

2012 International Symposium on Physical Design

C. L. Liu

National Tsing Hua University



Design Automation

DAC 1964, Atlantic City, NJ, USA

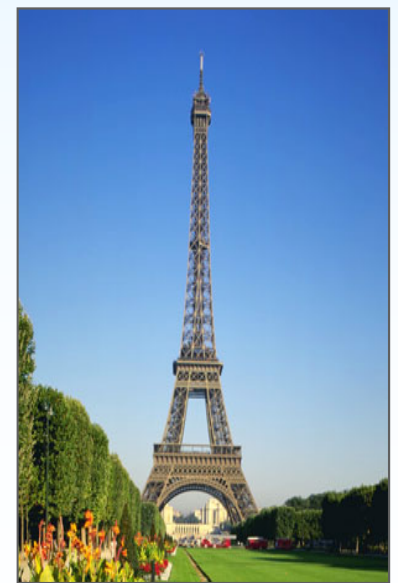
ISPD 1987, Hilton Head, SC, USA

ICCAD 1990, Santa Clara, CA, USA

EuroDAC 1990, Glasgow, Scotland

ASPDAC 1995, Makuhari, Chiba, Japan

DATE 1998, Paris, France

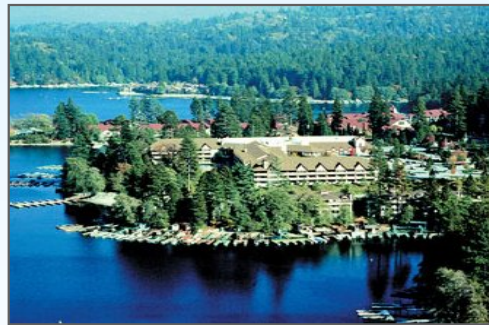


ISPD History

PD Workshop: 1987, 1989, 1991, 1993, 1996

ISPD (annually): 1997 ~

The 21st ISPD - 2012



My First DAC

The 19th Design Automation Conference

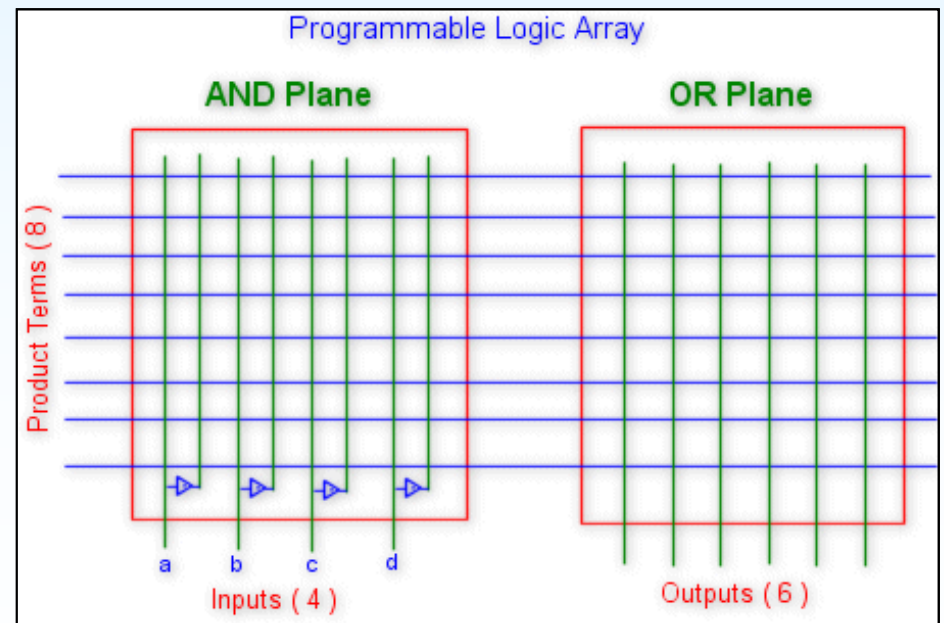
June 1982, Las Vegas



1982 DAC

J. R. Egan (Mentor Graphics) and
C. L. Liu (NTHU)

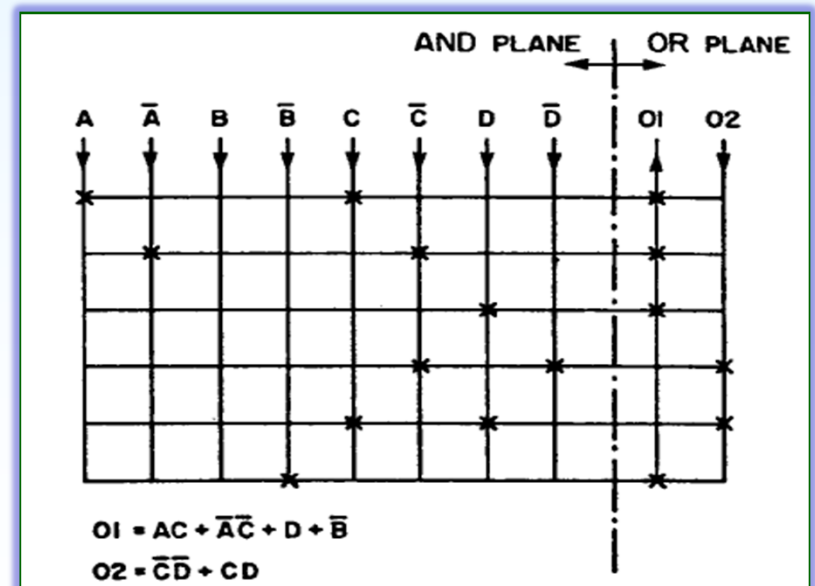
“Optimal bipartite folding of PLA”,
p.141-146, 1982 DAC.



1982 DAC

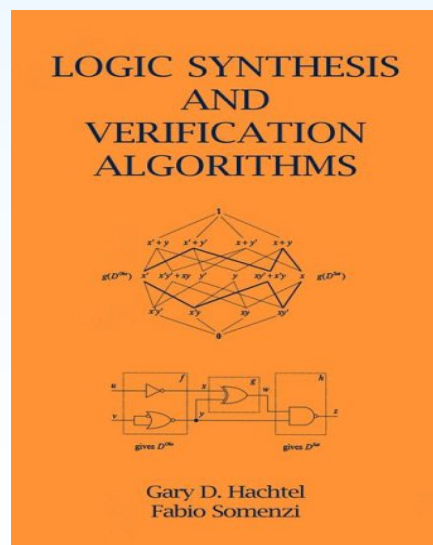
G. D. Hachtel (Univ. of Colorado, Boulder),
A. R. Newton (UC Berkeley) and
A. L. Sangiovanni-Vincentelli (UC Berkeley)

“Techniques for programmable logic array folding”,
p.147-155, 1982 DAC.



1982 DAC

G. D. Hachtel (Univ. of Colorado, Boulder)

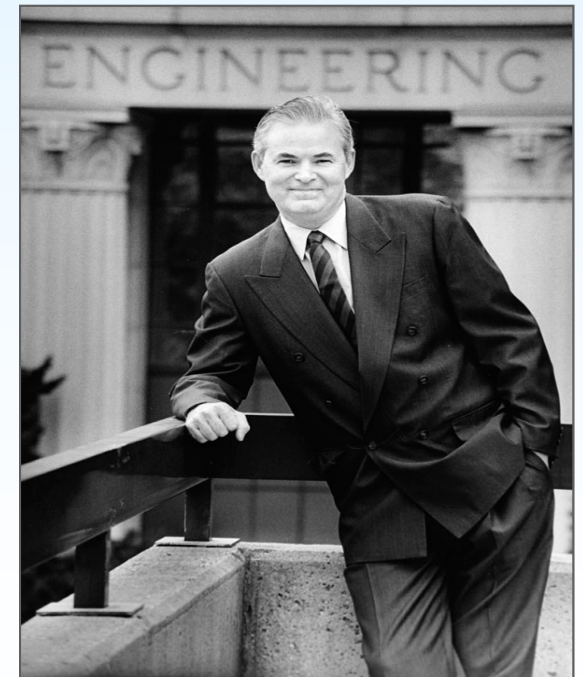


1982 DAC

A. Richard Newton (UC Berkeley)

July 1, 1951 ~ Jan. 2, 2007

“The VLSI design challenge of the 80's“,
p. 343-344, 1980 DAC.



1982 DAC

Stephen Trimberger (Xilinx)

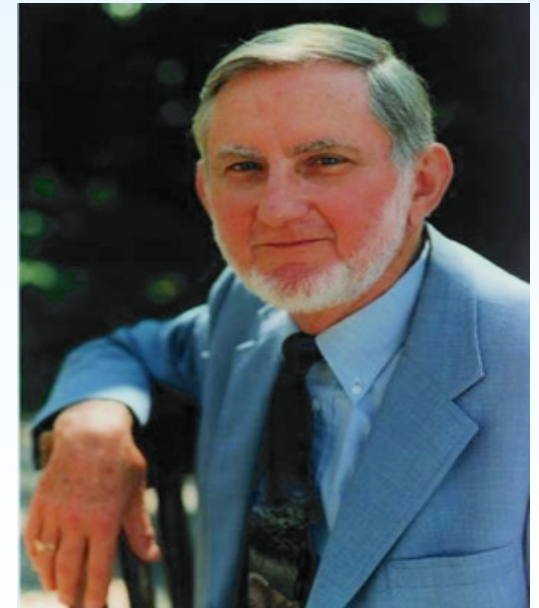
“Riot – a simple graphical chip assembly tool”,
p.371-376, 1982 DAC.



1982 DAC

Edward J. McCluskey, Jr. (Stanford Univ.)

“Verification testing”, *p.495-500, 1982 DAC.*



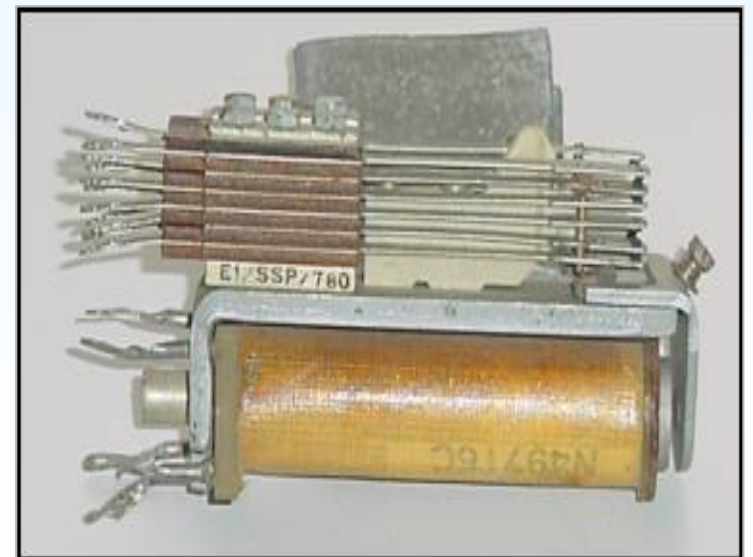
Samuel H. Caldwell (MIT)

Jan. 15, 1904 ~ Oct. 12, 1960

“Switching circuits and logical design”, *Wiley, 1958.*

Chap. 1~11 Combinational Circuits

Chap. 12~15 Sequential Circuits

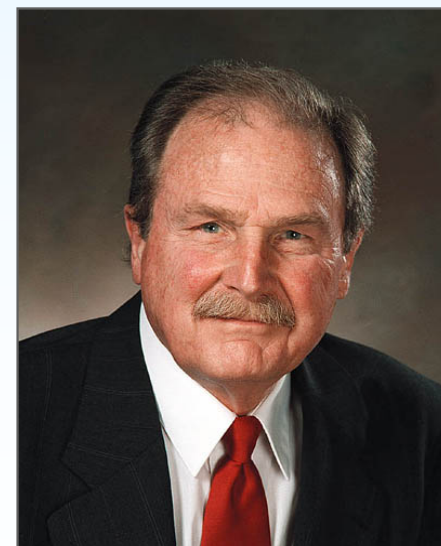


David A. Huffman (UC Santa Cruz)

Aug. 9, 1925 ~ Oct. 7, 1999

“A method for the construction of minimum-redundancy codes”, *Proc. IRE*, 1952.

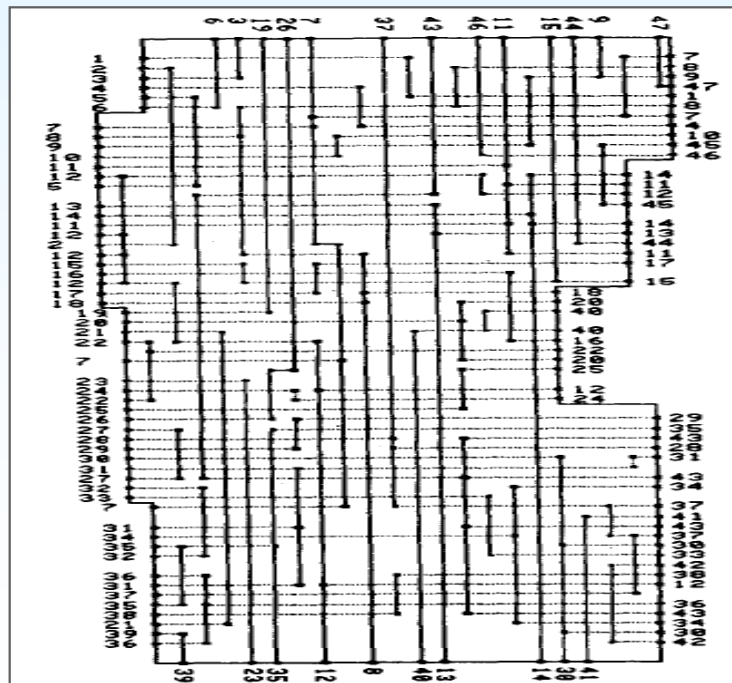
“The synthesis of sequential switching circuits“, *Sc.D. Thesis, MIT*, 1953.



1982 DAC

Chi-Ping Hsu (Cadence)

“A new two-dimensional routing algorithm”,
p.46-50, 1982 DAC.



Ernest S. Kuh (UC Berkeley)

“The backboard wiring problem: some results on single-row routing”, *pp. 369-372, 1975 ISCAS.*

“A dynamic and efficient representation of building-block layout”, *p. 376-384, 1987 DAC.*

Sanjit Mitra, Ibrahim Hajj,
Ron Rohrer, Michael Jackson,
Margaret Marek-Sadowska,
Ming-jen Chien, Chi-Ping Hsu,
Nan-Ping Chen, C.K. Cheng,
Rensong Tsay, Wei-Ming Dai,
Tim Cheng, Massoud Pedram

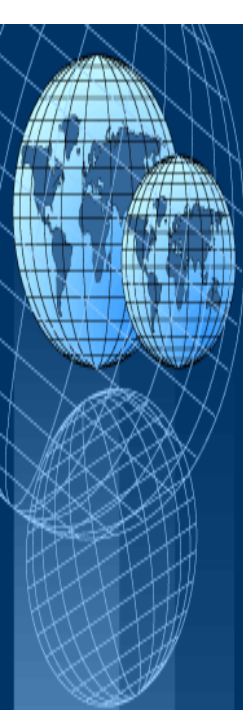


1982 DAC

Satoshi Goto (Waseda Univ.)

“LAMBDA: A quick, low cost layout design system for master-slice LSIs”, *p.802-808, 1982 DAC*.





T. Ohtsuki (Waseda Univ.)

“A sparse matrix method for analysis of piecewise-linear resistive networks”, *p. 571-584, IEEE Trans. on Circuit Theory, 1972.*

Satoshi Goto

Takeshi Yoshimura

Masao Yanagisawa

Nozomu Togawa



1982 DAC

Hong Xian-long (Tsinghua Univ.)

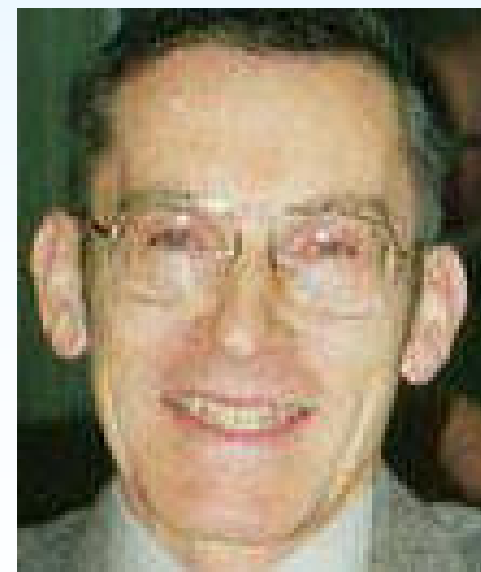
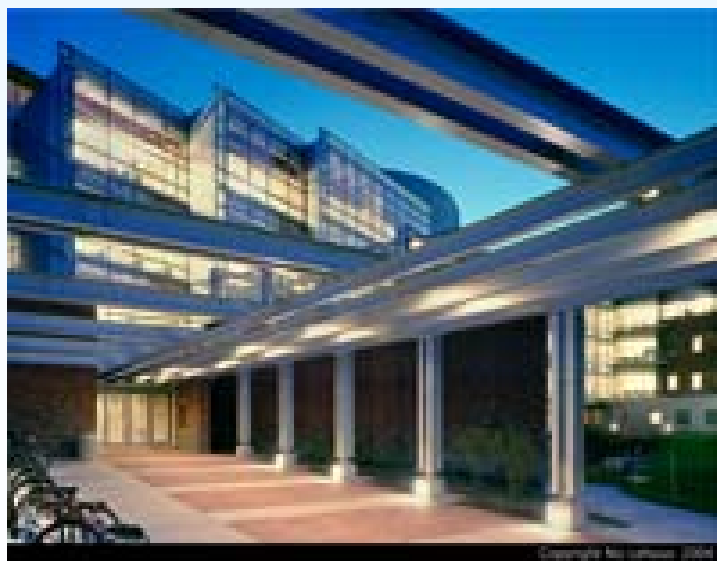
“QCADS - a LSI CAD system for minicomputer”,
p.706-711, 1982 DAC.



1982 DAC

William J. Kubitz (UIUC)

“A layout synthesis system for NMOS gate-cells”,
p.307-314, 1982 DAC.



Saburo Muroga (UIUC)

Mar. 15, 1925 ~ Dec. 9, 2009

“Logic design and switching theory”, *Wiley, 1979.*

“Timing optimization for multi-level combinational networks“, *p.339-344, 1991 DAC.*

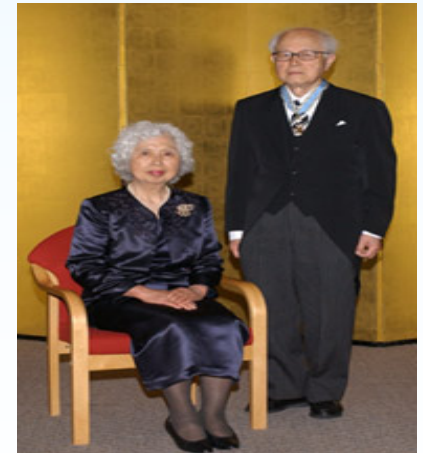
K. C. Chen

R. B. Culter

Jackson K. Hu

H. C. Lai

M. H. Young



1982 DAC

Ajoy K. Bose (Interra)

“A fault simulator for MOS LSI circuits”,
p.400-409, 1982 DAC.



1982 DAC

Gabriele Saucier (Design & Reuse SA)

“Automatic generation of microprocessor test programs”,
p.566-573, 1982 DAC.



1982 DAC

Stephen Kang (UC Santa Cruz)

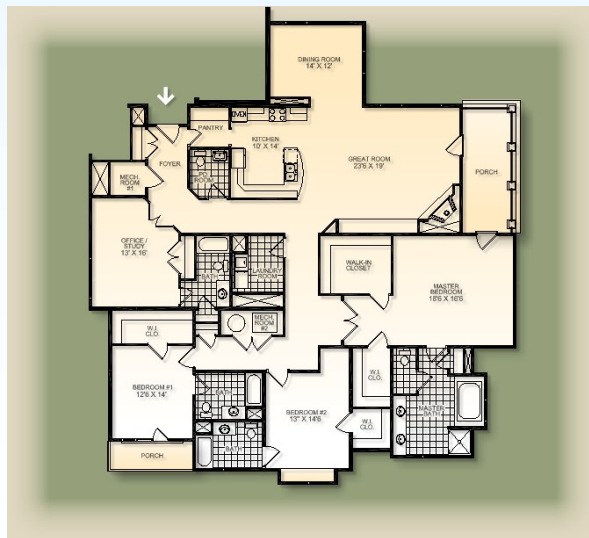
“Gate matrix layout of random control logic in a 32-bit CMOS CPU chip adaptable to evolving logic design”,
p.170-174, 1982 DAC.



1982 DAC

Ralph H. J. M. Otten (TU Eindhoven)

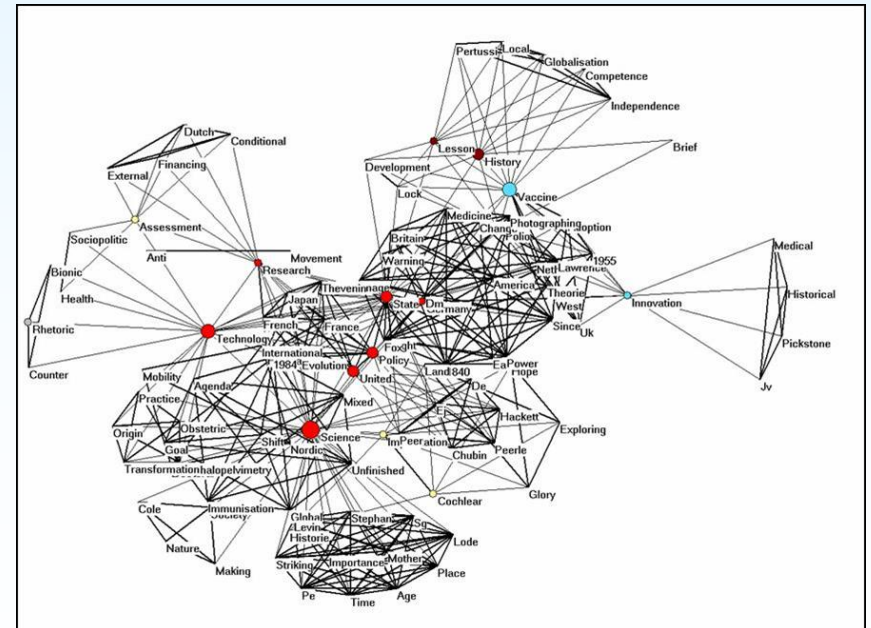
“Automatic floorplan design”, *p.261-267, 1982 DAC*.



1982 DAC

C. M. Fiduccia

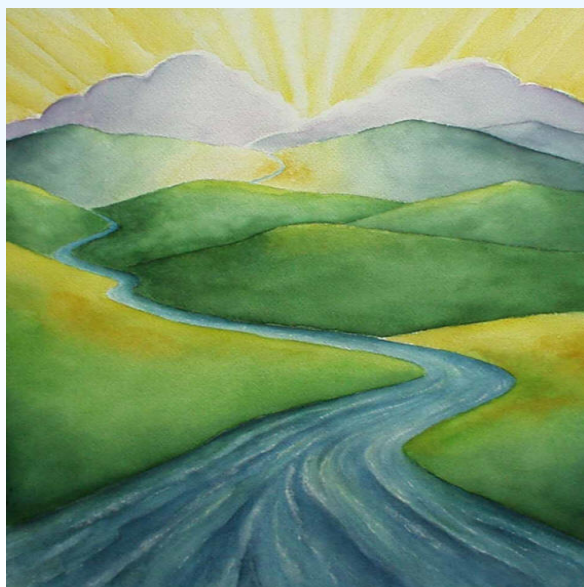
“A linear-time heuristic for improving network partitions”,
p.175-181, 1982 DAC.



1982 DAC

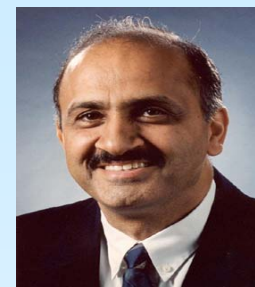
Ronald L. Rivest (MIT)

“A “greedy” channel router”, *p.418-424, 1982 DAC.*

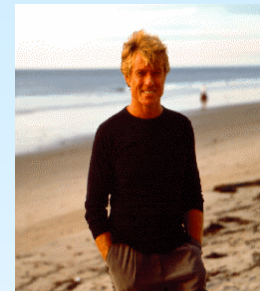


1982 DAC

Sartaj Sahni (Univ. of Florida)



Kenneth J. Supowit (Ohio State)



Ron Y. Pinter (Technion)



Richard J. Lipton (Georgia Tech)



Robert Sedgewick (Princeton)



The First DAC

The 1st Design Automation Conference

June 1964, Atlantic City



1964 DAC

P. O. Pistilli (MP Associates)

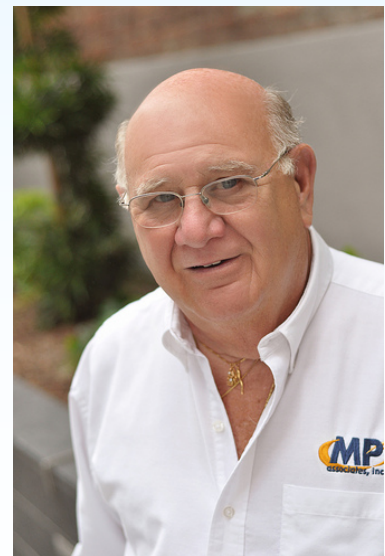
“Introduction”, p.1.1-1.5, 1964 DAC.

There was no medium whereby people could interchange ideas, techniques, experiences, and even specific computer programs on a regular basis.

It was from this environment that the Design Automation Committee would emerge as an organization dealing with computer aid in the design field.

Design Automation had grown, by that time (August 1963), from a searching infancy to a rapidly maturing adolescence as a result of increasing effort throughout industry.

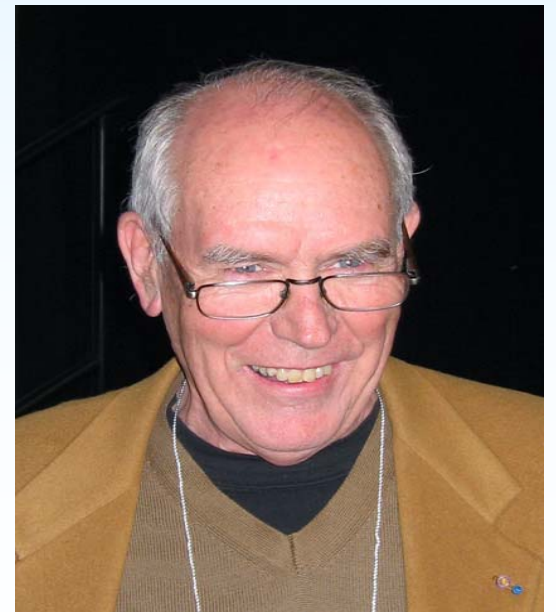
To repeat my earlier thought: The time has come to SHARE our problems, our needs, our plans, our aspirations.

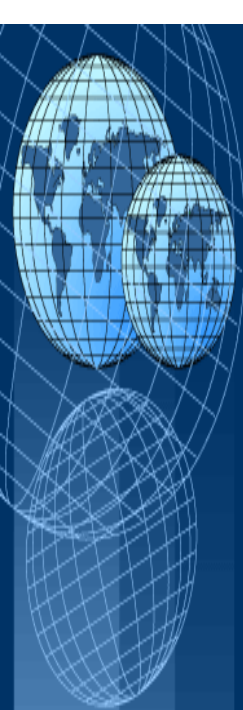


1964 DAC

Ivan E. Sutherland (Sun Microsystems)

“Sketchpad a man-machine graphical communication system”, *p.6.329-6.346, 1964 DAC*.





2011 DAC

The 48th Design Automation Conference

June 2011, San Diego



Two Time Winner

A. L. Sangiovanni-Vincentelli

“Techniques for programmable logic array folding”,
p.147-155, 1982 DAC.

“Are logic synthesis tools robust?”,
p.633-638, 2011 DAC.



All Time Winner

Melvin A. Breuer

“The application of integer programming in design automation”, *p.2.1-2.19, 1966 DAC*.

“A survey of the state-of-the-art of design automation: an invited presentation”, *p.1.1, 1982 DAC*.

“Hardware that produces bounded rather than exact results.”, *p.871-876, 2010 DAC*.



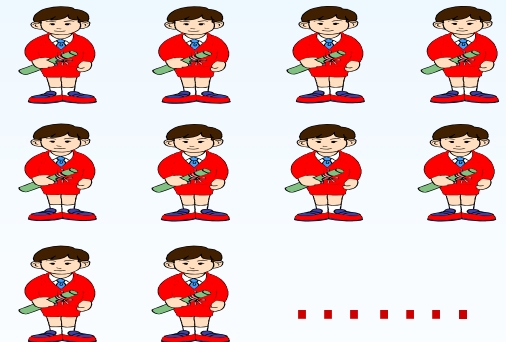
Friends in this session

Martin D. F. Wong (UIUC)

“floorplan design ...”, *1986 DAC*.

“PCB routing ...”, *2011 DAC*.

“double patterning ...”, *2011 DAC*.



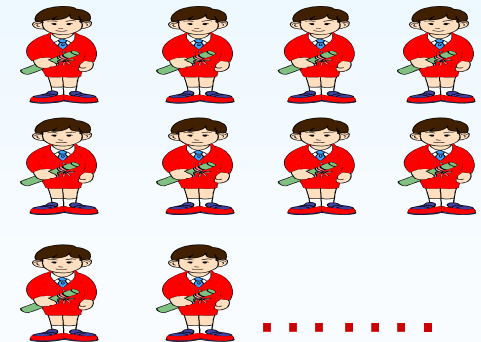
Friends in this session

Jason Cong (UCLA)

“channel routing ...”, *1988 DAC*.

“Scratchpad Memory ...”, *2011 DAC*.

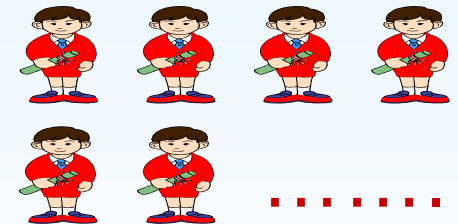
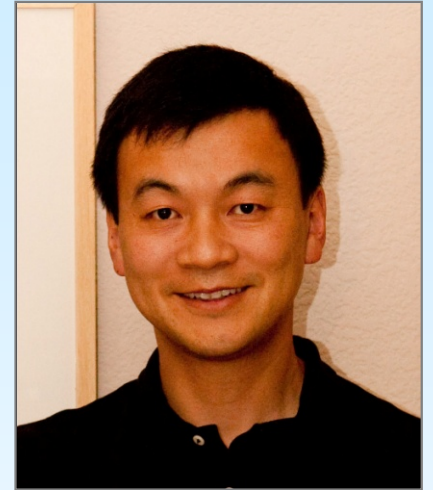
“3D IC placement ...”, *2011 DAC*.



Friends in this session

Tong Gao (Synopsys)

“A Performance-Driven ...”, 1992 *DAC*.



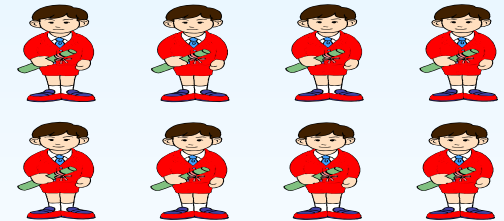
Friends in this session

Yao - Wen Chang (NTU)

“Fast performance- ...”, *1996 DAC*.

“TSV-aware ...”, *2011 DAC*.

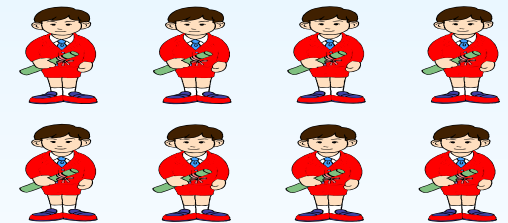
“Simultaneous functional ...”, *2011 DAC*.



Friends in this session

Prashant Saxena (Synopsis)

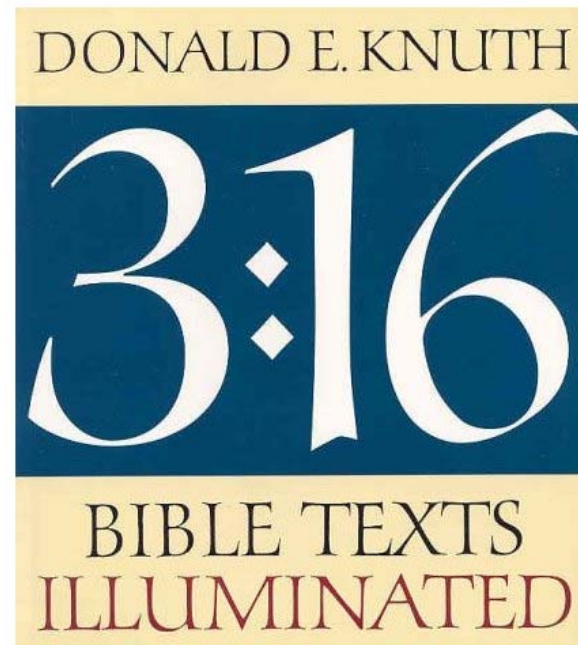
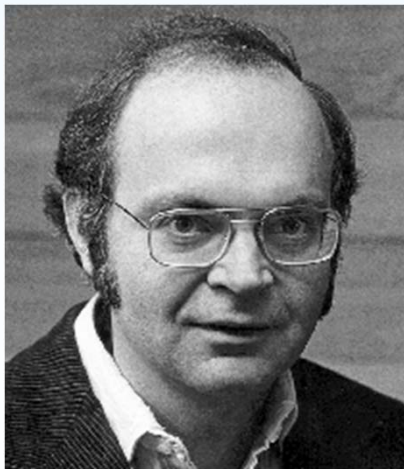
“Crosstalk-minim ...”, *1998 DAC*.



A Sampling Technique

For God so loved the world, that He gave His only begotten Son, that whosoever believeth in Him should not perish, but have everlasting life.

– *John 3:16*



Half of a century

1962

1982

2002



Teaching

- ☐ Salary
- ☐ Students
- ☐ Self-Improvement
- ☐ Service to Education
- ☐ Satisfaction



Research

- ☐ Funds
- ☐ Fortune
- ☐ Fame
- ☐ Friends
- ☐ Fun



Academic Administration

- ☐ Respect
- ☐ Responsibility
- ☐ Rubbing Shoulders
- ☐ Rejuvenation
- ☐ Returnning



Industrial Experience

- ☐ Foundry
- ☐ Fabless
- ☐ Flash
- ☐ Fommunication
- ☐ Fesign Service



Media Work

- ☐ Education
- ☐ Eloquence
- ☐ Enjoyment
- ☐ Entertainment
- ☐ Endurance



Explosion

New Algorithms

New Materials

New Frameworks

New Methodologies

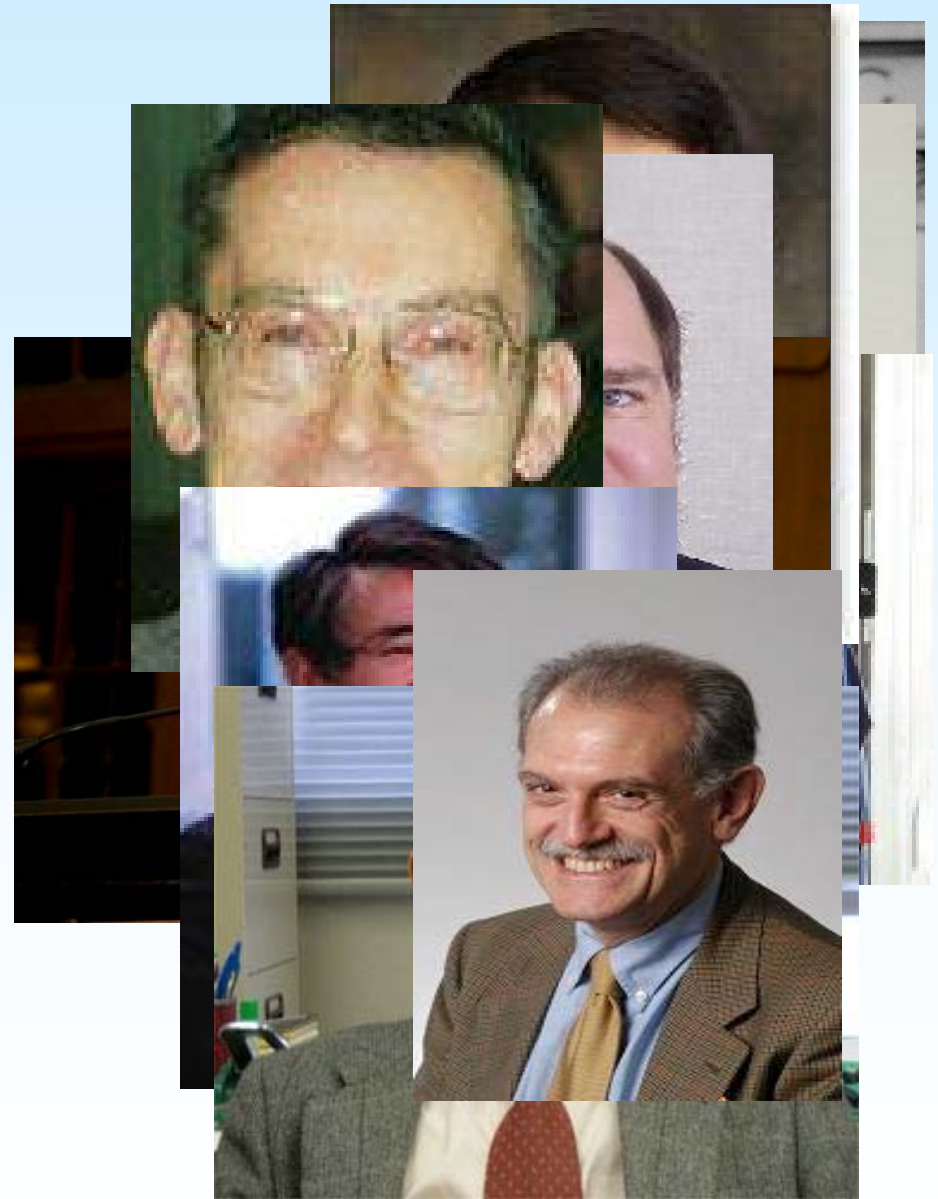
New Platforms

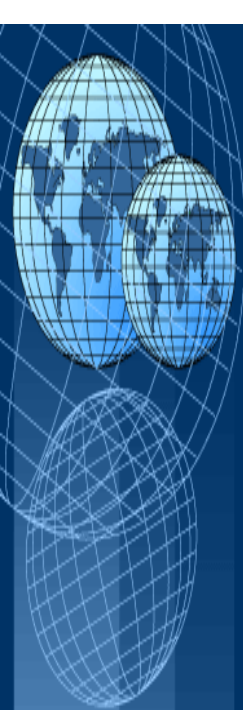
New Technologies



Leading the Explosion

Colleagues
Collaborators
Competitors
Friends





Thanks For The Memory

*Thanks for the memory
Of things I can't forget
Journeys on a jet
Our wond'rous week in Martinique
And Vegas and roulette
How lucky I was*

*But thanks for the memory
With every “**paper**” a thrill
I've been through the mill
I've lived a lot and learned a lot*

 *And thank you so much*

