

Regular Session I-A (80min, 4 papers)

Session Chair: Prof. Jari Linatti

(359509) Study of TeraHertz Time Domain Spectroscopy for Tissue Characterization in Body Area Networks

Marco Hernandez (Mexico Autonomous Institute of Technology), Hernandez, Marco (CWC, University of Oulu, Finland)

(359886) Layered Dielectric Characterization of Human Skin in the Sub-Terahertz and Terahertz Frequency Ranges

Elisabetta Marini (Politecnico di Milano) Mura, Silvia (Politecnico di Milano); Magarini, Maurizio (Politecnico di Milano); Hamalainen, Matti (University of Oulu, Finland)

(359884) Experimental Characterization of Biological Tissue Dielectric Properties through THz Time-Domain Spectroscopy

Elisabetta Marini (Politecnico di Milano), Mura, Silvia (Politecnico di Milano); Hernandez, Marco (University of Oulu); Hamalainen, Matti (University of Oulu, Finland); Magarini, Maurizio <maurizio.magarini@polimi.it> (Politecnico di Milano)

(359495) Performance of Data Channel Migration Procedure for SmartBAN

HIROKAZU TANAKA (Hiroshima City University), TAKAHIRA ITO (Hiroshima City University)

Regular Session I-B (80min, 4 papers)

Session Chair: Matti Hämäläinen

(359615) Evaluation of 3-Dimensional In-Body Device Localization Using Machine Learning Algorithms with Reduced Training Data

Taiki EGUSA (Osaka Metropolitan University); Kobayashi, Takumi (Osaka Metropolitan University); Hyry, Jaakko (Osaka Metropolitan University); Fujimoto, Manato (Osaka Metropolitan University / RIKEN Center for Advanced Intelligence Project AIP); Ata, Shingo (Osaka Metropolitan University); Anzai, Daisuke (Osaka Metropolitan University)

(359622) Performance Evaluation on Multiple Implantable Device Localization Based on Magnetic Fields

Riko Takano (Nagoya Institute of Technology), Hyry, Jaakko (Osaka Metropolitan University); Kobayashi, Takumi (Osaka Metropolitan University); Anzai, Daisuke (Osaka Metropolitan University)

(359285) Personalized 6-DoF Scapular Motion Recognition Using a Single-Device, Single-Site Optical MMG Array

Takashi Arai (University of the Ryukyus), Akamine, Tomo (University of the Ryukyus); Tamaki, Emi (University of the Ryukyus/H2L Inc.)

(358238) A Comparative Study of Sensing Modalities for Classifying Active and Passive Motion

Higa Haruki (University of the Ryukyus); Momoko, Oshiro (University of the Ryukyus); Satoshi, Shimabukuro (University of the Ryukyus); Tomo, Akamine (University of the Ryukyus); Emi, Tamaki (University of the Ryukyus / H2L, Inc)

Regular Session I-C (80min, 4 papers)

Session Chair: Prof. Dairoku Muramatsu

(359854) Biometric Authentication in Galvanic Coupling Communications: A Physical Layer Approach for Secure Wearable Medical Systems

Lorenzo Mucchi (University of Florence, Dept. of Information Engineering), Caputo, Stefano (University of Florence); Vizziello, Anna (University of Pavia); Coviello, Antonio (Politecnico di Milano); Magarini, Maurizio (Politecnico di Milano); Borghini, Giacomo (Università degli studi di Firenze); Savazzi, Pietro (University of Pavia, Italy); Mucchi, Lorenzo (University of Florence, Dept. of Information Engineering)

(359325) A Fundamental Study of Inductive/Capacitive Hybrid WPT for Implantable Devices: Coupler Misalignment Tolerance

Dairoku Muramatsu (The University of Electro-Communications); Kodama, Miyu (The University of Electro-Communications)

(359892) Peripheral Nerve Injuries: Impact, Solutions and Innovation

Antonio Coviello (Politecnico di Milano); Franceschini, Giulio (Politecnico di Milano); Scazzoli, Davide (Politecnico di Milano); Crocco, Manuela (Politecnico di Milano); Mura, Silvia (Politecnico di Milano); Motto Ros, Paolo (Politecnico di Torino); Demarchi, Danilo (Politecnico di Torino); Burinato, Federica (Politecnico di Milano); Simeone, Anna (Politecnico di Milano); Tasso, Virginia (Politecnico di Milano); Cavigliano, Chiara (Politecnico di Milano); Cerutti, Andrea (Politecnico di Milano); Giacalone, Yeshua (Politecnico di Milano); Spagnolini, Umberto (Politecnico di Milano); Magarini, Maurizio (Politecnico di Milano)

(360041) Modeling of Propagation Characteristic for VHF-High Maritime Broadband System

Takahiro Ito (Hiroshima City University); Yamanaka, Masaaki (Japan Coast Guard Academy); Anzai, Daisuke (Osaka Metropolitan University); Tanaka, Hirokazu (Hiroshima City University)

Regular Session I-C (100min, 5 papers)

Session Chair: Prof. Kai Ishida

(359895) Trade-Offs in FMCW Radar-Based Respiration and Heart Rate Variability

Davide Scazzoli (Politecnico di Milano); Mura, Silvia (Politecnico di Milano); Fineschi, Lorenzo (Politecnico di Milano); Magarini, Maurizio (Politecnico di Milano)

358230 A Systematic Comparison of Muscle Deformation Sensor Placement for Subject-Independent Cognitive State Classification

Tomo Akamine (H2L Inc., University of the Ryukyus); Miyake, Tamon (H2L Inc.); Shimabukuro, Satoshi (University of the Ryukyus); Nishiguchi, Ryota (H2L Inc.); Nakamura, Shinya (H2L Inc.); Okubo, Chihiro (H2L Inc.); Tamaki, Emi (H2L Inc., University of the Ryukyus)

(358186) A fundamental study of objective color blindness evaluation based on brain waves

Takumu Kobayashi (Chubu University); Itai, Akitoshi (Chubu University)

(358181) The Study on Health Status Assessment Technology Using a Foot-Pressure Mat

Momona Kikuzawa (Chubu University); Matsuura, Miki (Chubu University); Katsumoto, Mayu (Chubu University); Kimura, Hideaki (Chubu University)

(359627) Motion Artifact Removal in R-R Interval Estimation of ECG Signal for Wearable Biomedical Sensors Using Empirical Mode Decomposition and High-pass Filter

Tadao Nakagawa (Tottori University); Hirota, Aito (Tottori University); Nakagawa, Tadao (Tottori University)

Regular Session II-A (100min, 5 papers)

Session Chair: Prof. Jaakko Hyry

(359277) Improving Patient Care in the Emergency Wards of Bangladesh Through an RFID-Based Web Simulation

MD MEHEDI HASAN (Saga University)

(359591) Development of Passive-Type Implantable VNS Device with Multiple Receive Coils

Kota Oku (Nagoya institute of university); HYRY, Jaakko (Osaka Metropolitan University); Kobayashi, Takumi (Osaka Metropolitan University); Saku, Keita (National Cerebral and Cardiovascular); Anzai, Daisuke (Osaka Metropolitan University)

(359263) Fundamental Study of a Monitoring System for Clinical Settings using LoRaWAN

Kai ISHIDA (Shonan Institute of Technology)

(359848) Development of a patient-specific cardiovascular simulator for tailored cardiovascular management

Takuya Nishikawa (National Cerebral and Cardiovascular Center)

(359505) Applications of Wearable Devices in Motor Sport

Satoshi Maeda (Hiroshima City University), Ai Miura (AIWIN)

Regular Session II-B (80min, 4 papers)

Session Chair: Prof. Chika Sugimoto

(358201) Extending a Parallel Boundary-Based CPM Algorithm Using a GPU-Accelerated Reaction-Diffusion Solver for Molecular Communication Simulations

Jiewen Wang (Osaka Metropolitan University); Nakano, Tadashi (Osaka Metropolitan University)

(359254) Model based Error Rate Analysis of Electrical-to-Molecular Communication Interface via Redox Mechanisms

Karthik Reddy Gorla (Politecnico di Milano); Magarini, Maurizio (Politecnico di Milano); Pierobon, Massimiliano (University of Nebraska-Lincoln)

(358220) Stochastic Modeling and Simulation of Collective Gradient Detection by Bio-Nanomachine Clusters

Tadashi Nakano (Osaka Metropolitan University); Sugiyama, Manaka (Osaka Metropolitan University); Nakano, Tadashi (Osaka Metropolitan University)

(359278) A Study on Coded Multiplexing Scheme for Optical Wireless Communications

Shoichiro Yamasaki (Hiroshima City University); Tanaka, Hirokazu (Hiroshima City University); Matsushima, Tomoko K. (Yokohama College of Commerce)

Regular Session II-C (100min, 5 papers)

Session Chair: Prof. Kento Takabayashi

(359663) Preliminary Study on Adaptive MAC Protocol for Reliable Control in IEEE 802.15.6ma BANs

Kosei NAGAI (Nagoya Institute of Technology); HYRY, Jaakko (Osaka Metropolitan University); KOBAYASHI, Takumi (Osaka Metropolitan University); ANZAI, Daisuke (Osaka Metropolitan University)

(359623) Performance Evaluation on IEEE 802.15.6ma-Based UWB Ranging in Coexistence Environment

Yuhei Oguri (Nagoya Institute of Technology); HYRY, Jaakko (Osaka Metropolitan University); Kobayashi, Takumi (Osaka Metropolitan University); Anzai, Daisuke (Osaka Metropolitan University)

(356932) IoT-based non-invasive and non-ionizing bone fracture home-monitoring system

Matti Hamalainen (University of Oulu); Nazar, Amher (University of Oulu); M̄, kel̄, , Juha-Pekka (University of Oulu); Kumpuniemi, Timo (University of Oulu); Parviainen, Roope (University of Oulu); Sinikumpu, Juha-Jaakko (University of Oulu); linatti, Jari (University of Oulu)

(360202) Research of detection system for the heatstroke which caused by wearing protective-clothes, based on Heartbeat Information using clothing-type wearable sensors

Kyoko Oe (Ministry of Defence)

Invited talk: A Heart Rate Variability Biofeedback Method Using Wearable Heart Rate and Respiratory Sensors

Kwon Euichul (Toyobo Co., Ltd)

Regular Session II-D (80min, 4 papers)

Session Chair: Prof. Manato Fujimoto

(359904) Improving Reliability in Hospital WLANs with RL-Based Channel Selection and Contention Window Adaptation

Kousuke Kinoshita (Toyo University); Takabayashi, Kento (Toyo University)

(359901) Hybrid ARQ with Cyclic Orthogonal Walsh adamard Spreading for Interference Robust IEEE 802.15.6ma based WBANs

Ruon Takahashi (Toyo University); Takabayashi, Kento (Toyo University)

(359644) Performance Comparison of IEEE802.15.6ma Error Control Scheme with Super Orthogonal Convolutional Code

Kento Takabayashi (Toyo University); Kohno, Ryuji (YRP International Alliance Institute)

(359469) Coordinator-to-Coordinator(C2C) Communication and Ranging for Coexisting Multiple UWB-BANs

Kohno, Ryuji (YRP International Alliance Institute); Kobayashi, Takumi (YRP International Alliance Institute)

Regular Session III-A (100min, 5papers)

Session Chair: Prof. Hirokazu Tanaka

(360029) Objective Evaluation of the Fabric Handle

λ柔ensitivity (Kansei) Design of Textile Materialsλ; Mari Inoue (Kobe University) Inoue, Mari (Kobe University)

(359273) Design and Demonstration of a Standardized Container Structure for Sensor Data Distribution

Takumi SEIKE (TIS Inc.); YOSHIMI, Masato (TIS Inc.); Ito, (Hiroshima City University); TANAKA, (Hiroshima City University)

(359272) Standardization and Concept of Heterogeneous Media Data Stream Alignment

Masahiro Ide (TIS Inc.); YOSHIMI, Masato (TIS Inc.)

(359935) A consideration for standardization of haptics technology

Murakami Kazuhiro (Meiji University)

(359908) Multi-function Integrated Reliable and Unconscious Virtual Vital-sign Sensor (MIRUWS) and its Service

Shigenobu Minami (MIRUWS Co. Ltd.)

Special Session

Session Chair: Prof. Daisuke Anzai

Invited talk:

Foundation Models in Medical Image Analysis

Rashed Essam (University of Hyogo)

Invited talk:

Visible Light-Based Hemodynamic Imaging

Kazuya Nakano (Seikei University)

Invited talk:

(358217) Multi-person Heartbeat Sensing Using Millimeter-wave Sensor

Tomoyuki Nakasha (KYOCERA Corporation); Honma, Takuya (KYOCERA Corporation); Kawai, Katsutoshi (KYOCERA Corporation); Toba, Tatsuo (KYOCERA Corporation); Kuroda, Jun (KYOCERA Corporation)

Invited talk:

Recent Studies on RF-EMF Exposure Assessment Above 6 GHz

Kun Li (The University of Electro-Communications)

Special Panel Session

Title: Standardization Session on Wearable Technologies

Session Chair (Moderator): Prof. Jari Linatti (University of Oulu)

Panelists:

- Dr. Shuji Hirakawa (IEC TC 124 Chair)

- Mr. Satoshi Maeda (IEC TC 124 WG2/WG3 Convener)
- Dr. Laure Pourcin ((ETSI TC SmartBAN Technical Officer)
- Prof. Hirokazu Tanaka (ETSI TC SmartBAN Vice Chair)
- Prof. Matti Hämäläinen (University of Oulu)
- Prof. Konstantin Mikhaylov (University of Oulu)

Panelist and Agenda:

Part 1: Introduction of IEC TC 124 and ETSI TC SmartBAN (60min. -> 10min./each panelist)

2. Introduction of IEC TC 124 - *Shuji Hirakawa (IEC TC 124 Chair)*

3. Trend of Standardization Activities on Wearable Device in IEC TC124 - *Satoshi Maeda (IEC TC 124 WG2/WG3 Convener)*

4. Introduction of ETSI - *Laure Pourcin (ETSI TC SmartBAN Technical Officer)*

5. Standardization Activities in TC SmartBAN - *Hirokazu Tanaka (ETSI TC SmartBAN Vice Chair)*

6. Future Direction in TC SmartBAN - *Matti Hämäläinen (Adjunct Professor, University of Oulu)*

7. On the convergence of the wireless connectivity landscape in the 6G era: what this means for WBAN? - *Konstantin Mikhaylov (Associate Prof., University of Oulu)*

Plan of Panel Discussion

Part 2: Panel Discussion (30min.)

Topic 1: Possible Collaborations between IEC and ETSI - *All Panelists*

Topic 2: *****

Topic 3: *****