

## WELCOME TO THE INSS 2007 Conference

INSS 2007 is the Fourth Annual Conference with a selective single-track technical program. Its aim is to provide a platform where researchers from academia and industry come together to discuss and address technical problems and solutions in these research areas.

The strong growth in networking technologies including wireless communications and the Internet and the ever increasing advancements in miniature sensors and low power microelectronics have brought researchers from various fields to develop an emerging multidisciplinary of networked sensor systems and applications. Such technology is expected to change the way how information is generated, processed, and communicated based on a large number of sensor nodes deployed for a specific application. Addressing these critical issues requires researchers from various disciplines to communicate effectively and collaborate together. The International Conference on Networked Sensing Systems invites outstanding research papers from the field of sensor technology, wireless networking or application of networked sensor systems. The conference especially encourages submissions that are suitable and should be of interest for the researchers from all three fields.









## BRAUNSCHWEIG: CITY OF THE LION

Braunschweig, the city of Henry the Lion, is a city that has been developing for over 1,000 years. You can reach out and touch its history. The city's modern buildings blend attractively with its past, presenting 21st century architecture alongside mediaeval sights. You are invited to stroll through the covered shopping centres that are flooded with light in the extensive pedestrian zone with its elegant boutiques and appealing shops. The lovely green parks in the city centre, the Botanical Gardens and the extensive recreational areas outside the city are perfect to relax in and take a break - Why not let yourself unwind?

#### GENERAL INFORMATION

#### Conference Meeting Room Locations

All rooms are located in the Pockelsstraße 11 building of the University of Braunschweig

Plenary Session - Auditorium, third floor Posters - lobby, first floor Demos - top level of the Auditorium BoF's will be held in two parallel sessions in the following rooms:

 ${\tt BoF}\ {\tt A}\ {\tt -Hardware},\ {\tt Networks},\ {\tt and}\ {\tt Algorithms}$  Auditorium

 ${\tt Bof\ B}$  - Middleware, System, and Application Room PK11.5, second floor

Tutorials and Workshops will be held in the Mühlenpfordtstraße 23 building.

#### Posters, BoF Posters and Demonstrations

Posters and BoF Posters will be on display throughout the Conference. All poster, BoF and demonstration papers are included in the Proceedings. Presenters will be available for questions during the following times:

Thursday, June 7 Friday, June 8 09:50 - 10:10 10:20 - 10:40 11:30 - 11:40 12:40 - 13:40 12:40 - 14:00 16:00 - 16:20

#### Breaks and Lunch

Mid-morning and afternoon breaks will be served in the lobby on the first floor. Lunch will also be served there.

#### Evaluation

A Conference Evaluation Form is included with your material. Your feedback is very

important to the improvement and development of this Conference. Please return your completed form to the Registration Desk.

#### Chimes

The chimes will ring 5 minutes before the end of each scheduled break. The sessions will begin on time, so please return to the room when you hear the chimes.

### Name Badges

All attendees must wear their name badge at all times to gain admission to all sessions and meal functions.

#### Meeting Room Logistics

Please contact the Conference Registration Desk if you find the temperature in the room uncomfortable or you are unable to hear or see because of equipment difficulties.

## Smoking

The meeting rooms and seated functions are smoke free. Please regard the smoking policy of the University.

#### Cellular Phones, Beepers and Watch Alarms

Out of courtesy to our speakers and other attendees, please turn off any cellular phones, pagers and watch alarms during sessions.

#### Cameras and Tape Recorders

Cameras and tape recorders are strictly prohibited in all Conference Areas and will be confiscated.

## GETTING HELP

For emergencies only you may reach the local contact, Daniel Röhr, at +49-157-7470-9303.

During Conference hours you may call the registration desk at +49-531-391-4490.

# WEDNESDAY, JUNE 6, 2007

| 08:00-09:00 | REGISTRATION  |
|-------------|---|
| 09:00-17:00 | TUTORIAL 1<br>FAST PROTOTYPING OF WIRELESS SENSOR NETWORKS<br>Jan Beutel, ETH Zurich, SWITZERLAND   |
| 09:00-12:00 | TUTORIAL 2 ENERGY IN WIRELESS SENSOR NETWORKS Raquel A.F. Mini, Pontifical Catholic University of Minas Gerais, BRAZIL Antonio A.F. Loureiro, Federal University of Minas Gerais, BRAZIL                                |
| 13:00-17:00 | TUTORIAL 3 INTRODUCTION TO RFID TECHNOLOGY Matthias Lampe, ETH Zurich, SWITZERLAND  |
| 13:00-17:00 | WORKSHOP 1 INTERNATIONAL WORKSHOP ON SENSOR WEBS, DATABASES, AND MINING IN NETWORKED SENSING SYSTEMS (SWDMNSS) Chairs: Yoh Shiraishi, University of Tokyo, JAPAN and Christian Decker, University of Karlsruhe, GERMANY |
| 10:00-15:00 | WORKSHOP 2 THE 1ST INTERNATIONAL WORKSHOP WIRELESS SENSOR NETWORKS FOR HEALTH CARE (WSNHC 2007) Chair: Leo Selavo, University of Virginia, USA  |
| 17:00-19:00 | TUTORIAL AND WORKSHOP RECEPTION   |
| 12:00-13:00 | LUNCH   |
|             | BREAKS: COFFEE AND REFRESHMENTS ARE AVAILABLE THROUGHOUT THE DAY IN THE   |

LOBBY ON THE 3RD FLOOR (1. OBERGESCHOSS).

# THURSDAY, JUNE 7, 2007

REGISTRATION

08:00

| 09:00       | OPENING REMARKS   |
|-------------|---|
| OPENING     | KEYNOTE   |
| Session     | Chair: Shigeru Ando, University of Tokyo, JAPAN   |
| 09:10       | PLENTY OF OPPORTUNITY AS WELL AS "ROOM AT THE BOTTOM"   |
|             | - SOME EXAMPLES IN OPTICAL MEMS   |
|             | Richard S. Muller University of California, Berkeley, USA   |
| 09:50       | COFFEE BREAK AND POSTER & DEMO REVIEW   |
| <br>03.30   | OCTED DAMA IND COLOR OF DEBO ACTED  |
|             |   |
|             | 1   WIRELESS SENSOR NETWORKS I  |
| <br>Session | Chair: Christian Decker, University of Karlsruhe, GERMANY   |
| 10:10       | DESIGNING A HIGH-RELIABILITY LOW POWER STATUS MONITORING PROTOCOL   |
|             | A. Meier, J. Beutel, R. Lim, and L. Thiele ETH Zurich, SWITZERLAND  |
| <br>10:30   | A SYNCHRONIZATION-BASED DATA GATHERING SCHEME IN UNSTABLE RADIO ENVIRONMENTS  |
| 10:30       | N. Wakamiya, S. Kashihara, and M. Murata  |
|             | Osaka University, JAPAN   |
| <br>10:50   | QoD ADAPTATION FOR ACHIEVING LIFETIME PREDICTABILITY OF WSN NODES COMMUNICATING   |
|             | OVER SATELLITE LINKS  |
|             | M. Amirijoo¹, S.H. Son², and J. Hansson³ ¹Linköping University, SWEDEN, ²University of Virginia, USA, and   |
|             | <sup>3</sup> Carnegie Mellon University, USA  |
| <br>11:10   | EMPIRICAL ANALYSIS OF TRANSMISSION POWER CONTROL ALGORITHMS FOR WIRELESS SENSOR   |
|             | NETWORKS  |
|             | J. Jeong <sup>1</sup> , D. Culler <sup>1</sup> , and JH. Oh <sup>2</sup>  |
|             | <sup>1</sup> University of California, Berkeley, USA and<br><sup>2</sup> United Technologies Research Center, USA   |
| <br>11:30   | BREAK   |
| 11.50       | DADER   |
|             |   |
|             | 2   MEMS SENSORS  |
| <br>Session | Chair: Hideto Iwaoka, Kanazawa Institute of Technology, JAPAN   |
| 11:40       | RF-POWERED SILICON-MEMS MICROSENSORS FOR DISTRIBUTED AND EMBEDDED SENSING   |
|             | APPLICATIONS  H. Takao <sup>1,3</sup> , S. Kizuna <sup>1</sup> , K. Sawada <sup>1,3</sup> , M. Sudou <sup>2,3</sup> , and M. Ishida <sup>1,3</sup>                        |
|             | ¹Toyohashi University of Technology, JAPAN, ²Seiko Instruments Inc., JAPAN, and   |
|             | <sup>3</sup> JST-CREST, JAPAN   |
| 12:00       | NON-CONTACT SENSING FOR HIGH-TEMPERATURE, CAPACITIVE MEMS SENSORS IN ACTIVE   |
|             | FUEL EMISSION CONTROL   |
|             | S.L. Garverick <sup>1</sup> , A. Patil <sup>1</sup> , and X. Yu <sup>2</sup> <sup>1</sup> Case Western Reserve University, USA and <sup>2</sup> Broadcom Corporation, USA |
| <br>12:20   | APPLICATION OF MULTI-ENVIRONMENTAL SENSING SYSTEM IN MEMS TECHNOLOGY  |
|             | - MONITORING OF HUMAN ACTIVITY  |
|             | K. Maenaka, K. Masaki, and T. Fujita  |
|             | University of Hyogo, JAPAN  |
| 12:40       | LUNCH AND POSTER & DEMO REVIEW  |
|             |   |

| BOF A  HARDWARE, NETWORKS, AND ALGORITHMS  Session Chair: Hiroyuki Shinoda, University of Tokyo, JAPAN  14:00  BOF-A1  PERFORMANCE IMPROVEMENT OF PASSIVE CLUSTERING ALGORITHM IN WIRELESS SENSOR NETWORKS H. Zeghilet Research Center on Scientific and Technical Information, ALGERIA  14:07  BOF-A2  B. Ishiruka and Y. Tobe Tokyo Denki University, JAPAN  14:14  ON OFTIMAL ROUTE OF A CALIBRATING MOBILE SINK IN A WIRELESS SENSOR NETWORK BOF-A3  S. Neamony, M.K. Vairamuthu, and M.E. Orlowska The University of Queensland, AUSTRALIA  14:21  IMPROVEMENT OF CAR ROSITIONING WITH MEASUREMENTS OF RELATIVE DISTANCE H. BOF-A4  H. Bontania and Y. Higuchi Nagoya Institute of Technology, JAPAN  14:28  CASE STUDIES ON A WIRELESS FIRER BRAGG GRATING CONDITION MONITORING SYSTEM FOR ROTATING COMPOSITE CYLINDERS T. Myllyla, H. Lahtinen, H. Sorvoja, and R. Myllyla University of Gule, FIRLAND  14:55  DESIGN AND DEPLOYMENT OF WIRELESS MONITORING SYSTEM FOR 4-20ma CURRENT LOOP SENSORS H. Sasaki and K. Udda Vamatake Corporation, JAPAN  14:42  EMERGY AND COVERAGE AWARE ROUTING ALGORITHM IN SELF ORGANIZED SENSOR NETWORKS BOF-A5  BOF-A6  J. Sallmann, S. Kubisch, F. Reichenbach, and D. Timmermann University of Rostock, GERMANY  14:56  BOF-A7  LASIS CLASSIFICATION WITH HIERARCHICALLY STRUCTURED RECURRENT SELF-ORGANIZING MAPS V. Baier', L. Mosenlechner', and M. Kranz' 'University of Monich, GERMANY, 'Technische University and Monichersity of Paramethysis, GERMANY  14:56  CAPTABLE & CARSHELF - UNOBTRUSIVE ACTIVITY RECOGNITION USING NETWORKED CAPACITIVE SENSORS R. Wimmer', M. Kranz', S. Boring', and A. Schmidt' 'University of Munich, GERMANY, 'Technische University of Bonn, GERMANY, and  Technical University, JAPAN and 'Ninjata University, JAPAN  15:10  CAPTABLE & CARSHELF - UNOBTRUSIVE ACTIVITY RECOGNITION USING NETWORKED CAPACITIVE SENSORS R. Wimmer', M. Kranz', S. Boring', and A. Schmidt' 'University of Monich, GERMANY and 'Ninjata University, JAPAN  15:10  CALSSIFICATION OF ANALYSIS TECHNIQUES FOR WIRELESS SENSOR NETWORKS  W. Chen, K. Makki, K.  |       |   |
|--|-------|---|
| BOF-A1 H. Zeghilet Research Center on Scientific and Technical Information, ALGERIA  14:07 SenriGan: A SENSED-POINT-DIRECTED GEOGRAPHIC ROUTING FOR SENSOR NETWORKS H. Ishizuka and Y. Tobe Tokyo Denki University, JAPAN  14:14 ON OPTIMAL ROUTE OF A CALIBRATING MOBILE SINK IN A WIRELESS SENSOR NETWORK BOF-A3 S. Nesamony, M.K. Vairamuthu, and M.E. Orlowska The University of Queensland, AUSTRALIA  14:21 IMPROVEMENT OF CAR POSITIONING WITH MEASUREMENTS OF RELATIVE DISTANCE BOF-A4 H. Hontani and Y. Higuchi Magoya Institute of Technology, JAPAN  14:28 CASE STUDIES ON A WIRELESS FIRRE BRAGG GRATING CONDITION MONITORING SYSTEM FOR ROTATING COMPOSITE CYLINDERS T. Myllylä, H. Lahtinen, H. Sorvoja, and R. Myllylä University of Oulu, FINLAND  14:35 DESIGN AND DEPLOYMENT OF WIRELESS MONITORING SYSTEM FOR 4-20ma CURRENT LOOP SENSORS BOF-A6 H. Sasaki and K. Ueda Yamatake Corporation, JAPAN  14:42 ENERGY AND COVERAGE AWARE ROUTING ALGORITHM IN SELF ORGANIZED SENSOR NETWORKS J. Salzmann, S. Kubisch, F. Reichenbach, and D. Timmermann University of Rostock, GERMANY  14:49 GESTURE CLASSIFICATION WITH HIERARCHICALLY STRUCTURED RECURRENT SELF-ORGANIZING MAPS V. Baier', L. Mosenlechner', and M. Kranz' University of Mounch, GERMANY, 'Gerchnische Universität München, GERMANY, and 'Technical University of Braunschweig, GERMANY  14:56 CAPIABLE & CAPSHELF - UNDSTRUSIVE ACTIVITY RECOGNITION USING NETWORKED CAPACITIVE BOF-A9 SENSORS R. Wimmer', M. Kranz', S. BOTING', and A. Schmidt' 'University of Munich, GERMANY and 'University of Bonn, GERMANY 'University of Munich, GERMANY, and 'Iniversity of Bonn, GERMANY  15:03 COOPERATIVE TRANSMISSION SCHEME IN DISTRIBUTED SENSOR NETWORK FOR EXTENSION OF TRANSMISSION RANGE R. Nikaco', T. Yamazato', M. Katayama', and H. Okada' 'Nagoya University, JAPAN and 'Nijagata University, JAPAN  15:10 ALASSIFICATION OF ANALYSIS TECHNIQUES FOR WIRELESS SENSOR NETWORKS V. Prasad and S.H. Son University of Virginia, USA  16:17 ANALYSIS OF GLUCOSE CONCENTRATION IN INTERSTITIAL FLUID BY MICRO SURFACE PLASMON RESONANCE S | BOF A |   |
| BoF-A2 H. Ishizuka and Y. Tobe Tokyo Denki University, JAPAN  14:14 ON OPTIMAL ROUTE OF A CALIBRATING MOBILE SINK IN A WIRELESS SENSOR NETWORK S. Nesamony, M.K. Vairamuthu, and M.E. Orlowska The University of Queensland, AUSTRALIA  14:21 IMPROVEMENT OF CAR POSITIONING WITH MEASUREMENTS OF RELATIVE DISTANCE H. Hontani and Y. Hiquchi Nagoya Institute of Technology, JAPAN  14:28 BOF-A5 ROTATING COMPOSITE CYLINDERS T. Myllylä, H. Lahtinen, H. Sorvoja, and R. Myllylä University of Oulu, FINLAND  14:35 BOF-A6 BOF-A6 BOF-A6 BOF-A7 BOF- |       | H. Zeghilet   |
| BoF-A3 S. Nesamony, M.K. Vairamuthu, and M.E. Orlowska The University of Queensland, AUSTRALIA  14:21 IMPROVEMENTO FC CAR POSITIONING WITH MEASUREMENTS OF RELATIVE DISTANCE H. Hontani and Y. Higuchi Nagoya Institute of Technology, JAPAN  14:28 CASE STUDIES ON A WIRELESS FIBRE BRAGG GRATING CONDITION MONITORING SYSTEM FOR ROTATING COMPOSITE CYLINDERS T. Myllylä, H. Lahtinen, H. SOTVOJA, and R. Myllylä University of Oulu, FINLAND  14:35 DESIGN AND DEPLOYMENT OF WIRELESS MONITORING SYSTEM FOR 4-20ma CURRENT LOOP SENSORS H. Sasaki and K. Ueda Yamatake Corporation, JAPAN  14:42 ENERGY AND COVERAGE AWARE ROUTING ALGORITHM IN SELF ORGANIZED SENSOR NETWORKS J. Salzmann, S. Kubisch, F. Reichenbach, and D. Timmermann University of Rostock, GERMANY, "GESTURE CLASSIFICATION WITH HIERARCHICALLY STRUCTURED RECURRENT SELF-ORGANIZING MAPS V. Baier', L. Mösenlechner', and M. Kranz' "University and Expendict Australia Control of Proceedings |       | H. Ishizuka and Y. Tobe   |
| BoF-A4 H. Hontani and Y. Higuchi Nagoya Institute of Technology, JAPAN  14:28 CASE STUDIES ON A WIRELESS FIBRE BRAGG GRATING CONDITION MONITORING SYSTEM FOR ROTATING COMPOSITE CYLINDERS T. Myllylä, H. Lahtinen, H. Sorvoja, and R. Myllylä University of Oulu, FINLAND  14:35 DeSIGN AND DEPLOYMENT OF WIRELESS MONITORING SYSTEM FOR 4-20mA CURRENT LOOP SENSORS BoF-A6 H. Sasaki and K. Ueda Yamatake Corporation, JAPAN  14:42 ENERGY AND COVERAGE AWARE ROUTING ALGORITHM IN SELF ORGANIZED SENSOR NETWORKS J. Salzmann, S. Kubisch, F. Reichenbach, and D. Timmermann University of Rostock, GERMANY  14:49 GESTURE CLASSIFICATION WITH HIERARCHICALLY STRUCTURED RECURRENT SELF-ORGANIZING MAPS V. Baier¹, L. Mösenlechner², and M. Kranz² ¹Universität München, GERMANY, and ¹Technical University of Braunschweig, GERMANY  14:56 CAPTABLE & CAPSHELF - UNOBTRUSIVE ACTIVITY RECOGNITION USING NETWORKED CAPACITIVE SSENSORS R. Wimmer', M. Kranz¹, S. Boring¹, and A. Schmidt² ¹University of Munich, GERMANY and ²University of Bonn, GERMANY  15:03 COOPERATIVE TRANSMISSION SCHEME IN DISTRIBUTED SENSOR NETWORK FOR EXTENSION OF TRANSMISSION RANGE K. Nakao', T. Yamazato¹, M. Katayama¹, and H. Okada² ¹Nagoya University, JAPAN and ¹Niigata University, JAPAN  15:10 CLASSIFICATION OF ANALYSIS TECHNIQUES FOR WIRELESS SENSOR NETWORKS DGF-A10 V. Prasad and S.H. Son University of Virginia, USA  15:17 MODELING ATTACK DISTRIBUTION IN SENSOR NETWORKS X. Chen, K. Makki, K. Yen, and N. Pissinou Florida International University, USA  15:24 NOVEL SENSOR AND ALGORITHM FOR MOTION TRACKING IN INDOOR AND OUTDOOR ENVIRONMENTS DF-A12 D. Wei, P. Masurel, T. Kurihara, and S. Ando The University of Tokyo, JAPAN  15:31 RESONANCE SENSOR D. Li¹', X. Huang¹, H. Yu¹, X. Hu¹, K. Xu¹, R.C. Roberts², and N.C. Tien²   |       | S. Nesamony, M.K. Vairamuthu, and M.E. Orlowska   |
| Bof-A5  ROTATING COMPOSITE CYLINDERS T. Myllylä, H. Lahtinen, H. Sorvoja, and R. Myllylä University of Oulu, FINLAND  14:35  Bof-A6 H. Sasaki and K. Ueda Yamatake Corporation, JAPAN  14:42  BOF-A7 J. Salzmann, S. Kubisch, F. Reichenbach, and D. Timmermann University of Rostock, GERMANY  14:49 GESTURE CLASSIFICATION WITH HIERARCHICALLY STRUCTURED RECURRENT SELF-ORGANIZING MAPS V. Baier', L. Mösenlechner', and M. Kranz' 'Universität München, GERMANY, 'Technische Universität München, GERMANY, and 'Technical University of Braunschweig, GERMANY  14:56 GAPTABLE & CAPSHELF - UNOBTRUSIVE ACTIVITY RECOGNITION USING NETWORKED CAPACITIVE SENSONS R. Wimmer', M. Kranz', S. Boring', and A. Schmidt' 'University of Munich, GERMANY and 'University of Bonn, GERMANY  15:03 GOOPERATIVE TRANSMISSION SCHEME IN DISTRIBUTED SENSOR NETWORK FOR EXTENSION OF TRANSMISSION RANGE K. Nakao', T. Yamazato', M. Katayama', and H. Okada' 'Nagoya University, JAPAN and 'Nhigata University, JAPAN  15:10 CLASSIFICATION OF ANALYSIS TECHNIQUES FOR WIRELESS SENSOR NETWORKS V. Prasad and S.H. Son University of Virginia, USA  15:17 BOF-A12 MODELING ATTACK DISTRIBUTION IN SENSOR NETWORKS D. V. Prasad and S.H. Son University of Virginia, USA  15:24 NOVEL SENSOR AND ALGORITHM FOR MOTION TRACKING IN INDOOR AND OUTDOOR ENVIRONMENTS D. Wei, P. Masurel, T. Kurihara, and S. Ando The University of Tokyo, JAPAN  15:31 ANALYSIS OF GLUCOSE CONCENTRATION IN INTERSTITIAL FLUID BY MICRO SURFACE PLASMON RESONANCE SENSOR D. Li'', X. Huang', H. Yu', X. Hu', K. Xu', R.C. Roberts', and N.C. Tien'   |       | H. Hontani and Y. Higuchi   |
| BoF-A6 H. Sasaki and K. Ueda Yamatake Corporation, JAPAN  14:42 ENERGY AND COVERAGE AWARE ROUTING ALGORITHM IN SELF ORGANIZED SENSOR NETWORKS BoF-A7 J. Salzmann, S. Kubisch, F. Reichenbach, and D. Timmermann University of Rostock, GERMANY  14:49 GESTURE CLASSIFICATION WITH HIERARCHICALLY STRUCTURED RECURRENT SELF-ORGANIZING MAPS V. Baier', L. Mösenlechner', and M. Kranz' ¹Universität München, GERMANY, and ¹Technical University of Braunschweig, GERMANY  14:56 CAPTABLE & CAPSHELF - UNOBTRUSIVE ACTIVITY RECOGNITION USING NETWORKED CAPACITIVE SSENSORS R. Wimmer', M. Kranz', S. Boring', and A. Schmidt' ¹University of Munich, GERMANY and ²Univeristy of Bonn, GERMANY  15:03 COOPERATIVE TRANSMISSION SCHEME IN DISTRIBUTED SENSOR NETWORK FOR EXTENSION OF TRANSMISSION RANGE K. Nakao', T. Yamazato', M. Katayama', and H. Okada' ¹Nagoya University, JAPAN and ²Niigata University, JAPAN  15:10 CLASSIFICATION OF ANALYSIS TECHNIQUES FOR WIRELESS SENSOR NETWORKS V. Prasad and S.H. Son University of Virginia, USA  15:17 MODELING ATTACK DISTRIBUTION IN SENSOR NETWORKS  15:18 MODELING ATTACK DISTRIBUTION IN SENSOR NETWORKS  15:24 NOVEL SENSOR AND ALGORITHM FOR MOTION TRACKING IN INDOOR AND OUTDOOR ENVIRONMENTS BOF-A12 D. Wei, P. Masurel, T. Kurihara, and S. Ando The University of Tokyo, JAPAN  15:31 ANALYSIS OF GLUCOSE CONCENTRATION IN INTERSTITIAL FLUID BY MICRO SURFACE PLASMON BOF-A14 P. MESONANCE SENSOR D. Li'-', X. Huang', H. Yu', X. Hu', K. Xu', R.C. Roberts', and N.C. Tien'   |       | ROTATING COMPOSITE CYLINDERS<br>T. Myllylä, H. Lahtinen, H. Sorvoja, and R. Myllylä   |
| BoF-A7  J. Salzmann, S. Kubisch, F. Reichenbach, and D. Timmermann University of Rostock, GERMANY  GESTURE CLASSIFICATION WITH HIERARCHICALLY STRUCTURED RECURRENT SELF-ORGANIZING MAPS  V. Baier¹, L. Mösenlechner², and M. Kranz³  ¹Universität München, GERMANY, ²Technische Universität München, GERMANY, and  ³Technical University of Braunschweig, GERMANY  14:56  BoF-A9  SENSORS  R. Wimmer¹, M. Kranz², S. Boring¹, and A. Schmidt²  ¹University of Munich, GERMANY and ²Univeristy of Bonn, GERMANY  15:03  COOPERATIVE TRANSMISSION SCHEME IN DISTRIBUTED SENSOR NETWORK FOR EXTENSION OF TRANSMISSION RANGE  K. Nakao¹, T. Yamazato¹, M. Katayama¹, and H. Okada²  ¹Nagoya University, JAPAN and ²Niigata University, JAPAN  15:10  CLASSIFICATION OF ANALYSIS TECHNIQUES FOR WIRELESS SENSOR NETWORKS  V. Prasad and S.H. Son University of Virginia, USA  15:17  MODELING ATTACK DISTRIBUTION IN SENSOR NETWORKS  D. Priorida International University, USA  15:24  NOVEL SENSOR AND ALGORITHM FOR MOTION TRACKING IN INDOOR AND OUTDOOR ENVIRONMENTS D. Wei, P. Masurel, T. Kurihara, and S. Ando The University of Tokyo, JAPAN  15:31  BoF-A14  BoF-A14  BoF-A14  BoF-A15  CLI¹², X. Huang¹, H. Yu¹, X. Hu¹, K. Xu¹, R.C. Roberts², and N.C. Tien²   |       | H. Sasaki and K. Ueda   |
| BoF-A8  V. Baier¹, L. Mösenlechner², and M. Kranz³ ¹Universität München, GERMANY, ²Technische Universität München, GERMANY, and ³Technical University of Braunschweig, GERMANY  14:56  BoF-A9  SENSORS  R. Wimmer¹, M. Kranz¹, S. Boring¹, and A. Schmidt² ¹University of Munich, GERMANY and ²Univeristy of Bonn, GERMANY  15:03  COOPERATIVE TRANSMISSION SCHEME IN DISTRIBUTED SENSOR NETWORK FOR EXTENSION OF TRANSMISSION RANGE  K. Nakao¹, T. Yamazato¹, M. Katayama¹, and H. Okada² ¹Nagoya University, JAPAN and ²Niigata University, JAPAN  15:10  CLASSIFICATION OF ANALYSIS TECHNIQUES FOR WIRELESS SENSOR NETWORKS  V. Prasad and S.H. Son University of Virginia, USA  15:17  MODELING ATTACK DISTRIBUTION IN SENSOR NETWORKS  X. Chen, K. Makki, K. Yen, and N. Pissinou Florida International University, USA  15:24  NOVEL SENSOR AND ALGORITHM FOR MOTION TRACKING IN INDOOR AND OUTDOOR ENVIRONMENTS D. Wei, P. Masurel, T. Kurihara, and S. Ando The University of Tokyo, JAPAN  15:31  ANALYSIS OF GLUCOSE CONCENTRATION IN INTERSTITIAL FLUID BY MICRO SURFACE PLASMON BOF-A14  RESONANCE SENSOR D. Li¹-², X. Huang¹, H. Yu¹, X. Hu¹, K. Xu², R.C. Roberts², and N.C. Tien²   |       | J. Salzmann, S. Kubisch, F. Reichenbach, and D. Timmermann  |
| BoF-A9  SENSORS R. Wimmer¹, M. Kranz¹, S. Boring¹, and A. Schmidt² ¹University of Munich, GERMANY and ²Univeristy of Bonn, GERMANY  15:03  COOPERATIVE TRANSMISSION SCHEME IN DISTRIBUTED SENSOR NETWORK FOR EXTENSION OF  TRANSMISSION RANGE K. Nakao¹, T. Yamazato¹, M. Katayama¹, and H. Okada² ¹Nagoya University, JAPAN and ²Niigata University, JAPAN  15:10  CLASSIFICATION OF ANALYSIS TECHNIQUES FOR WIRELESS SENSOR NETWORKS V. Prasad and S.H. Son University of Virginia, USA  15:17  MODELING ATTACK DISTRIBUTION IN SENSOR NETWORKS X. Chen, K. Makki, K. Yen, and N. Pissinou Florida International University, USA  15:24  NOVEL SENSOR AND ALGORITHM FOR MOTION TRACKING IN INDOOR AND OUTDOOR ENVIRONMENTS D. Wei, P. Masurel, T. Kurihara, and S. Ando The University of Tokyo, JAPAN  15:31  ANALYSIS OF GLUCOSE CONCENTRATION IN INTERSTITIAL FLUID BY MICRO SURFACE PLASMON RESONANCE SENSOR D. Li¹,², X. Huang¹, H. Yu¹, X. Hu¹, K. Xu¹, R.C. Roberts², and N.C. Tien²  |       | V. Baier <sup>1</sup> , L. Mösenlechner <sup>2</sup> , and M. Kranz <sup>3</sup> <sup>1</sup> Universität München, GERMANY, <sup>2</sup> Technische Universität München, GERMANY, and |
| TRANSMISSION RANGE  K. Nakao¹, T. Yamazato¹, M. Katayama¹, and H. Okada² ¹Nagoya University, JAPAN and ²Niigata University, JAPAN  15:10  CLASSIFICATION OF ANALYSIS TECHNIQUES FOR WIRELESS SENSOR NETWORKS  V. Prasad and S.H. Son University of Virginia, USA  15:17  MODELING ATTACK DISTRIBUTION IN SENSOR NETWORKS  X. Chen, K. Makki, K. Yen, and N. Pissinou Florida International University, USA  15:24  NOVEL SENSOR AND ALGORITHM FOR MOTION TRACKING IN INDOOR AND OUTDOOR ENVIRONMENTS  D. Wei, P. Masurel, T. Kurihara, and S. Ando The University of Tokyo, JAPAN  15:31  BOF-A14  ANALYSIS OF GLUCOSE CONCENTRATION IN INTERSTITIAL FLUID BY MICRO SURFACE PLASMON RESONANCE SENSOR D. Li¹-², X. Huang¹, H. Yu¹, X. Hu¹, K. Xu¹, R.C. Roberts², and N.C. Tien²  |       | SENSORS R. Wimmer <sup>1</sup> , M. Kranz <sup>1</sup> , S. Boring <sup>1</sup> , and A. Schmidt <sup>2</sup>   |
| BoF-All  V. Prasad and S.H. Son University of Virginia, USA  15:17  BoF-Al2  MODELING ATTACK DISTRIBUTION IN SENSOR NETWORKS  X. Chen, K. Makki, K. Yen, and N. Pissinou Florida International University, USA  15:24  NOVEL SENSOR AND ALGORITHM FOR MOTION TRACKING IN INDOOR AND OUTDOOR ENVIRONMENTS  D. Wei, P. Masurel, T. Kurihara, and S. Ando The University of Tokyo, JAPAN  15:31  BoF-Al4  ANALYSIS OF GLUCOSE CONCENTRATION IN INTERSTITIAL FLUID BY MICRO SURFACE PLASMON RESONANCE SENSOR D. Li <sup>1,2</sup> , X. Huang <sup>1</sup> , H. Yu <sup>1</sup> , X. Hu <sup>1</sup> , K. Xu <sup>1</sup> , R.C. Roberts <sup>2</sup> , and N.C. Tien <sup>2</sup>  |       | TRANSMISSION RANGE K. Nakao¹, T. Yamazato¹, M. Katayama¹, and H. Okada²   |
| BoF-A12 X. Chen, K. Makki, K. Yen, and N. Pissinou Florida International University, USA  15:24 NOVEL SENSOR AND ALGORITHM FOR MOTION TRACKING IN INDOOR AND OUTDOOR ENVIRONMENTS D. Wei, P. Masurel, T. Kurihara, and S. Ando The University of Tokyo, JAPAN  15:31 ANALYSIS OF GLUCOSE CONCENTRATION IN INTERSTITIAL FLUID BY MICRO SURFACE PLASMON RESONANCE SENSOR D. Li <sup>1,2</sup> , X. Huang <sup>1</sup> , H. Yu <sup>1</sup> , X. Hu <sup>1</sup> , K. Xu <sup>1</sup> , R.C. Roberts <sup>2</sup> , and N.C. Tien <sup>2</sup>  |       | V. Prasad and S.H. Son  |
| BoF-A13  D. Wei, P. Masurel, T. Kurihara, and S. Ando The University of Tokyo, JAPAN  15:31  BoF-A14  ANALYSIS OF GLUCOSE CONCENTRATION IN INTERSTITIAL FLUID BY MICRO SURFACE PLASMON RESONANCE SENSOR D. Li <sup>1,2</sup> , X. Huang <sup>1</sup> , H. Yu <sup>1</sup> , X. Hu <sup>1</sup> , K. Xu <sup>1</sup> , R.C. Roberts <sup>2</sup> , and N.C. Tien <sup>2</sup>   |       | X. Chen, K. Makki, K. Yen, and N. Pissinou  |
| BoF-A14 RESONANCE SENSOR D. Li <sup>1,2</sup> , X. Huang <sup>1</sup> , H. Yu <sup>1</sup> , X. Hu <sup>1</sup> , K. Xu <sup>1</sup> , R.C. Roberts <sup>2</sup> , and N.C. Tien <sup>2</sup>  |       | D. Wei, P. Masurel, T. Kurihara, and S. Ando  |
| Triangin university, think and tase western Reserve University, USA  |       | RESONANCE SENSOR  |

| BOF B            | MIDDLEWARE, SYSTEM, AND APPLICATION Session Chair: Susanna Pirttikangas, University of Oulu, FINLAND   |
|------------------|--|
| 14:00<br>BoF-B1  | DESIGN AND APPLICATIONS OF MARINE BROADBAND FRAMEWORK FOR FISHERIES  M. Wada¹, K. Hatanaka², and M. Toda¹  ¹Future University-Hakodate, JAPAN and ²Tokyo University of Agriculture, JAPAN  |
| 14:07<br>BoF-B2  | A TANGIBLE USER INTERFACE AS INTERACTION AND PRESENTATION DEVICE TO A SOCIAL LEARNING SOFTWARE  K. Leichtenstern¹, E. Andrè¹, E. Lösch¹, M. Kranz², and P. Holleis² ¹University of Augsburg, GERMANY and ²University of Munich, GERMAY   |
| 14:14<br>BoF-B3  | 3D MEASUREMENT BY DISTRIBUTED CAMERA SYSTEM FOR CONSTRUCTING AN INTELLIGENT ROOM<br>K. Irie, M. Wada, and K. Umeda<br>Chuo University, JAPAN   |
| 14:21<br>BoF-B4  | EXTRACTING HUMAN BEHAVIORS WITH INFRARED SENSOR NETWORK<br>S. Honda, K. Fukui, K. Moriyama, S. Kurihara, and M. Numao<br>Osaka University, JAPAN   |
| 14:28<br>BoF-B5  | S2B2: BLACKBOARD FOR TRANSPARENT DATA AND CONTROL ACCESS IN HETEROGENEOUS SENSING SYSTEMS  M. Beigl¹, M. Beuster¹, D. Röhr¹, T. Riedel², C. Decker², and A. Krohn³ ¹Technical University of Braunschweig, GERMANY, ²University of Karlsruhe, GERMANY, and ³Particle Computer, GERMANY          |
| 14:35<br>BoF-B6  | FABRICATION OF MULTILAYER INTERCONNECTION USING ULTRAVIOLET NANOIMPRINT LITHOGRAPHY H. Ono, S. Shoji, J. Mizuno, and M. Saito Waseda University, JAPAN   |
| 14:42<br>BoF-B7  | A USER-CENTRIC APPROACH FOR INTERACTIVE VISUALIZATION AND MAPPING OF GEO-SENSOR DATA<br>Y. Shiraishi<br>The University of Tokyo, JAPAN   |
| 14:49<br>BoF-B8  | GRAPHICALLY GEO-CODING OF SENSOR SYSTEM INFORMATION  C. Decker <sup>1</sup> , T. Riedel <sup>1</sup> , P. Scholl <sup>1</sup> , A. Krohn <sup>1</sup> , and M. Beigl <sup>2</sup> <sup>1</sup> University of Karlsruhe, GERMANY and <sup>2</sup> Technical University of Braunschweig, GERMANY |
| 14:56<br>BoF-B9  | StarBED2: TESTBED FOR NETWORKED SENSING SYSTEMS  J. Nakata, R. Beuran, T. Miyachi, K. Chinen, S. Uda, K. Masui, Y. Tan, and Y. Shinoda National Institute of Information and Communications Technology, JAPAN, and Japan Advanced Institute of Science and Technology, JAPAN                   |
| 15:03<br>BoF-B10 | SOI-MEMS SENSOR FOR MULTI-ENVIRONMENTAL SENSING-SYSTEM<br>T. Fujita, Y. Fukumoto, F. Suzuki, and K. Maenaka<br>University of Hyogo, JAPAN  |
| 15:10<br>BoF-B11 | AUTOMATIC COMPOSITION OF SENSOR DATA FOR BEHAVIOR-DRIVEN APPLICATION IN SMART ROOM H. Noguchi¹, T. Mori², and T. Sato² ¹Japan Science and Technology Agency, JAPAN and ²The University of Tokyo, JAPAN   |
| 15:17<br>BoF-B12 | EXPERIMENTAL APPLICATIONS OF MAPPING SERVICES IN WIRELESS SENSOR NETWORKS J. Shuttleworth, M. Hammoudeh, E. Gaura, and R. Newman Coventry University, UK   |
| 15:24<br>BoF-B13 | BROWNIE: SEARCHING CONCEALED REAL WORLD ARTIFACTS  S. Satake <sup>1</sup> , H. Kawashima <sup>2</sup> , and M. Imai <sup>3</sup> <sup>1</sup> Graduate School of Keio University, JAPAN, <sup>2</sup> University of Tsukuba, JAPAN, and <sup>3</sup> Keio University, JAPAN                    |
| 15:31<br>BoF-B14 | KRAFT: A REAL-TIME ACTIVE DBMS FOR SIGNAL STREAMS<br>H. Kawashima<br>University of Tsukuba, JAPAN  |
| 15:38<br>BoF-B15 | A VERSATILE NETWORKED SENSING SYSTEM AS ADD-ON SYSTEM FOR AUGMENTING SPORTS DEVICES A. Kräss and M. Kranz Research Group Embedded Interaction, GERMANY   |

## SPECIAL EVENT: VOLKSWAGEN'S AUTOSTADT

Participants of the Conference are invited to the Autostadt, a famous theme park of Germany's prominent motor manufacturer Volkswagen, who has for years been closely related to the region and, in particular, to the city of Wolfsburg.

The Autostadt, which is located directly next to Volkswagen's headquarter, attracts thousands of visitors daily to view and learn about Volkswagen brands such as Bentley, Audi and Lamborghini. It offers both entertainment and information — on car technologies, historical developments and future prospects.

Our program schedule includes a guided tour and a joint dinner in Wolfsburg.

You will get to see the different pavilions of the diverse VW car brands and experience some of the top sites of the park, such as "Investor Relations", "CarDesign Studio", "Zeithaus" and the astounding "Car Towers". Please join us for an interesting overview and have an enjoyable and extremely captivating visit to the park.

Meeting Place: Thursday, June 7, 16:00, buses will depart outside the main entrance of the Conference building.











# FRIDAY, JUNE 8, 2007

Kyushu University, JAPAN

COFFEE BREAK AND POSTER & DEMO REVIEW

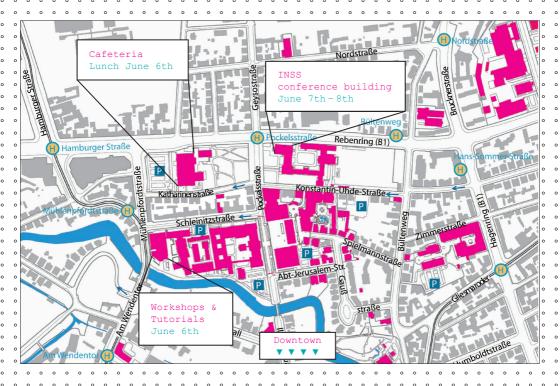
|       | 3   SMART SPACES<br>Chair: Sang Hyuk Son, University of Virginia, USA  |
|-------|--|
| 9:00  | A MIDDLEWARE FRAMEWORK FOR SHARING SENSOR NODES AMONG SMART SPACES<br>J. Nakazawa and H. Tokuda<br>Keio University, JAPAN  |
| 9:20  | SENSING TECHNOLOGIES AND THE PLAYER-MIDDLEWARE FOR CONTEXTAWARENESS IN KITCHEN ENVIRONMENTS  M. Kranz <sup>1</sup> , A. Schmidt <sup>1</sup> , B. Hörnler <sup>2</sup> , G. Rigoll <sup>2</sup> , R.B. Rusu <sup>2</sup> , A. Maldonado <sup>2</sup> , and M. Beetz <sup>2</sup> <sup>1</sup> University of Munich, GERMANY and <sup>2</sup> Technische Universität München, GERMANY |
| 9:40  | A METHOD FOR ESTIMATING POSITION AND ORIENTATION WITH A TOPOLOGICAL APPROACH USING MULTIPLE INFRARED TAGS Y. Nakamura <sup>1</sup> , Y. Namimatsu <sup>2</sup> , N. Miyazaki <sup>2</sup> , Y. Matsuo <sup>1</sup> , and T. Nishimura <sup>1</sup> <sup>1</sup> AIST, JAPAN and <sup>2</sup> Alpha Systems, Inc., JAPAN  |
| 10:00 | UDSS: SENSOR DEVICE FOR CONTEXT AWARENESS IN HOME NETWORK T. Matsuura, K. Hisazumi, T. Kitasuka, T. Nakanishi, and A. Fukuda   |

|   |   | Q  | re.   | 2.T.O | N 4      |   | QT  | TD.     | E 7\ ( | ٦,  | N   | TE C | יזאור | סר  | K C  | 7\    | ND       | 7   | T C | ΛÞ  | TT  | ЦM  | 10       |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|---|---|----|-------|-------|----------|---|-----|---------|--------|-----|-----|------|-------|-----|------|-------|----------|-----|-----|-----|-----|-----|----------|-----|----------------|-----|---------|-----|-----|-----|---------|--------|-----------------|-----|--------|-----|-----|---------|-----|-------|--------|----------------|---|
|   |   |    |       |       | Ch       |   |     |         |        |     |     |      |       |     |      |       |          |     |     |     |     |     |          | tv  | -н             | a k | oda     | ate | ,   | JA: | PAI     | 1      |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    | 0:4   |       |          |   |     |         |        |     |     |      |       |     |      |       | ING      |     |     |     |     |     |          |     |                |     |         |     |     |     |         | •••••  | YE              | R   |        |     |     |         |     | ••••• |        |                |   |
|   |   |    | o • 1 | 0     | 1        |   |     |         |        |     |     |      |       |     |      |       | 1. Y     |     |     |     |     |     |          |     |                |     |         |     | 110 | 01  | J14     | 111    |                 | 10  |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | - 1      |   |     |         |        |     |     |      |       |     |      |       | JAI      |     |     |     |     |     |          |     |                |     |         |     | d.  | ,   | JA      | PAI    | 1               |     |        |     |     |         |     |       |        |                |   |
|   |   | 1  | 1:0   | 0     | Т        | HRE   | E-1 | <br>11C | 4EN    | SI  | ON  | ΙΑΙ  | S     | ΗÆ  | PE   | <br>C | APT      | UE  | RE  | SH  | EET | ·   | <br>JS 1 | NG  | D              | IS' | <br>TR: | IBU | TE  | D ' | <br>[R] | LAX    | ΙA              | L 2 | <br>AC | CEI | EF  | <br>105 | 4E1 | rer   | <br>RS |                |   |
|   |   |    |       |       |          | THREE-DIMENSIONAL SHAPE CAPTURE SHEET USING DISTRIBUTED TRIAXIAL ACCELEROMETERS T. Hoshi, S. Ozaki, and H. Shinoda The University of Tokyo, JAPAN   |     |         |        |     |     |      |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | Т        | he  | Un: | ive     | ers    | it  | Э   | of   | Т     | o k | уо   | ,     | JAP      | Αì  | J   |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   | 1  | 1:2   | 0     | М        | AGI   | C : | SUI     | RFA    | CF  |     | Z    | S     | ΜZ  | RT   | <br>B | UIL      | D.  | ING | М.  | ATE | RI  | ΑI       | F   | OR             | I   | <br>ND( | OOF | S   | EN  | <br>SII | <br>1G | IN              | FR  | AS:    | ΓRU | JCT | UF      | RES | <br>3 |        |                |   |
|   |   |    |       |       | R        | MAGIC SURFACES: A SMART BUILDING MATERIAL FOR INDOOR SENSING INFRASTRUCTURES  R. Kurakake <sup>1</sup> , Y. Nishizawa <sup>1</sup> , K. Sakakura <sup>1</sup> , H. Ouchi <sup>1</sup> , M. Minami <sup>1</sup> , and H. Morikawa <sup>2</sup> |     |         |        |     |     |      |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | 15       | Shil  | oau | ra      | I      | ns  | tit | tu   | te    | 0   | fТ   | 'e    | chn      | 01  | og] | 7,  | JA  | PΑ  | N        | and | 1 <sup>2</sup> | Th  | e i     | Uni | .ve | rs  | it      | у      | of              | То  | kу     | ٥,  | JI  | AP#     | AN  |       |        |                |   |
|   |   | 1  | 1:4   | 0     | A        | DUM   | BR  | ATI     | Ξ:     | MC  | TI  | 01   | I D   | ΕT  | EC'  | ΓI    | ON       | W   | ГТН | U   | NRE | LI  | ΑE       | LE  | R              | AN  | GE.     | DA  | TA  |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | Т        | ADUMBRATE: MOTION DETECTION WITH UNRELIABLE RANGE DATA T. Parker and K. Langendoen  |     |         |        |     |     |      |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | D        | elf   | tΙ  | Jn:     | ive    | rs  | it  | У    | of    | Ι   | 'ecl | hn    | olo      | g z | ₹,  | TH: | E N | ΙΕΊ | HE       | RL  | AN             | DS  |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   | 1  | 2:0   | 0     | Р        | ART   | ΙA  | LI      | DIF    | FF. | ìRE | ГN   | ΊA    | L   | EQI  | JΑ    | TIO      | N-  | -BA | SE  | D Z | LC  | OF       | IT  | НМ             | 0   | F       | SOU | ND  | S   | UC      | RCE    | L               | OC. | AL:    | ΙΖΡ | ΙΤΙ | 10      | 1 N | VII   | Ή      |                |   |
|   |   |    |       |       | F        | INE   | ST  | GI      | RAN    | UI  | JAR | rI;  | Ϋ́    | ΙN  | 1 В  | TC    | н т      | I   | 1E  | AN  | D E | RE  | ĮQI      | ΈN  | CY             |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | - 1      |   |     |         |        |     |     |      |       |     |      |       | uji      | ta  | 3   |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | U        | niv   | er  | si1     | У      | Οſ  | T   | 'ok  | Ϋ́    | ,   | JA:  | P.A.  | N        |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   | 1: | 2:2   | 0     | - 1      |   |     |         | SIC    | N   | RO  | BU   | JST   | Ι   | IK   | EL    | IHO      | OI  | ) I | NT: | EGF | RAI | CIC      | N.  | ΜE             | TH  | OD      | FC  | R   | MU: | LT:     | I C P  | ME              | RA  | PI     | EOE | 'LE | i F     | ΙΕZ | AD    |        |                |   |
|   |   |    |       |       |          | RAC   |     |         |        | _   | m   | ,    | 77    |     |      |       | -1 m     |     | T+7 |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       |          | . M<br>aka  |     |         |        |     |     |      |       |     |      |       | d T<br>N | ٠   | wa  | ua  |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | -        |   |     |         |        |     |     |      |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    | 2 : 4 |       | <u>i</u> |   |     |         |        |     |     |      |       |     |      |       | REV:     |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | 0 0      |   |     |         |        |     |     |      |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
| 0 | • | •  | •     | 0     | 0 0      | •   | •   | 0       | •      |     |     |      | -     |     | •    | 0     | 0        | 0   | 0   | •   | 0   | •   | •        | •   | •              | •   | •       | •   | •   | •   | •       | •      | •               | •   | •      | 0   | _   | _       | •   | •     | •      | •              | • |
|   |   | 1  | 3:4   | 10    | I        | NV:   | ГTЕ | ED      | TZ     | ΑL  | K   |      |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | S        | NA-   | MEI | 1S      | ВА     | TT. | ER. | YI   | ES    | s-  | -WI  | RE    | LES      | S   | SE  | NS  | INC | i N | 101      | UL  | E              | UT  | IL:     | ΙΖΙ | NG  | R   | FII     | ) S    | YS              | TEI | M      |     |     |         |     |       |        |                |   |
|   |   |    |       |       | - 1      |   |     |         |        |     |     |      |       |     |      |       | , K      |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        | :a <sup>2</sup> | , 8 | ano    | d S | · . | St      | ıgi | Lya   | ıma    | 1 <sup>2</sup> |   |
|   |   |    |       |       | 1(       | Omr   | on  | Сс      | rp     | or  | at: | io   | n,    | J.  | APA  | N     | and      | d   | ²Ri | ts  | ume | eil | car      | ı U | ni             | ve  | rs      | ity | , , | JA  | PA      | Ŋ      |                 |     |        |     |     |         |     |       |        |                |   |
| 0 | 0 | 0  | 0     | 0     | 0 0      | 0   | 0   | 0       | 0      | 0   | 0   | •    | 0     | •   | 0    | 0     | 0        | 0   | 0   | 0   | 0   | 0   | 0        | 0   | 0              | 0   | 0       | 0   | 0   | 0   | 0       | 0      | 0               | 0   | 0      | 0   | c   | )       | 0   | 0     | 0      | 0              | 0 |
|   |   |    |       |       | 0 0      |   |     |         |        |     |     |      |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        | 0              | 0 |
|   |   |    | 0     |       |          |   |     |         |        |     |     |      |       |     |      |       | 0        |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        | 0              | 0 |
|   |   |    |       |       | 0 0      |   |     |         |        |     |     |      |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        | -              | - |
|   |   |    |       |       | 0 0      |   |     |         |        |     |     |      |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       |          |   |     |         |        | _   | _   | _    |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     | _   | _       |     |       |        |                |   |
|   |   | S  | ES    | SIO   | N 5      | 1   | W   | [R]     | ELI    | ΞS  | S   | SE   | ENS   | 30  | R I  | NE    | TWO      | ЭF  | RKS | Ι   | Ι   |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   | S  | ess   | ion   | Ch       | air   | : . | Jai     | n B    | eι  | ıte | 1,   | Ε     | TH  | [ Z1 | ır    | ich      | ,   | SW  | IT. | ZEF | RLA | NI       |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   | 1  | 4:0   | 0     | С        | OOR   | DI  | IA!     | ΓIC    | N-  | ·FR | EE   | R     | ΕF  | EA'  | ΓE    | R G      | R   | DUP | S   | ΙN  | WI  | RE       | LE  | SS             | S   | ENS     | SOF | N   | EΤ  | MOI     | RKS    | ;               |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | 1        | . W   |     |         | -      |     |     |      |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | Т        | ech   | ni  | ca.     | L U    | ni  | .ve | rs   | it    | У   | Be:  | rl    | in,      |     | SER | MA. | NY  |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   | 1  | 4:2   | 0     |          |   |     |         |        |     |     |      |       |     |      | G     | ATH      | ΕI  | RIN | G   | US1 | NO  | 3 V      | IIR | ΕL             | ES  | S       | SEN | SO  | R I | NE:     | ΓWC    | RK              | S   |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | - 1      | . I   |     |         |        |     |     |      | -     |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       | Н        | amb   | ur  | g (     | Jni    | VE  | rs  | 1t   | У     | o f | T (  | ec    | hno      | Τ.  | ogy | ,   | GEF | M.F | YN?      |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   | 1  | 4:4   | 0     | - 1      |   |     |         |        |     |     |      |       |     |      |       | OF       |     |     |     |     |     |          |     | ON             | ΙT  | OR:     | ING | I   | N   | SH:     | INJ    | UK              | U   | GY(    | DEN | 1 G | AF      | RDE | ΞN    |        |                |   |
|   |   |    |       |       | - 1      |   |     |         |        |     |     | -    |       |     |      | Ι     | shi      | ka  | awa | ,   | Н.  | ТС  | kι       | ıda |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   |    |       |       |          | eio   |     |         |        |     |     |      |       |     |      |       |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |
|   |   | 1. | 5:0   | 0     |          |   |     |         |        |     |     |      |       |     |      |       | -EFI     | FI  | CIE | INI | M   | JL' | ΓI       | CAS | Т              | AL  | GO:     | RIT | 'HM | F   | OR      | WI     | RE              | LES | SS     | SE  | NS  | OR      | N S | ΙEΤ   | WO     | RK             | S |
|   |   |    |       |       | G        | . Z   | en  | Э,      | С.     | V   | ıan | g,   | Ĺ     |     | Xl   | ЭO    |          |     |     |     |     |     |          |     |                |     |         |     |     |     |         |        |                 |     |        |     |     |         |     |       |        |                |   |

Michigan State University, USA

| 15:20     | BILLIARDS: POLICY-BASED SESSION CONTROL PROTOCOL IN DISRUPTION TOLERANT SENSOR NETWORKS  R. Suzuki <sup>1</sup> , T. Suzuki <sup>2</sup> , K. Sezaki <sup>1</sup> , and Y. Tobe <sup>2</sup> <sup>1</sup> The University of Tokyo, JAPAN and <sup>2</sup> Tokyo Denki University, JAPAN                                       |
|-----------|---|
| 15:40     | SYNCOB: COLLABORATIVE TIME SYNCHRONIZATION IN WIRELESS SENSOR NETWORKS  A. Krohn <sup>1</sup> , M. Beigl <sup>2</sup> , C. Decker <sup>3</sup> , and T. Riedel <sup>3</sup> <sup>1</sup> Particle Computer GmbH, GERMANY, <sup>2</sup> University of Braunschweig, GERMANY, and <sup>3</sup> University of Karlsruhe, GERMANY |
| 16:00     | BREAK AND POSTER & DEMO REVIEW  |
| 16:20     | PANEL: THE FUTURE OF SENSING SYSTEMS INTERDISCIPLINARY CHALLENGES IN SENSING, NETWORKING, AND SYSTEMS RESEARCH Moderator: Marc Langheinrich, ETH Zurich, SWITZERLAND Panelists: Richard S. Muller, University of California, Berkeley USA Hide Tokuda, Keio University, JAPAN Péter Boda, Nokia-NRC, FINLAND                  |
| 17:10     | CLOSING REMARKS   |
| 0 0 0 0 0 |   |
| Posters   |   |
| P-1       | A SCHEME FOR EXPANDING GRID SIZE OF GEOGRAPHICAL ADAPTIVE FIDELITY<br>T. Inagaki and S. Ishihara<br>Shizuoka University, JAPAN  |
| P-2       | AUTOMATIC ACQUISITION OF SENSOR-NETWORK TOPOLOGY BASED ON PHEROMONE COMMUNICATION MODEL H. Tamaki, K. Fukui, K. Moriyama, S. Kurihara, and M. Numao Osaka University, JAPAN   |
| P-3       | CHANNEL PARAMETER ESTIMATION IN THE CDMA MULTIUSER DETECTION PROBLEM T. Yano <sup>1</sup> , K. Nakamura <sup>2</sup> , T. Tanaka <sup>2</sup> , and S. Honda <sup>1</sup> <sup>1</sup> Keio University, JAPAN and <sup>2</sup> Kyoto University, JAPAN  |
| P-4       | FUZZY INFERNO AND NOSTALGIC COW: TWO PRACTICAL APPLICATIONS FOR AD-HOC NETWORKS W. Olesinski <sup>1</sup> , P. Gburzynski <sup>2</sup> , and I. Nikolaidis <sup>2</sup> <sup>1</sup> Olsonet Communications Corporation, CANADA and <sup>2</sup> University of Alberta, CANADA  |
| P-5       | LOCATION ESTIMATION USING AUDITORY SIGNAL EMITTED AND RECEIVED BY ALL OBJECTS T. Nishimura, Y. Nakamura, H. Tomobe, T. Kurata, T. Okuma, and Y. Matsuo National Institute of Advanced Industrial Science and Technology (AIST), JAPAN   |
| P-6       | MODELING SENSOR NETWORKS AS CONCURRENT SYSTEMS<br>C. Amariei, C. Teodorov, E. Fabiani, and B. Pottier<br>Université De Bretagne Occidentale, FRANCE   |
| P-7       | PRIVACY RESPECTED UBIQUITOUS SENSOR ENVIRONMENT<br>H. Sakakibara, T. Yonezawa, J. Nakazawa, and H. Tokuda<br>Keio University, JAPAN   |
| P-8       | REGULATION OF ELECTRICITY MARKETS WITH UBIQUITOUS COMPUTING D. Röhr¹, M. Beigl¹, M. Beuster¹, T. Riedel², and C. Decker² ¹Technical University of Braunschweig, GERMANY and ²University of Karlsruhe, GERMANY   |

| ?=9   | SHAWN: THE FAST, HIGHLY CUSTOMIZABLE SENSOR NETWORK SIMULATOR S.P. Fekete <sup>1</sup> , A. Kröller <sup>1</sup> , S. Fischer <sup>2</sup> , and D. Pfisterer <sup>2</sup> <sup>1</sup> University of Technology Braunschweig, GERMANY and <sup>2</sup> University of Lübeck, GERMAN   |
|-------|--|
| ?-10  | TOWARDS COMPONENT REUSE IN MAC PROTOCOLS T. Parker, M. Bezemer, and K. Langendoen Delft University of Technology, THE NETHERLANDS  |
|       |  |
| DEMOS |  |
| D-1   | A SENSOR AND ACTUATOR PROXY FOR CREATING CONTEXT-AWARE APPLICATIONS Y. Kawahara, M. Ozawa, N. Kawanishi, and H. Morikawa The University of Tokyo, JAPAN  |
| D-2   | AUTOANNOTATED SKATING MAPS  T. Riedel <sup>1</sup> , C. Decker <sup>1</sup> , M. Berchtold <sup>1</sup> , A. Krohn <sup>2</sup> , and M. Beigl <sup>3</sup> <sup>1</sup> University of Karlsruhe, GERMANY, <sup>2</sup> Particle Computer GmbH, GERMANY, and <sup>3</sup> University of Brauschweig, GERMANY   |
| D-3   | AUTOMATED WIRELESS SENSOR NETWORK TESTING<br>J. Beutel, M. Dyer, R. Lim, C. Plessl, M. Wöhrle, M. Yücel, and L. Thiele<br>ETH Zurich, SWITZERLAND  |
| D-4   | GEOCODING SENSOR NETWORKS  C. Decker <sup>1</sup> , T. Riedel <sup>1</sup> , M. Berchtold <sup>1</sup> , P. Scholl <sup>1</sup> , M. Isomura <sup>2</sup> , M. Beigl <sup>3</sup> , D. Röhr <sup>3</sup> and M. Beuster <sup>3</sup> <sup>1</sup> University of Karlsruhe, GERMANY, <sup>2</sup> KDDI, JAPAN, and <sup>3</sup> Technical University Braunschweig, GERMANY  |
| D-5   | INSTANT LEARNING SOUND SENSOR: FLEXIBLE ENVIRONMENTAL SOUND RECOGNITION SYSTEM Y. Negishi and N. Kawaguchi<br>Nagoya University, JAPAN   |
| D-6   | INTEGRATING THE ANALYSIS OF USER / ASSET SPATIO-TEMPORAL RELATIONSHIPS FOR THE OPTIMIZATION OF MOBILE FIELD PROCESSES  F. Berger, HJ. Eikerling, and M. Benesch Siemens IT Solutions and Services, GERMANY   |
| D-7   | INVESTIGATING SENSOR NETWORKS WITH CONCURRENT SEQUENTIAL PROCESSES AND SMALLTALK<br>C. Amariei and C. Teodorov<br>Université De Bretagne Occidentale, FRANCE   |
| D-8   | NETWORK-ENABLED SENSING ROBOT EMULATION  R. Beuran <sup>1,2</sup> , T. Okada <sup>2</sup> , J. Nakata <sup>1,2</sup> , T. Miyachi <sup>1,2</sup> , K. Chinen <sup>1,2</sup> , Y. Tan <sup>1,2</sup> , and Y. Shinoda <sup>1,2</sup> ¹National Institute of Information and Communications Technology, JAPAN and ²Japan Advanced Institute of Science and Technology, JAPAN |
| D-9   | OPPORTUNISTIC REMOTE MEDICAL MONITORING USING BLUETORRENT<br>J. Chen, D. Cho, J. Choi, T. Massey, H. Noshadi, M. Gerla, and M. Sarrafzadeh<br>University of California, Los Angeles, USA   |
| D-10  | ROUTING TAGS AND PEGS: TWO GENERIC APPLICATION FRAMEWORKS FOR ADHOC MESH NETWORK W. Olesinski <sup>1</sup> , P. Gburzynski <sup>2</sup> , and I. Nikolaidis <sup>2</sup> ¹Olsonet Communications, CANADA and ²University of Alberta, CANADA  |
| D-11  | THE PROPOSAL OF THE DIGITAL PLETHYSMOGRAPH USING A SENSOR NETWORK  N. Segawa¹, K. Yamazaki², Y. Hayasaka¹, and J. Sawamoto¹  ¹Iwate Prefectural University, JAPAN and ²Tokai University, JAPAN   |



This Conference is sponsored by the Transducer Research Foundation and technically sponsored by IEEE.





We gratefully acknowledge the following companies and organisations for their support, encouragement, and involvement in the INSS 2007 Conference:





**Panasonic** 

