute



Rebecca Bergman
Vice-President, CRDM
Medtronic, Inc.



BHI 2012
HONG KONG, SHENZHEN
5 – 7 JAN, 2012



IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI 2012)

Theme: "Global Grand Challenge on Health Informatics"

Call for Papers

Building on the success of the EMBS International Conference on Information Technology and Applications in Biomedicine (ITAB), EMBS has launched a new Special Topic Conference titled IEEE-EMBS International Conferences on Biomedical and Health Informatics (BHI), starting from this year. The inaugural meeting, BHI2012, will be held in Hong Kong and Shenzhen, China, January 5-7, 2012.

To be held in conjunction with the 8th International Symposium on Medical Devices and Biosensors and the 7th International Symposium on Biomedical and Health Engineering, the BHI 2012 will be devoted to an inter-disciplinary research area intersecting engineering, information technology and computer science with biology, medicine and health. The conference is to examine enabling technologies of devices and systems that optimize the acquisition, transmission, processing, storage, retrieval (P-STAR) of biomedical and health information as well as to report clinical studies on the novel application of health information systems. The goal of the proposed joint event is to bring together academicians, clinicians, industrial representatives, government and private research agencies and funders to facilitate a dialogue on addressing the theme "Global Grand Challenge on Health Informatics".

Features:

- Special Workshop on "Meet IEEE-EMBS Editors-in-Chief" sponsored by IEEE Engineering in Medicine and Biology Society (EMBS)
- Special Academician & Fellow Forum sponsored by the Key Lab for Health Informatics of Chinese Academy of Sciences (HICAS)
- Special Forum on Imaging Informatics
- Special Panel on "Grand Challenge on Health Informatics"
- Accepted papers will be included in IEEE Xplore
- Extended version of selected papers may be considered for publication in the IEEE Trans. on Information Technology in Biomedicine (SCI, EI, Scopus)

Important Dates:

- **Paper Submission Deadline: 14 Oct 2011**
- **Notification of Acceptance: 11 Nov 2011**
- **Early Registration: 2 Dec 2011**
- **Pre-conference Workshop: 5 Jan 2012**
(in Hong Kong)
- **Conference Dates: 6-7 Jan 2012** (in Shenzhen)

The conference covers a broad spectrum of themes including but not limited to the following topics:

I) P-STAR of Biomedical and Health Information

- Wearable and implantable devices
- Body sensor/area networks (BSN /BAN)
- Diagnostic and therapeutic systems
- Internet and web solutions for healthcare delivery
- Multi-scale modeling and information fusion;
- Ambient assisted living, smart homes;
- Electronic health records, interoperability and connectivity
- Context-aware retrieval
- p-health, m-health, u-health, e-health systems

II) Biologically Inspired Informatics

- Virtual reality in medicine and surgery
- Bio-inspired robotics and biomimics
- Brain-computer interfacing and human-computer interfacing

III) Informatics in Biological Systems

- Neuroinformatics
- Genomics and proteomics
- Bioinformatics, computational biology

IV) Medical Imaging Informatics

- Realtime imaging
- Multimodal imaging
- Molecular imaging

V) Health Informatics Applications

- Cardiovascular informatics
- Applications in the early diagnosis and treatment of cancers

Organized and sponsored by:

- IEEE-Engineering in Medicine and Biology Society (EMBS)
- Key Lab for Health Informatics of Chinese Academy of Sciences (HICAS)
- CAS-SIAT Institute of Biomedical and Health Engineering (IBHE)

Technically co-sponsored by:

- The Chinese University of Hong Kong

Supported by:

- IEEE-EMBS Hong Kong Chapter

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Conference Website:
<http://bhi2012.embs.org>

Second AMA-IEEE Medical Technology Conference on Healthcare

October 16-18, 2011 - Boston

Park Plaza Hotel and Towers



CALL FOR ABSTRACTS

The American Medical Association (AMA) and the IEEE Engineering in Medicine and Biology (EMB) Society are pleased to announce the **Second AMA-IEEE Medical Technology Conference: Health Information Technology - Delivering on the Promise of Cost Effective Quality Healthcare**, in Boston, MA, on **October 16-18, 2011** at the **Boston Park Plaza Hotel and Towers**. The meeting will take place just before the Connected Health Symposium (for more information visit www.connected-health.org).

The 2011 conference will be devoted to Healthcare IT, a discipline at the intersection of information and computer science, engineering, and healthcare. The conference will examine resources, devices and methods required to optimize the acquisition, storage, retrieval, display, and use of information in health and biomedicine including healthcare informatics applications such as clinical decision support.

We invite participation by healthcare providers, engineers, innovators, industrial leaders, government agencies and policy makers. The conference will be inaugurated by a keynote lecture at an evening reception on Sunday, October 16. The following two days will feature plenary and poster presentations focusing on the challenges and solutions involving healthcare informatics and quality patient care.

Please visit <http://ama-ieee.embs.org/> for more information. **Accepted papers may be considered for publication in PULSE or other EMB Transaction Publications.**

Important Dates

June 30, 2011 – Call for 1-page abstracts - Abstract submission open – *please see our website for details*

August 29, 2011 – Abstract deadline

September 15, 2011 - Notification of acceptance; registration deadline for authors

September 23 – Papers loaded on the website

October 7 - Online PPT presentations due

4 Main Themes (*a list of keywords for each theme are located on our website under “themes”*)

- Health IT Adoption and Healthcare Reform
- Workflow (administrative & clinical) and Health IT
- Clinical Decision Support and Individualized Medicine
- Improving the Outcomes and Quality





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- Biosignal processing
- Biosystems modeling
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- Cardiovascular devices
- Computational bioengineering & bioinformatics
- Conventional diagnostics
- Distributed Diagnosis & Home Healthcare
- Diagnostic imaging
- Drug delivery
- Drug discovery tools
- E-medicine
- Genomics, proteomics & physiome
- Medical instrumentation & sensors
- MEMS & nanotechnology
- MIS
- Neural engineering
- Neuromuscular devices
- Point-of-care diagnostics
- Rehabilitation engineering

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There's no better source for breaking news and comprehensive coverage on emerging trends, mature and cutting-edge technologies and research breakthroughs than these top-cited EMBS publications:

- IEEE Engineering in Medicine and Biology Magazine
- IEEE Reviews on Biomedical Engineering
- IEEE Transactions on Biomedical Engineering
- IEEE Transactions on Biomedical Circuits and Systems
- IEEE Transactions on Information Technology Biomedicine
- IEEE Transactions on Medical Imaging
- IEEE Transactions on NanoBioscience
- IEEE Transactions on Neural Systems and Rehabilitation Engineering

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