11th International Symposium on System Synthesis

December 2-4, 1998

15F., Chinatrust Hotel, Hsinchu, Taiwan, R.O.C.

Sponsored by the IEEE Computer Society DATC and the ACM SIGDA
In Cooperation with Ministry of Education, R.O.C. and National Science Council, R.O.C.

http://www.cs.nthu.edu.tw/~isss98/

FINAL PROGRAM

About ISSS

ISSS is a major international forum presenting emerging techniques for the system-level design and synthesis of computing systems. Having begun as the International Workshop on High-Level Synthesis in the mid-80's, it attracts leading design automation professionals from around the world. The growing acceptance of commercial synthesis tools, and the unified view of both hardware and software that such tools enable, have led to the symposium expanding to now cover system-level synthesis, hardware/software codesign, programmable (multi-)processor-based design, architectural and high-level synthesis, system-design experience and methodologies, embedded and real-time system software, synthesis for low power and testability and verifiability. ISSS'98 is the 11th in this very successful series of symposia. It features 4 invited talks by leading industrial and academic experts on very timely and interesting topics related but not overlapping with the other ISSS activities. In addition, 1 panel session is organized on topics of active interest for the future of our community. ISSS'98 also features 24 high-quality regular and poster papers selected from over 60 submissions. Paper presentations will consist of 20 minute talks followed by poster sessions, allowing ample time for discussion and interaction.

Technical Program

Tuesday, December 1, 1998

18:00 - 20:00 On-site Registration
19:00 - 21:00 Reception

Wednesday, December 2, 1998

08:30 - 09:00 Open Statement
09:00 - 10:00 Invite Talk: Is IP Business Hype or Reality?
Prof. D. D. Gajski, U. of California, Irvine, USA
10:00 - 10:30 Coffee Break
10:30 - 11:30 Session 1: Code Generation and Optimization Issues

1.1 A Uniform Optimization Technique for Offset Assignment Problems; *Rainer Leupers, Fabian David; Dept. of Computer Science, Univ. of Dortmund*

1.2 Code Generation for Compiled Bit-True Simulation of DSP Applications; *L. De Coster, M. Ade, R. Lauwereins, J.A. Peperstraete; Katholieke Univ. Leuven, Dept. ESAT, Belgium*

1.3 Addressing Optimization for Loop Execution Targeting DSP with Auto-Increment/Decrement Architecture; *W.-K. Cheng, Y.-L. Lin; Dept. of Computer Science, NTHU, Taiwan, R.O.C*

11:30 - 12:00 Poster Discussion
12:00 - 13:30 Lunch
13:30 - 14:30 Invite Talk: Issues in Embedded DRAM Development and Applications; *Ms. K.-S. Doris, Siemens Research and Devel, Germany*
14:30 - 15:30 Session 2: IP Reuse and Language

2.1 A Processor Description Language Supporting Retargetable Multi-Pipeline DSP Program Development Tools; *C. Siska; Rockwell Semiconductor Systems, Inc.*

2.2 Intellectual Property Re-use in Embedded System Co-design: an Indutrial Case Study; *E. Filippi, L. Lavagno, L. Licciardi, A. Montanaro, M. Paolini, R. Passerone, A. Sangiovanni-Vincentelli, M. Sgroi; CSELT, Italy. Dipartimento di Elettronica, Politecnico di Torino, Italy. Univ. of CA. at Berkeley, USA.*

2.3 Incorporating Cores into System-Level Specification; *F. Vahid and T. Givargis; Dept. of Computer Science, Univ. of California, USA*

15:30 - 16:00 Poster Discussion and Coffee Break
16:00 - 16:30 Poster Presentation

P1 HDL-Based Modeling of Embedded Processor Behavior for Retargetable Compilation; *R. Leupers; Dept. of Computer Science, Univ. of Dortmund*

P2 False Path Analysis based on a Hierarchical Control Representation; *A. A. Kountouris and C. Wolinski; IRISA - Institut de Recherche en Informatique et Systemes Aleatoires*

P3 Resource constrained Modulo Scheduling with Global Resource Sharing; *C. Jaeschke, R. Laur; Dept. 1, Institute of Electromagnetic Theory and Micro., Univ. of Bremen, Bremen/ Germany.*

P4 Statistical Performance-Driven Module Binding in High-Level Synthesis; *H. Tomiyama, A. Inoue, and H. Yasuura; Dept. of Computer Science and Communication Eng., Graduate School of Information Science and Electrical Eng., Kyushu Univ., Japan*

P5 Concurrent Error Detection at Architectural Level; *C. Bolchini, W. Fornaciari, F. Salice, D. Sciuto; Cristiana Bolchini; Politecnico di Milano-Dipartimento di Elettronica e Informazione, Italy.*

P6 Communication and Interface Synthesis on a Rapid Prototyping Hardware/Software Codesign System; *Y.-T. Hwang, Y.-H. Wang; Dept. of Electronic Eng. NYU of Science & Technology Taiwan, R.O.C*

16:30 - 17:30 Poster Discussion
18:30 - 20:00 Dinner
20:00 - 22:00 Panel: 『IP-Based design: VIP (Very Important Process) or RIP(Rest in Peace)』

Thursday, December 3, 1998

09:00 - 10:00 Invite Talk: Compiler Technology for Application-Specific Processors/Systems on Chips; *Prof. Monica Lam, Stanford U., USA*
10:00 - 10:30 Coffee Break
10:30 - 11:30 Session 3: Application-Specific Synthesis Techniques

3.1 Application-Specific Heterogenous Multiprocessor Synthesis Using Differential-Evolution; *A. Rae, S. Parameswaran; Dept. of Computer Science and Electrical Eng. Univ. of Qu`ensland, Australia.*

3.2 Proposal for unified system design meta flow in task- level and instruction-level design technology research for multi-media applications; *F. Catthoor, D. Verkest, E. Brockmeyer; IMEC, VSDM Division, Katholieke Univ. Leuven*

3.2 Data-path Synthesis of VLIW Video Signal Processors; *Z. Wu, W. Wolf; Dept. of Electrical Eng., Princeton Univ., U.S.A.*

11:30 - 12:00 Poster Discussion
12:00 - 13:30 Lunch
13:30 - 14:30 Group Discussion
14:30 - 15:30 Session 4: Synchronization and Interface Issues

4.1 Synchronization Detection for Multi-Process Hierarchical Synthesis; *O Bringmann, W. Rosenstiel, D. Reichardt; FZI and Univ. of Tubingen, Germany*

4.2 Integrating Communication Protocol Selection with Partitioning in Hardware/Software Codesign; *P. V. Knudsen and J. Madsen; Dept. of Information Technology, Technical Univ. of Denmark, Denmark*

4.3 Interface Exploration for Reduced Power in Core-Based Systems; *T. Givargis, F. Vahid; Dept. of Computer Science, Univ. of California, U.S.A.*

15:30 - 16:00 Poster Discussion and Coffee Break
16:00 - 17:00 Session 5: Instruction Encoding and Software Synthesis Techniques

5.1 Instruction Encoding Techniques for Area Minimization of Instruction ROM; *T. Okuma, H. Tomiyama, A. Inoue, E. Fajar, H. Yasuura; Dept. of Computer Science and Communication Eng., Kyushu Univ., Japan*

5.2 Application of Instruction Analysis/Synthesis Tools to x86's Functional Unit Alloation; *I.-J. Huang, P.-H. Xie; Institute of Computer and Information Eng., NSYSU Kaohsiung, Taiwan, R.O.C.*

5.3 Memory Efficient Software Synthesis from Dataflow Graph; *W. Sung, Junedong Kim, Soonhoi Ha; Dept. of Computer Eng., Seoul National Univ., Korea*

17:00 - 17:30 Poster Discussion

17:30 - 18:30 General discussion session

19:00 - 21:00 Banquet

Friday, December 4, 1998

09:00 - 10:00 Invite Talk: (TBA); *Mr. Miin Wu, Macronix International Co., Ltd, Taiwan*

10:00 - 10:30 Coffee Break

10:30 - 11:30 Session 6: Partitioning and Scheduling Techniques

6.1 A Tool Partitioning and Pipelined Scheduling of Hardware-Software Systems; *Karam S. Chatha and Ranga Vemuri; Laboratory for Digital Design Environments, Dept. of ECECS, Univ. of Cincinnati, USA*

6.2 A Three-Step Approach to the Functional Partitioning of Large Behavioral Processes; *F. Vahid; Dept. of Computer Science, Univ. of California, U.S.A.*

6.3 Fine-Grain, Incremental Rescheduling Via Architectural Retiming; *S. Hassoun; Dept. of Electrical Eng. and Computer Science, Tufts Univ.*

11:30 - 12:00 Poster Discussion

12:00 - 13:30 Lunch

13:30 - 16:30 *Science-Based Industry Park Tour*

Saturday, December 5, 1998

Taipei City Tour

Sunday, December 6, 1998

Tarako National Park Tour

Steering Committee:

General Chair:Francky Catthoor, IMEC
Honorary Chair:Chung-Laung Liu Tsing Hua U., Taiwan
Program Chair:Allen C.-H. Wu, Tsing Hua U., Taiwan
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Jan Madsen, Tech. U. of Denmark, Denmark
Lev Markov, Mentor Graphics, USA
Peter Marwedel, U. of Dortmund, Germany
Vijay Nagasamy, VSIS Inc., USA
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Kevin O'brien, LEDA, France
B. Ramakrishna(Bob)Rau, HP Labs, USA
Wolfgang Rosenstiel, U. of Tubingen/FZI, Germany
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Leon Stok, IBM, USA
Donald Thomas, Carnegie Mellon U., USA
Diederik Verkest, IMEC, Belgium
Kazutoshi Wakabayashi, NEC Corporation, Japan
Robert Walker, Kent State U., USA
Wayne Wolf, Princeton U., USA
Hiroto Yasuura, Kyushu U., Japan

Visa Information

A visa is required for foreign passport holders. However, if your passport and the length of your visit to Taiwan satisfy the following terms, then no visa is required:

(1) You are holding a passport from USA, Japan, France, Germany, Canada, Australia, Austria, Belgium, Costa Rica, Greece, Italy, Luxembourg, New Zealand, the Netherlands(Holland), Portugal, Spain, Sweden, and U.K. (Please reconfirm with your travel agent!!!)
(2) Your passport is valid for longer than 6 months.
(3) The length of your visit is less than 14 days.
(4) a confirmed return air (steamer) ticket or an air(steamer) ticket and a visa for the next destination, and a confirmed air (steamer) seat reservation for his (her) departure.

Visa can be obtained from Taiwans embassies, consulates, or designated representative offices. Please check with your travel agent concerning necessary procedures.

General Information

Symposium Location and Registration

ISSS'98 will be held at the Chinatrust Hotel, Hsinchu, Taiwan. The registration desk is located at the lobby of the Symposium Hall, at the 15 floor of the Chinatrust Hotel. Registration hours are December 1, 18:00-20:00(at the 8th floor of the Chinatrust Hotel), December 2-3, 08:30-16:30, and December 4, 08:30-10:00.

Chair/Speaker's Presentation Equipment Reservation

One lcd projector , and one overhead projector and poster boards will be available in the conference room. Special needs should be requested to the Program Chair in advance.

Reception

The reception will be held at the 8th floor of the Chinatrust Hotel, 19:00, Tuesday, December 1, 1998. Food and drinks will be served.

Banquet

The banquet will be held at the 8th floor of the Chintrust Hotel, from 19:00 to 21:00, Thursday, December 3, 1998.

Tour Programs

(1) Science-Based Industrial Park (free to registered attendees; please sign up at the registration desk)
Length: half-day, Friday, December 4
Science-Based Industrial Park (SBIP) is the home of many leading high-tech companies of Taiwan, which is located in Hsinchu as part of the effort in developing Hsinchu into the cultural, Scientific and technological center of Taiwan. The Park currently has a total area of 1,433 acres consisting of industrial, research, and residential zones, all served by a complete system of public utilities. The high-tech fields established in the Park are computer & peripheral, integrated circuits, telecommunication, optoelectronics, precision machinery & material, and biotechnology. Currently, the park accommodates more than 150 companies and its yearly revenue in 1997 is in hundreds of billion NT dollars, and is still growing. The technical tour is no charge, but reservation is required. seats are limited. Reservation will be on first-come-first-serve basis.)

(2) Taipei City Tour
Length: one day, Saturday, December 5
Taipei City is the capital of Taiwan. There are more information on the Web Site (http://www.taipei.gov.tw/index_e.html). We will arrange Taipei City Tour on December 5. If you plan to attend, please fill out the Tour form and fax it to 886-2-25230002 or 886-2-26946057.

(3) Taroko Gorge National Park

Length: one day, Sunday, December 6

One of the greatest and most awesome natural wonders of the world is the 19-kilometer (12-mile) long Taroko Gorge at the eastern end of the 193-kilometer (120-mile) long East-West Cross-Island Highway which the Chinese call the "Rainbow of Treasure Island". The towering cliffs of the gorge, some more than 900 meters (3,000 feet) high, contain millions of tons of marble deposites.

Climate

Taiwan's climate is subtropical, with the average annual temperature of 22° C(72° F) in the north and 24° C(75° F)in the south. The temperature in December ranges from 15° C(59° F) to 25° C (77 ° F). The temperature in Hsinchu at this period of time is usually very pleasant, but it can be windy (and therefore Hsinchu is nicknamed the Windy City).

Currency and Tipping

The New Taiwan dollar (NT$) is the official currency of Taiwan. The exchange rate in recent months has been shifting between NT$32 - NT$34 to US$1. Foreign currencies can be exchanged at government-designated banks and hotels. Receipts are given when currency is exchanged, and must be presented in order to exchange unused NT dollars before departure. A 10% service charge and a 5% value added tax are automatically added to room rates, meals, and all purchases. Tipping is optional.

Airport Tax

An airport tax of NT$300 is required for each departing passenger.

Transportation between CKS airport and the Chinatrust Hotel or Shin Yuan Park Hotel

Hsinchu is located about 40 kilometers south of the CKS international airport. There is no regular bus running between Hsinchu and the CKS airport. You are advised to take taxi from the airport to the hotels in Hsinchu. One-way fare from the airport to the hotel is about NT$1,200-NT$1,500; tipping is not required. The address and phone numbers of the hotels are as follows; the Chinatrust Hotel, 106 Chung Yang Road, Hsinchu, Fax:886-3-5269244, Tel:886-3-5263181 ext 2106; the Shin Yuan Park Hotel, 11 Ta Tung Road, Hsinchu, Fax:886-3-5260522, Tel:886-3-5226868. Airport pick-up can be arranged. Please indicate it on the hotel form.

Transportation between Hsinchu and Taipei

Public transportation, including bus and railway, is available between Hsinchu and Taipei. But fare is NT$100, and train fare is is NT$180 one way (per person). Taxi fare is about NT$1,300 -NT$1,500 per car, one way.

Information

For more information, please contact ISSS'98 secretariat

Ms. Shu-Jane lee
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National Tsing Hua University
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isss98@cs.nthu.edu.tw
http://www.cs.nthu.edu.tw/~isss98/

Registration Information

Advance registration due : Nov. 10, 1998

Conference pre-registration is strongly advised. Participants are therefore requested to fill in and fax (payment by credit card only) or mail the enclosed registration form together with the appropriate fee to:

ISSS'98 Program Chair
Allen C.-H. Wu
Department of Computer Science
National Tsing Hua University
Hsinchu, Taiwan
E-mail:isss98@cs.nthu.edu.tw
Fax: 886-3-5723694

☆ **Registration Fees:**

The Symposium registration fees include admission to all technical sessions, lunchs, coffee breaks, reception, banquet (except students), and a copy of the symposium proceedings.

Before Nov. 10, 1998	**After Nov. 10, 1998**
ACM/IEEE Member	
US$320 NT$11,000	US$380 NT$13,000
Non-member	
US$400 NT$13,500	US$400 NT$13,500
Full-time Student	
US$150 NT$ 5,000	US$200 NT$6,500

☆ **Payment:**

Payment can be made by credit card, cash, traveler's check,

1. bank draft or bank transfer to:

   Allen C.-H. Wu
   Account No. 036-16-0060160,
   Chiao Tung Bank, Hsinchu Branch, Hsinchu, Taiwan.

2. Credit Card

   Credit Card is available for pre-registration and on-site registration. Please fill out the appropriate section on the registration form.

☆ On-site registration:

On-site registration desk: 15 F., Chinatrust Hotel

Registration desk will be opened during the following hours:

Tuesday, December 1, 1998	18:00 - 20:00
Wednesday, December 2, 1998	08:00 - 16:30
Thursday, December 3, 1998	08:30 - 16:30
Friday, December 4, 1998	08:30 - 10:00

ISSS'98 Registration Form

(Print or Type, one form for each registrant.)
(If your payment is by credit card, please FAX the form to us. Thank you.)
Please enter your session/paper number ________________
for authors.
Advance Registration Deadline: November 10, 1998
Any registration after Nov. 10, 1998 (postmark cut-off) will be charged the at-symposium rate.
Please complete the information below. Payment with registration must be made in US or NT dollars and made payable to:
Allen C.-H. Wu
Account No. 036-16-0060160,
Chiao Tung Bank, Hsinchu Branch, Hsinchu, Taiwan.

Title : __Prof. __Dr. __Mr. __Ms. __Miss. __Mrs.

Name : ____

Last First Mid

Affiliation :____

Address : ____

____

____

Phone : ____

Fax : ____

E-mail : ____

Special needs [ ] Vegetarian [ ] Other ____________________

Before Nov. 10, 1998	After Nov. 10, 1998
[ ]ACM/IEEE Member	
[ ]US$320 [ ]NT$11,000	[ ]US$380 [ ]NT$13,000
[ ]Non-member	
[ ]US$400 [ ]NT$13,500	[ ]US$400 [ ]NT$13,500
[ ]Full-time Student	
[ ]US$150 [ ]NT$ 5,000	[ ]US$200 [ ]NT$6,500

Total Amount Enclosed : US$ __________ NT$ ___________
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ACM/IEEE Membership # : ________________
(reqd. if registering at ACM/IEEE rates)
I __enclose __Traver's check __ Money order
I __use Credit card : __Visa __Master Card
(Do not accept American Express).
Card No. ___________ -___________ - __________ -________
Expiry date: ____
Name as it appears on card: ______________________________
Passport no./ROC citizen ID no.:___________________________
Signature: ____
Date: ____

Cancellation Policy: No refunds will be made on cancellations received after Nov. 20, 1998. Cancellations received before Nov. 20 are subject to a 20% processing fee.

Hotel Reservation Form

Please type or print.
Title : __Prof. __Dr. __Mr. __Ms. __Miss. __Mrs.
Name : ____
Last First Mid
Affiliation : ____
Address : ____
Phone : ____
Fax : ____
E-mail : ____
Member of IEEE/ACM Member No.:____________________

HOTEL RESERVATION

Hotel	Single	Twin
__Chinatrust Hotel	__NT$2,970	__NT$3,330
__Shin Yuan Park Hotel	__NT$2,430	__NT$3,120

(include service charge and tax.)
Check-in date: ___________ Check-in time: _________
Check-out date: ___________ Number of nights: _____

TRANSPORTATION
One way, between the CKS Airport and Hotel: NT$1,300
Flight Number: ___________ Arrival Time: ___________

METHOD OF PAYMENT
Pay to the hotel when you check out with cash, traveler's check, or credit card. No personal check, please.
NOTE: The room rates and availability are guaranteed for the period of Nov. 29 - Dec. 6, 1998, only if your reservation form is received before Nov. 10, 1998.
Please send this form to the hotel you choose:
Chinatrust Hotel:
106 Chung Yang Rd., Hsinchu, Taiwan 300
Fax: +886-3-5269244; Tel: +886-3-5263181
Shin Yuan Park Hotel:
11 Ta Tung Rd., Hsinchu, Taiwan 300
Fax: +886-3-5260522; Tel: +886-3-5226868

Tour Reservation Form

Tour 1.: Taipei City Tour
Date: Dec. 5, 1998 (Sat.)
Fare: NT$1,750(Includes: 1 lunch)
1. National Palace Museum
2. Martyr's Shrine
3. Chinese Temple
4. Chiang Kai-Shek Memorial Hall
5. Dr. Sun Y. S. Memorial Hall
6. Presidential Office (Pass by)
7. Handicraft Center

Tour 2.: Tarako National Park (Hualien)
Date: Dec. 6, 1998 (Sun.)
Fare: NT$4,200 (Including: Round-trip air ticket and lunch)
(Passport needed for enplaning)
Itinerary: Pick-up from hotel -> Transfer to Taipei Airport -> Arrive at Hualien -> Enbus for Tarako Groge Gateway ->Eternal-Spring Shrine -> Swallow Caves -> Tunnel of Nine Turns -> TienhsiangLodge -> Marble factory -> Enplane for Taipei -> Transfer to hotel

Please type or print.
Sex: __F __M
Name : ____
Last First Mid
Passprot No.: ________________________________
Birth Date: ________________________________
Nationality: ________________________________
Signature: ________________________________
Tour Selection: please indicate your choice(s)
___ Taipei City Tour ____Tarako National Park (Hualien)
Total amount: NT$____________________
Payment: By cash or traverler's check in NTD to the travel agent at the conference site.
Please send this form to (before Nov. 10, 1998)
Trans Continental Travel Service Co., Ltd.
4F, No. 21, Lane 45, Sec. 2, Chung-San N. Rd., Taipei, Taiwan.
Fax: +886-2-25230002; +886-2-26946057
Tel: +886-2-25233131