Summary of Activities

The goal of the Sensory Systems (SS) Technical Committee is to foster research, development, education and industrial dissemination of knowledge relating to the emerging field of sensors, MEMS and associated processing systems. The activity is genuinely multidisciplinary, drawing upon knowledge and expertise from fields such as biology, physics, mechanics and chemistry, in addition to areas more traditionally associated with the IEEE such as electrical and computer engineering, computer science and information technology.

Committee members are renowned experts, who are both committed to, and active within, the field. The committee membership currently stands at 54 members. The following details the CASS-related Sensory Systems activity by the committee and its members.

1. Participation in ISCAS track paper reviews: We had a total of 67 papers originally submitted to the track. At least two reviews were arranged for each paper. The acceptance rate was 60% with 25 papers accepted for oral presentation and 15 papers accepted for poster presentation.

2. Best Paper Award:

The 10 best papers in the Sensors track (according to the reviews) were selected by the TC 2005 chair (Dr. Yadid-Pecht) and then were sent to all the TC members for uniform re-evaluation and grading. A neutral person who had no paper in the list of 10 finalists got the grading tables from the TC members and arbitered the final selection (Dr. Bernabe Linares).

The 3 best papers in the Sensory Systems track 2005 were:

1. Abhishek Bandyopadhyay, Jungwon Leez, Ryan Robuccix, Paul Hasler "A 80µW/frame 104x128 CMOS imager front end for JPEG Compression"
3. Alexander Fish, Shy Hamami,Orly Yadid-Pecht, "SELF-POWERED ACTIVE PIXEL SENSORS FOR ULTRA LOW-POWER APPLICATIONS"

3. Journal Special Issues: A special issue for TCASI based on the best papers from ISCAS 2005 is currently in preparation.
4. **Out Reach:** Members of our TC serve on program committees of various conferences such as SPIE, NIPS, ISSCC, ICECS, BIS and many others.

5. **Technical Committee Membership.** We have recruited a group of TC members that cover all the thrusts of our TC. The committee has members from academia, national labs and industry. We have also attempted to diversify the membership to include senior and junior scientists, as well as women and minorities. In addition, our members serve on the editorial boards of various Journals, such as IEEE TVLSI, TSensors, TCAS and AICSP journal.

(Appendix A contains a full list of current TC members)

6. **Future Plans:** Extend visibility of TC via special issues, books, workshops etc. Special Issue on Sensors, planned to be published through TCASI.

7. **Committee members activities:**
The activities by the various committee members are listed in appendix B

**Appendix A**

**Current list of Technical Committee Members:**
Chair: Andre van Schaik, University of Sydney, Australia, andre@ee.usyd.edu.au
Chair Elect: Shih-Chi Liu, Institut für Neuroinformatik, Switzerland, shih@ini.phys.ethz.ch
Secretary: Denise Wilson, University of Washington, wilson@ee.washington.edu
Secretary Elect: Bernabe Linares, National Microelectronics Center, Spain, Bernabe.Linares@imse.cnm.es
Past Chair: Orly Yadid-Pecht, Ben-Gurion University, Israel, oyp@ee.bgu.ac.il

Pamela Abshire, University of Maryland, pabshire@umd.edu
Andreas Andreou, Johns Hopkins University, andreou@jhu.edu
Salvatore Baglio, University of Catania, salvatore.baglio@diees.unict.it
Diego Barretti, University of Washington, diego@ee.washington.edu
Amiine Bermak, The Hong Kong University of Science and Technology, ebeerm@ee.ust.hk
Shantami Chakrabanty, Michigan State University, shantanu@msu.edu
Marc Cohen, University of Maryland, mhcohen@glue.umd.edu
Eugenio Culurcso, Yale University, eugenio.culuriello@yale.edu
Tobi Delbruck, ETH, Zurich, tobi@ini.phys.ethz.ch
Piotr Dudek, UMIST, United Kingdom, pdudek@umist.ac.uk
Ralph Etienne-Cummings, Johns Hopkins University, retienne@jhu.edu
Wai-Chi Fang, JPL Caltech, U.S.A., wfang@jpl.nasa.gov
Roman Genov, University of Toronto, Canada, roman@eeecg.toronto.edu
Paul Hasler, Georgia Institute of Technology, phasler@ece.gatech.edu
Martin Haenggi, University of Notre Dame, mhaenggi@nd.edu
Philipp Hafliger, University of Oslo, Norway, hafliger@ifi.uio.no
John Harris, University of Florida, harris@cnel.ufl.edu
Timothy Horuchi, University of Maryland, timmer@isr.umd.edu
Giacomo Indiveri, ETH, Zurich, giacomo@ini.phys.ethz.ch
Tor Sverre Lande, University of Oslo, bassen@ifi.uio.no
Franco Maloberti, University of Texas-Dallas, franco.maloberti@utdallas.edu
Andrew Mason, Michigan State University, mason@msu.edu
Karim Oweiss, Michigan State University, koweiss@msu.edu
Angel Rodríguez-Vasquez, Instituto de Microelectrónica de Sevilla, angel@imse.cnm.es
Bertram Shi, Hong Kong University of Science and Technology, eebert@ee.ust.hk
Ce Kuen Shieh, National Cheng Kung University, shieh@ee.ncku.edu.tw
Alan Stocker, New York University, alan@cns.nyu.edu
Peter (Chung-Yu) Wu, National Chiao Tung University, cywu@alab.ee.nctu.edu.tw
Mona Zaghloul, George Washington University, zaghloul@gwu.edu
Appendix B

Orly Yadid-Pecht

I. 2004-2005 IEEE Circuits and Systems Society - Distinguished Lecturer

Invited Lectures/International Workshops


II. Publications

Peer Reviewed Papers (FROM APR 2005 only):


Invited Papers:
A. Fish, V. Milrud and O. Yadid-Pecht, “High Speed and High Precision Current Winner-take-all Circuit”, invited for “The Neuromorphic Engineer”. 
Peer reviewed conference papers:

III. SERVICE ACTIVITIES

Member of the Editorial Board (Deputy Editor in Chief), IEEE Trans. on Circuits and Systems I, 2004-2006.
Member of the Editorial Board (Guest Editor), Analog Integrated Circuits and Signal Processing, 2003-2004.
Past Chair of the IEEE CAS Technical Sensors Committee (2004-2005)
IEEE Sensors Council – CAS representative
Member of the IEEE CAS Analog Signal Processing, Neural Networks, Biocas and Sensors Technical Committees (1996-present).
Member of the SPIE Solid State Sensor Arrays international conference program committee (1997-present).
Member of the Technical Committee for the IEEE workshop on CCDs and Advanced Image Sensors (1998-present).
Jan Van der Spiegel

Activities
Program Vice-Chair of the IEEE ISSCC 2006 and the Program Chair of ISSCC2007 (Feb. 2007).
Dist. Lecturer of the IEEE SSCS.
Reviewer for ISCAS06

Publications:

Piotr Dudek

ISCAS06 RCM & session chair
Technical Programme Committe member of International Conference on Sensing Technology, ICST 2005, 21-23 November 2005, Palmerston North, New Zealand,

Publications
Shih-Chii Liu

ISCAS-2006: Review Committee Member for Sensory Systems, Session Chair.
Chairman of Emerging Technologies Track at NIPS Dec 2005.
Program Committee Member for SPIE International Symposium on Microtechnologies for the New Millenium 2005, Bioengineered and Bioinspired Systems II (EMT104) (9--11 May, 2005).
Editorial Board Member of Institute of Neuromorphic Engineering Newsletter

Publications:
Alan Stocker

Co-organizer of the ISCAS06 special session "live demonstrations" together with Philipp Hafliger and Ralph Etienne-Cummings.
NIPS organizing committee member: co-chair of the demonstration session.

Publications:

book
"Analog VLSI circuits for the perception of visual motion", monograph, wiley & sons, 240 pages.

journals:
alan stocker (2006) "Analog Integrated 2-D Optical Flow Sensor", analog integrated circuits and signal processing 46(2)
analan stocker and eero simoncelli (2006) "noise characteristics and prior expectations in human visual speed perception", nature neuroscience 9(4)
Martin Haenggi

RCM for ISCAS06
Technical Program Chair of GLOBECOM'06.
Assoc. Editor for Elsevier Journal on Ad Hoc Networks.
Distinguished Lecturer for CAS, 2005-06.
NSF CAREER Award 2005-2010 for a project entitled "Modeling and Managing Uncertainty in Wireless Sensor and Ad Hoc Networks"

Publications:

Book chapter:

Journals:
Giacomo Indiveri

Co-organizer Telluride Neuromorphic Engineering Workshop 2006,
Secretary & Web Administrator of IEEE Circuits and Systems Society Technical Committee on Neural Systems and Applications
Associate Editor for ISIC 2006 Conference
Editorial Board member of the Neuromorphic Engineering Newsletter

Publications:
Indiveri, G. and Chicca, E. and Douglas, R. A VLSI array of low-power spiking neurons and bistable synapses with spike–timing dependent plasticity, IEEE Transactions on Neural Networks, 17:(1) 211--221, Jan, 2006
**Bernabe Linares-Barranco**

**Publications:**


Mona Zaghloul

Elected President of the IEEE-Sensors Council
Reviewer for ISCAS06 for papers in SS track and Bio track
AE for TCAS-1
AE IEEE-Sensors Journal
Guest Editor special Issue of TCAS-I Smart Sensors with Orly Yadid-Pecht and Dennis Wilson
Ralph Etienne-Cummings

HONORS
Recipient of the Visit African Fellowship Award, University of Cape Town, 2006/2007
Selected for Fulbright Fellowship Award to South Africa, 2005/2006
Re-Elected to the Board of Governors, IEEE CAS Society, 2003-2005, 2006 – Present (Re-elected)

PROFESSIONAL ACTIVITIES
Associate Editor: IEEE Sensors Journal
Member: IEEE, Circuits and Systems, Solid-State Circuits, SPIE, Electron Devices
EWNS, ISCAS, Wiley, NSF, NIH
Program Committee: ISSCC, SPIE, BIS, ISCAS, NIPS, COSI
Promotion and Tenure Referee: Associate Professor for 2 candidates, 2005

PUBLICATIONS

Journal Publications:
1. S. Mehta and R. Etienne-Cummings, “A Normal Optical Flow Camera,” accepted to IEEE
   Future Issue 2006.
4. R. Philipp and R. Etienne-Cummings, “A Single Chip Stereo Imager” ISSCC’06 Digest of
6. F. Tenore, J. Vogelstein, R. Etienne-Cummings, G. Cauwenberghs and P. Hasler, “A Floating-
   Gate Programmable Array of Silicon Neurons for Central Pattern Generating Networks,” accepted for
8. N. Ekekwe, R. Etienne-Cummings and P. Kazanzides, “A Configurable VLSI Chip for DC
   Motor Control for Compact, Low-Current Robotic Systems,” accepted for IEEE ISCAS 2006, Kos,
11. V. Gruev, R. Philipp and R. Etienne-Cummings, “General Image Processing Chip in 3D

Workshops/Conferences/Panels/Invited Talks:
Session Chairman: International Symposium on Circuits and Systems, 2005
Invited Speaker: SPIE Conference, Orlando, FL, 2005
Invited Speaker: Post IJCNN Neuromorphic Workshop, Montreal, Canada, 2005
Invited Speaker: NRO, Chantilly, VA, 2005.
Invited Speaker: Columbia University, NY, 2005.
Invited Speaker: Workshop on Neuromorphic Systems, IJCNN’05, Montreal, Canada, 2005.
Invited Speaker: ETHZ-INI/INE Workshop, Zurich, Switzerland, 2005.
Organizer: Topical Meeting on Time Domain Neural Signal Processing, Zurich, Switzerland, 2005.

PATENTS

André van Schaik

Chair IEEE CAS Sensory Systems TC
Member, IEEE CAS Technical Committees: Analogue Signal Processing, Biomedical Circuits and Systems, Neural Systems and Applications
Track Chair, Sensory Systems IEEE ISCAS06
AE IEEE TCASI
Board Member, Institute of Neuromorphic Engineering
Organizer, Telluride Neuromorphic Engineering Workshop
Member EPSRC peer review college

Publications:

Journal papers:

Conference papers:
5. Craig Jin, Teewoon Tan, Alan Kan, Dennis Lin, Andre van Schaik, Keir Smith, Matt McGinity, Real-time, head-tracked 3D Audio with Unlimited Simultaneous Sounds, ICAD 05, Eleventh Meeting of the International Conference on Auditory Display, Limerick, Ireland, July 6-9 2005