

**Second International Workshop on
Networked Sensing Systems
INSS 2005**

**June 27-28, 2005
San Diego, California USA**

PROGRAM SCHEDULE

Monday, June 27, 2005

- 7:30 a.m. Registration
- 8:30 a.m. **OPENING SESSION**
Opening Remarks
Program Committee
- 8:40 a.m. **Invited Talk 1**
Geographical Networking in Wireless Sensor Networks
Michele Zorzi, Ph.D.
University of Padua, Italy
- 9:10 a.m. **SESSION A APPLICATION**
Realization of Portable Radio Device and Ad Hoc Wireless Network for Lifelog Based Physical and Informational Support System
Tatsuya Harada, Yusuke Kawano, Satoshi Otani, Taketoshi Mori, and Tomomasa Sato
The University of Tokyo, JAPAN
- Networked Sensing System by Sensor Fusion with Genetic Algorithms – Object Recognition by the Network System of CCDs and an Ultrasonic Array**
Kozo Ohtani¹ and Mitsuru Baba²
¹Hiroshima Institute of Technology, JAPAN and ²Ibaraki University, JAPAN
- Channel Allocation Strategy for Wireless Sensor Networks Deployed for Telemetry**
Madhan K. Vairamuthu, Sudarsanan Nesamony, Maria E. Orłowska, and Shazia W. Sadiq
The University of Queensland, AUSTRALIA
- 10:10 a.m. **Break**
- 10:40 a.m. **SESSION B PROTOCOL**
Energy-Aware Adaptive Low Power Listening for Sensor Networks
Raja Jurdak, Pierre Baldi, and Cristina V. Lopes
University of California, Irvine, USA
- Youngest Path Routing for Many-to-One Wireless Sensor Networks**
Karric K. Kwong and Ruzena Bajcsy
University of California, Berkeley, USA
- Fountain Broadcast for Wireless Sensor Networks**
Rajnish Kumar, Arnab Paul, and Kishore Ramachandran
Georgia Institute of Technology, USA
- Solar Biscuit: A Battery-Less Wireless Sensor Network System for Environmental Monitoring Applications**
Masateru Minami¹, Takashi Morito¹, Hiroyuki Morikawa², and Tomonori Aoyama²
¹Shibaura Institute of Technology, JAPAN and ²The University of Tokyo, JAPAN
- 12:00 p.m. **Lunch**

- 1:20 p.m. **SESSION C SENSOR HARDWARE**
Remote RF Powering and Data Telemetry System for Wireless MEMS Strain Sensors
Nattapon Chaimanonart, Wen H. Ko, and Darrin J. Young
Case Western Reserve University, USA
- Energy Harvesting MEMS Device Based on Thin Film Piezoelectric Cantilevers**
Won Jae Choi, Yuxin Xia, John A. Brewer and Sang Gook Kim
Massachusetts Institute of Technology, USA
- Sensing and Networking with Correlation Image Sensor, Modulated Light Source, and Multipole Polarizing Reflector**
Yohei Nagai, Toru Kurihara, Nobutaka Ono, and Shigeru Ando
The University of Tokyo, JAPAN
- Multichannel, Wireless Sensor Interface IC with Application to Neurodynamic Studies**
Xinyu Yu, Paras Samsukha, Ruchi Kothari, Xianhua Sun, and Steven L. Garverick
Case Western Reserve University, USA
- 2:40 p.m. **Break**
- 3:10 p.m. **Invited Talk 2**
From Smart Dust to Reliable Networks
Kristofer S.J. Pister, Ph.D.
University of California at Berkeley and Dust Networks, USA
- 3:40 p.m. **SESSION D POSTER/ORAL PRESENTATIONS**
- P-1 Collaborative Decision making for Hazardous Substance Monitoring**
Yuhua Chen and Xiaojing Yuan
University of Houston, USA
- P-2 3D Localization and Optical Communication in Ad Hoc Sensor Network with Embedded Camera and LEDs**
Arata Hirokawa and Kosuke Sato
Osaka University, JAPAN
- P-3 MuSE: Middleware for Using Sensors Effectively**
Loren J. Rittle, Venu Vasudevan, Nitya Narasimhan, and Chen Jia
Motorola Labs, USA
- P-4 An RFID-TAG Based Visual Tracking System**
Hidekata Hontani
Nagoya Institute of Technology, JAPAN
- P-5 Configuration of an Experimental Sensor-Actuator Network for Networked Interaction Therapy**
Ikuko Urushibara¹, Atsushi Aizawa^{1,2}, Ti-Rung Yu^{1,2}, Seiichi Nakajima¹, Noriyoshi Yamauchi^{1,2}, and Kazuhiro Kuwabara²
¹Waseda University, JAPAN and
²ATR Intelligent Robotics and Communication Laboratories, JAPAN
- P-6 Ubiquitous Robotics with Ubiquitous Functions Activate Module**
Kenichi Ohara¹, Kohtaro Ohba², Bong Keun Kim², Tamio Tanikawa², Shigeoki Hirai², and Kazuo Tanie²
¹University of Tsukuba, JAPAN and
²National Institute of Advanced Industrial Science and Technologies, JAPAN

- P-7 Agent-Based Human-Environment Interaction Framework for Ubiquitous Environment**
Satoshi Kurihara¹, Shigemi Aoyagi², Toshihiro Takada², Toshio Hirotsu³,
Toshiharu Sugawara² and Masayuki Numao¹
¹Osaka University, JAPAN, ²NTT Communication Science Labs, JAPAN, and
³Toyohashi University of Technology, JAPAN
- P-8 Tradeoff between Energy and Latency for Convergecast**
Mahesh Arumugam and Sandeep S. Kulkarni
Michigan State University, USA
- P-9 Hardware Architectural Assessments for Cogent Sensors – Requirements Derived from a Planetary Exploration Scenario**
R. M. Newman, J. Tabor, Elena I. Gaura, and S. Mount
Conventry University, UK
- P-10 A Low Noise Capacitive Sensing Amplifier for CMOS-MEMS Gyroscope with 1 Mili-Watt Power Dissipation**
Deyou Fang and Huikai Xie
University of Florida, USA
- P-11 A Robot with Networked Facial Image Sensing**
Eiji Takemoto and Hideyuki Kishiba
Omron Corporation, JAPAN
- P-12 TOMAC - Real-Time Message Ordering in Wireless Sensor Networks using the MAC Layer**
Albert Krohn, Michael Beigl, Christian Decker, and Tobias Zimmer
Universität Karlsruhe, GERMANY
- P-13 A Small Size MEMS Antenna for 5 GHz Wireless Sensor Network Application using LC Resonators**
Ji-Hyuk Kim¹, Hyeon Cheol Kim¹, Soon Don Choi², and Kukjin Chun¹
¹Seoul National University, KOREA and ²Yeung Nam University, KOREA

4:45 p.m. **Poster Exhibits**

5:45 p.m. - **Wine and Cheese Reception**
7:00 p.m.

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8:30 a.m. **Invited Talk 3**
From Cybernetics to Symbiosis: A New Picture on Man-Machine Collaboration
Hideyuki Nakashima, Ph.D.
Future University-Hadodate, JAPAN

9:00 a.m. **SESSION E EVENT DETECTIONS**
Adaptive Fault-Tolerant Event Detection in Sensor Networks
Xuanwen Luo, Ming Dong and Yinlun Huang
Wayne State University, USA

Group-Based Event Detection in Undersea Sensor Networks
Arsalan Tavakoli, Jingbin Zhang, and Sang H. Son
University of Virginia, USA

GEM: Generic Event Service Middleware for Wireless Sensor Networks
Binjia Jiao, Sang H. Son, and John A. Stankovic
University of Virginia, USA

10:00 a.m. **Break**

10:20 a.m. **SESSION F COMMUNICATION HARDWARE**
Configuration Effects of Liquid Crystal Tunable Capacitors
C. Alex Chang, Chih-Cheng Cheng, Jing-Yi Huang, and J. Andrew Yeh
National Tsing Hua University, TAIWAN

Low-Power FSK Transmitter for High-Temperature Sensors using Si Tunnel Diode and SOI MOS Varactor
Yunli He, Amita Patil, Matthew Crane, and Steven L. Garverick
Case Western Reserve University, USA

Two Dimensional Communication Technology for Networked Sensing System
Yasutoshi Makino, Kouta Minamizawa, and Hiroyuki Shinoda
The University of Tokyo, JAPAN

2D Beam Steering using Electrostatic and Thermal Actuation for Networked Control
Jitendra Makwana¹, Stephen Phillips¹, Lifeng Wang¹, Nathan Wedge², and Vincenzo Liberatore²
¹Arizona State University, USA and ²Case Western Reserve University, USA

Cell Bridge: A Signal Transmission Element for Constructing High Density Sensor Networks
Akimasa Okada, Yasutoshi Makino, and Hiroyuki Shinoda
The University of Tokyo, JAPAN

12:00 p.m. **Lunch**

1:20 p.m. **SESSION G ENVIRONMENTAL SENSING**
WINFO: A Human-Assisted Sensor Network
Kenji Sasaki, Ushio Inoue, and Yoshito Tobe
Tokyo Denki University, JAPAN

WiSARDNET: A System Solution for High Performance *In-Situ* Environmental Monitoring
Zijiang Yang, Bill Ruggeri, Paul G. Flikkema, Daniel Johnson, Michael Wright, and Kun Xia
Northern Arizona University, USA

Behavior Prediction System Based on Environmental Sensor Records
Taketoshi Mori, Aritoki Takada, Hiroshi Noguchi, and Tomomasa Sato
The University of Tokyo, JAPAN

2:20 p.m. **Invited Talk 4**
Hardware-software co-design for Sensor Networks
Rajit Manohar, Ph.D.
Cornell University, USA

2:50 p.m. **Break**

3:20 p.m. **SESSION H SECURITY AND ALGORITHM**

Electric Circuit Analogy and Optimal Algorithm of the Cooperative Calibration and Synchronization Problem in Sensor Networks
Shigeru Ando and Nobutaka Ono
The University of Tokyo, JAPAN

A Distributed Authentication Scheme for a Wireless Sensing System
Kevin Bauer and Hyunyoung Lee
University of Denver, USA

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SenSec: Sensor Security Framework for TinyOS

Tieyan Li, Hongjun Wu, Xinkai Wang, and Feng Bao
Institute for Infocomm Research, SINGAPORE

**Statistical Mechanics of Hyperparameter Estimation in CDMA Multiuser Detection:
Naive Mean Field Approximation**

Toru Yano, Kazutaka Nakamura, and Satoshi Honda
Keio University, JAPAN

4:40 p.m. **CLOSING SESSION – Proposal for INSS 2006**

5:00 p.m. **ADJOURN**