2009 DIGEST OF TECHNICAL PAPERS
INTERNATIONAL CONFERENCE ON CONSUMER ELECTRONICS

"PROGRAMMABLE CONSUMER ELECTRONIC DEVICES"

JANUARY 10 - 14, 2009
Welcome to the 27th IEEE International Conference on Consumer Electronics, part of the IEEE Consumer Electronics Society. Each year we have a new conference theme based on trends and future opportunities in the Consumer Electronic field. This year’s theme is “Programmable Consumer Electronic Devices” reflecting the emergence of consumer devices that can maintain themselves, seamlessly update new services and we look forward to the emergence of self adaptive and learning systems in the consumer field. Two special sessions have been arranged containing papers related to programmability in consumer devices. Linked to this activity, the Consumer Electronics Society has a part share in the new IEEE Transactions on Artificial Intelligence and Gaming and we will develop this field with great interest.

The conference committee has arranged an excellent set of keynotes. Hans Rijns from NXP and Robert Blake from Altera will be offering Industrial trends while Prof Amano will present academic development in Dynamically Reconfigurable Processors. We are very fortunate to have attracted Ranga Yogeshwar who many know as a science journalist and TV personality promoting Science. We also have IEEE Distinguished Lecturer Thomas Coughlin who will be presenting his experiences on the DL program and how the society is supporting chapters in this endeavor.

This year has seen an international economic downturn and traveling to technical events may be seen by some as expensive or even impractical. However, by attending ICCE, delegates will be exposed to the latest research and technology in the field providing valuable information to keep technical skills up to date - a clear requirement to keep ahead and position you well in the skills market. Like previous years, we are very fortunate to be a partner of the International Consumer Electronics Show (CES) organized by the Consumer Electronics Association (CEA). CEA has been a vital partner in ICCE for many years offering ICCE delegates an opportunity to see the latest products and services.

I would like to thank the conference organizing committee (ExCom) and the Technical Program Committee (TPC) for their continual and unselfish dedication and hard work. However the conference belongs to the delegates who have submitted their research work, their dedication working many hours in the laboratory often into the night, and their generosity to share their hard work with us for future generations.

I hope you find ICCE technically challenging and rewarding.

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On behalf of the Technical Program Committee, I would like to welcome you to ICCE 2009. The role of the committee is to assemble a program as exciting as possible, with new research findings, including new hardware and software developments that benefit the consumer electronics industry. I hope we have done so this year. In addition, we have an array of six tutorials, with topics ranging from Human Interface Design to Optical Storage, for the benefit of our members.

This year many of the exciting technologies developed for this Conference will be previewed in our partner Consumer Electronics Show. We thank the Consumer Electronics Association for allowing it.

The TPC selected the theme “Programmable Consumer Electronic Devices” for this year’s Conference and we hope that the chosen papers reflect our intention. In addition, we have an array of other interesting papers, with topics ranging from mobile computing to security issues, that I am sure will be of interest to our society members. The work of the Technical Program Committee has been rigorous in reviewing the totality of submitted papers for breadth and depth. For that, I would like to especially thank all of our reviewers who contributed with their efforts and expertise.

If any of you is interested in becoming involved as a reviewer or in the TPC duties, please let us know.

On behalf of the TPC, I welcome you again to our ICCE!!!

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Chair: Sorin Stan  
Co-Chair: Kei Yamashita

**6.0 Human-Computer Interaction (General/Other)**
Chair: Reinhard Moeller  
Co-Chair: George Rome Borden

**7.0 Display Devices (General/Other)**
Chair: Atul Batra  
Co-Chair: Wang Lou

**8.0 RF & Wireless (General/Other)**
Chair: Uwe E. Kraus  
Co-Chairs: Wolfgang Weltersbach/Paul Snopko

**9.0 Networking (General/Other)**
Chair: Johan Lukkien  
Co-Chair: Bernard Fong

**10.0 Security & Rights Management (General/Other)**
Chair: Akiomi Kunisa  
Co-Chair: Scott Lee Linfoot

**11.0 Other Consumer Technology/Applications**
Chair: Guido Volleberg  
Co-Chair: Peter Corcoran
ICCE 2009 REVIEWERS

Ed Barrett
Atul Batra
E.B.(Erwin) Bellers
Petronel Bigioi
Martin Bolton
George Rome Borden IV
Yung-Chang Chen
Tihao Chiang
Peter Corcoran
Thomas M. Coughlin
Peter H.N. de With
Isao Echizen
Onno Eerenberg
James O. Farmer
Gerardo Fernandez-Escribano
Bernard Fong
Paul Hall
John G. N. Henderson
Christian Hentschel
Dietmar Hepper
Tatsuya Hirai
David Hostetler
Rong Hu
Norm Hurst
David Hutchison
Takuya Ima-ide
Michael A. Isnardi
Fumio Issiki
Hari Kalva
Isao Kawahara
Ihor Kirenko
Sung-Jea Ko
Arakdy Kopansky
Uwe E. Kraus
Akiomi Kunisa
William Lin
Fredric Lindstrom
Scott Linfoot
Stuart Lipoff
Sebastian Lopez
Wang-He Lou
J.J. Lukkien
William Lumpkins
Vishal Markandey
Saurabh Mathur
Reinhard Moeller
Aldo W. Morales
Dengpan Mou
Stefan Mozar
Wolfgang Mueller
Haruhiko Murata
Antonio Navarro
Marina Nicolas
Anthony Ojo
Sharon Peng
William A. Rowe
Masaru Sakurai
Kousik Sankar
Christian Schüldt
Ling Shao
R. S. Sherratt
Paul A. Snopko
Sorin G. Stan
Richard Verhoeven
Anthony Vetro
Guido T.G. Volleberg
Xianbin Wang
Andreas Weber
Wolfgang Weltersbach
Tao Wu
Jun Xin
Chojuro Yamamitsu
Kei Yamashita
Xiaoquan (Bill) Yi
Larry Zhang
ICCE 2009 TUTORIALS

Saturday, January 10 & Sunday, January 11, 2009
Chair: Sorin G. Philips Consumer Lifestyle, The Netherlands

The 2009 International Conference on Consumer Electronics will sponsor Tutorial Sessions on January 10 (Saturday afternoon) and January 11 (Sunday morning and afternoon). These Tutorial Sessions have been a key highlight of the ICCE conference for many years. The tutorials will provide an introduction to several important topics in consumer electronics. The half-day sessions are intended to be rigorous in nature and will be taught at an appropriate level for practicing engineers.

The sessions have been arranged to allow attendees time to visit the CES Exhibits.

Note: As shown on the conference registration site, attendance at the Tutorial Sessions requires payment of a fee separate from that required for the Conference. This fee entitles the registrant to attend Tutorials on Saturday and Sunday and receive the handout material for all sessions.

SATURDAY, January 10, 2009

T1.1 2:30 - 6:00 PM
Human Interface Design
Stefan Mozar, CCM Consulting, Sydney, Australia

T1.2 2:30 - 6:00 PM
The 3D Graphics Pipeline from an OpenGL ES Perspective
Mathieu Robart, STMicroelectronics R&D, Great Britain

SUNDAY, January 11, 2009

T2.1 8:30-12:00 Noon
Architecture Trade-Offs for Embedded Audio/Video Processing
Jens Franzen, Johan Janssen, NXP Semiconductors

T2.2 8:30-12:00 Noon
Optical Storage
Richard (Dick) G. Zech, The ADVENT Group, Colorado Springs, CO, Curt Shuman, Ph.D., Di Chen, Ph.D.

T3.1 2:30 -6:00 PM
Home Networking in Embedded Devices
Adam Powers, Macrovision's Embedded Solutions

T3.2 2:30 - 6:00 PM
Vibrant Picture Quality Enhancement for Display Systems
Pierre de Greef, NXP Semiconductors
ICCE 2009 KEYNOTES

2009 Opening Keynote

Monday, January 12, 2009
9:00 AM - 10:20 AM

Hans Rijns, NXP

Biography: Hans Rijns is Vice President and Manager Research at NXP, the independent semiconductor company founded by Philips.

Hans is responsible for all applications, systems, circuits and process technology research programs at NXP. In this role, he is part of the NXP Corporate Innovation and Technology management team headed by Rene Penning de Vries.

He started his professional career in 1991 at Philips Research as scientist in the area of discrete-time mixed-signal circuits. In 1996 he moved to Philips Semiconductors and held various technical and business management positions mainly in the field of baseband and multimedia products for the wireless market. Since 2006, he proceeded to executive management positions in NXP Research.

Hans holds an M.Sc. and Ph.D in Electrical Engineering from the University of Twente, the Netherlands.

2009 Monday Luncheon Keynote

Monday, January 12, 2009
12:20 PM - 2:10 PM

Robert Blake, Altera Corporation

Biography: Robert Blake is the vice president of the Automotive and Consumer Business Unit at Altera Corporation. Mr. Blake is responsible for defining Altera's programmable logic product solutions for applications in the automotive and consumer market segments. He has been developing ASIC and programmable logic for high speed network applications for over 17 years. Prior to Altera he worked at LSI Logic and Fairchild where he worked developing ASIC technology. He holds a MEng. in Business and Microelectronics and BSc. in Applied Physics & Electronics from the University of Durham in England.

2009 IEEE Masaru Ibuka Awards Luncheon Keynote

Tuesday, January 13, 2009
12:00 Noon - 2:20 PM

Hideharu Amano, Keio University, Japan

Dynamically Reconfigurable Processors - Flexible Off-Loading Engines for Consumer Electronics

Abstract: Dynamically Reconfigurable Processors have been started to be utilized as an off-load engine for various types of System-on-Chips (SoCs) in consumer electronics. In order to achieve better area- and power-efficiency compared with traditional field-programmable devices such as FPGAs, they incorporate
the following properties; (1) a simple coarse grained processor, and (2) dynamic reconfiguration of the PE
array which enables time-multiplexed execution is introduced. Some of them provide multiple sets of
configuration data called hardware contexts and switch them in one or a few clock cycles, and others can
change its configuration in several micro seconds. Especially in Japan, some of them are embedded in real
commercial products like portable video games and printers.

Biography: Hideharu Amano
Professor of Keio University, Japan
Hideharu Amano received the Ph.D
degree from Keio University in 1986. He was a visi
ting assistant professor in Stanford Univ. CSL from
1989 to 1990. He is currently a professor in the Dept. of Information and Computer Science, Keio
University. His research interests include the area of parallel processing and reconfigurable systems.

2009 Closing Keynote

Wednesday, January 14, 2009
12:20 PM - 2:10 PM

Ranga Yogeshwar

Generation "New"- Does Innovation Change Our Culture?
Abstract: At any time in history we have seen a comparable transition within society. Today the speed of
innovation has reached a critical pace: Mobile communication, broadband internet, new media etc. have
changed our life in a fundamental way. The generation gap is widening and new global business structures
challenge our traditional models. Leaps in innovation induce disorientation within enterprises and in
societies. How is innovation changing our culture?

Biography: Since 1987 Ranga Yogeshwar has been active as Science Editor at WDR-Germany TV, the
nationwide German TV-network of public rights. Between 1995 and 2001, he was Acting Chief and
between 2001 and 2005 the Chief of the Science TV Programme Group at WDR. Ranga has over 1000 TV
shows and many Radio presentations to his credit. He is author/co-author of several newspaper and
magazine columns and articles in learned periodicals. He is engaged in many national and international
projects and is member of boards and committees of institutions in the fields of Science, Education and
Knowledge Propagation. He received many awards and decorations for his work in the field of science
communication. In 2008 he founded his company xplainy. Ranga holds degree of Diplomphysiker in
experimental particle physics and astrophysics from Aachen University, Germany. His hobbies centre
around the family, music and astronomy (MPC-Code B43). The asteroid 20522, discovered by André
Knöfel in September 1999 has been named after him. Ranga Yogeshwar is married to the classical soprano
singer Ursula Müller. They have four children and live close to Hennef near Cologne, Germany.
ICCE 2009 AWARDS

2009 IEEE Masaru Ibuka Consumer Electronics Award
The 2009 IEEE Masaru Ibuka Consumer Electronics Award is sponsored by Sony and will be presented at the Awards Luncheon in January 2009. The winner is Eugene Polley.

2009 IEEE Daniel E. Noble Award
Dr. Larry F. Weber
For pioneering contributions to Plasma Display Technology and its commercialization

IEEE Consumer Electronics Society Outstanding Service Award
Leander Hoke
For Outstanding Service to the IEEE Consumer Electronics Society, particularly being Treasurer since 2002 and overseeing the Society to a good financial position and
Stefan Mozar
For Outstanding Service to the IEEE Consumer Electronics Society, particularly his leadership of the International Symposium on Consumer Electronics and his leadership in developing International Chapters

ICCE 2009 Best Paper Awards

Joint/1st Place Best Paper
“Low Cost LCD Panel Frame Rate Doubling By Applying Motion Controlled Dynamic Frame Insertion”
Haiyan He, Johan G Janssen, Erwin Bellers, NXP Semiconductors, United States

Joint/1st Place Best Paper
“An Image Stabilization Technology for Digital Still Camera based on Blind Deconvolution”
Haruo Hatanaka, Simpei Fukumoto, Hiroshi Kano, Haruhiko Murata, SANYO Electric Co., Ltd., Japan

3rd Place Best Paper
Chang Yeon Cho, Joon Tae Kim, Konkuk University, South Korea,
Jun Heo, Korea University, South Korea

2007 Chester W. Sall Memorial Paper Awards

First Place
“A New Approach to Color Adjustment for Mobile Application Displays with a Skin Protection Algorithm on a CIE1931 Diagram”
Jooyoung Ha, Sungmok Lee, Tae-eung Kim, Wontae Choi, Bongsoon Kang

Second Place
“Development of T-DMB Receiver Linking with CDMA Network for Interactive Data Broadcasting Services”
Byungjun Bae, Joungil Yun, Yong-Tae Lee, Jong-Soo Lim

Third Place
“Rough Sets-Assisted Subfield Optimization for Alternating Current Plasma Display Panel”
Gwanggil Jeon, M. Anisetti, V. Bellandi, E. Damiani, Jechang Jeong