



IEEE STANDARDS ASSOCIATION



Mini-Symposium, Wednesday, July 24, 14:00 – 15:30, R8 - level 3

Emerging Technologies and Innovations in Biomedical Engineering Accelerate Global Standards Development

Organizers:

Carole C. Carey, C3-Carey Consultants, LLC c.carey@ieee.org

Esteban J. Pino, Universidad de Concepcion epino@ieee.org

Emerging and novel technologies, in both medical and consumer devices, generally evolve faster than the development and upkeep of corresponding standards. While this standardization gap provides much design freedom for new technology developers, it also poses a range of challenges, risks, and costs pertaining to the reliability, scalability, interoperability, and longevity of emerging technologies. This session will be a panel of multidisciplinary experts who are leading the development of standards or actively participating in current standardization projects. They will share their knowledge and expertise (i.e., research project and/or practical experience) and perspectives on the value of standards at any stage: research, development, technology transfer or commercialization. The audience will provide an opportunity to have an interactive discussion with panel to identify additional gaps for future standards development as well as stimulate active involvement to help reduce the lag between technology and availability of standards.

Panel Speakers

A. *Won Bong Lim, Chosun University Hospital, (South Korea)* wonbong@chosun.ac.kr

“3D Simulation and 3D Printing Standard for Medical Education and Clinical Application”

Won Bong is a Professor in the Orthopedic Dept. Chosun University and Director of Chosun Medical Research Center. He participates in standards development projects of the IEEE P3333.2 (3D-Based Medical Application Working Group).

B. *Benny Lo, Imperial College London, (U.K)* benny.lo@imperial.ac.uk

“Body Sensing for Health”

Benny Lo is a Senior Lecturer of the Hamlyn Center and the Department of Surgery and Cancer, Imperial College London. He is Associate Editor of the IEEE Journal on Biomedical and Health Informatics, Chair of IEEE EMBS Wearable Biomedical Sensors and Systems Technical Committee, and member of the IEEE EMB Standards Committee and the IEEE P2650 Working Group, Standard for enabling mobile device platforms for pre-screening audiometric systems. His current research focuses on pervasive sensing, computer vision, machine learning, Body Sensor Networks (BSN), Internet of Things (IoT) and Wearable Robots and their applications in healthcare, sports and wellbeing.

C. *Luigi Bianchi, University of Rome at Tor Vergata, (Italy)* luigi.bianchi@uniroma2.it

“Brain-Computer Interfaces: Sharing a Model to Share Methods and Tools”

Luigi Bianchi is an Assistant Professor at the "Department of Civil Engineering and Computer Science," Tor Vergata University, Rome. His main interests are real-time and offline signal processing, Brain-Computer Interfaces (BCI), Human-Computer Interaction and assistive technologies, and released many free tools which can be downloaded from his web site <http://www.braininterface.com>. He also built the first wearable BCI system in the world. Luigi is WG the Chair of IEEE P2731 developing unified terminology standard for BCI.

D. *Carole C. Carey, C3-Carey Consultants, LLC, (U.S.)* carolecarey@mac.com

“Modern Trends Surrounding Biomedical Engineering Technology Standards Development at IEEE”

Carole Carey is Chair of the IEEE EMB Society Standards Committee, taking responsibility for technical oversight to its Working Groups and other projects. She was a recipient of the IEEE-SA Standards Medallion Award. She has long term work experience in the U.S. FDA Medical Device Program as Senior Scientific Reviewer on cardiovascular devices, as FDA Standards Liaison to several standards committees at national and international levels and as International Advisor/Director of International Staff. She also served as a Mansfield Fellow in Japan.

E. *Zach McKinney, Scuola Superiore Sant'Anna Pisa, (Italy)* z.mckinney@santannapisa.it

“Neural Interface Research Reporting Standards to Promote the Interoperability, Clinical integration, and Commercialization of Rehabilitation Technologies”

Zach is a Post-Doc Research Fellow in the Wearable Robotics Laboratory of the BioRobotics Institute of Scuola Superiore Sant'Anna (Pisa). In addition to the development and clinical evaluation of exoskeletal robotic technology for neural rehabilitation applications, he has led the user needs focus area of the IEEE Industry Connections Activity on neurotechnology for brain-machine interfaces, and he is the chair of the IEEE P2794 Working Group developing reporting standard for in vivo neural interface research.

Co-Chair *Esteban J. Pino, Universidad de Concepcion (Chile)* epino@ieee.org

Esteban Pino is an associate professor at the Universidad de Concepcion, Chile, teaching undergraduate and graduate courses in biomedical engineering. He is also the Secretary of the IEEE EMB Standards Committee. His primary research interest is unobtrusive monitoring of physiological variables and signal processing. He is currently the director of the Engineering for Life Center, whose goal is to translate research conducted at the Engineering School to solutions to improve life quality at all stages of life.