

DANIEL W. LEWIS

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BIOGRAPHY

Dr. Lewis' efforts led to the creation of Santa Clara University's Computer Engineering department in 1988, where he has served as Chair ever since. During his tenure, Lewis established unique co-op and study abroad options that fit within the normal undergraduate four-year plan, the first graduate-level academic certificate programs for working professionals, and a cross-disciplinary minor in Information Technology and Society that has become one of the most popular minors on campus.

Prior to joining the University in 1975, Lewis worked for six years at General Electric's Aerospace Division where he designed a fault-tolerant clocking system for one of the first triple-redundant automatic landing systems for commercial aircraft. He has consulted for a number of Bay Area companies, including the Singer-Link Company, where his design of new algorithms and a corresponding modular array of VLSI circuits became the basis of a new product line of real-time computer graphics systems.

EDUCATION

PhD, Electrical Engineering, Syracuse University, 1975. Dissertation: "Conditional Opcode Interpretation in Various Computer Architectures", Advisor: Dr. Edward P. Stabler.

Engineer's Degree, Electrical Engineering, Syracuse University, 1974.

M.S., Electrical Engineering, Syracuse University, 1972. Thesis: "Hazard Detection by a Quinary Simulation of Logic Devices with Bounded Propagation Delays", Advisor: Dr. Edward P. Stabler.

B.S., Electrical Engineering, Georgia Institute of Technology, 1968.

TRAINING

Certificate in Computer Forensics, High-Tech Crime Investigation Association (HTCIA), San Mateo, CA., May 2003.

Faculty Development Workshop V, Software Engineering Institute, Carnegie-Mellon University, Scottsdale, AZ., January 1989

Logic Symposium XI, University Associates Program, Hewlett-Packard, Colorado Springs, CO., May 1987. (*Training on the use of software for hardware simulation and development.*)

Application Development Seminar for Microsoft Windows, Microsoft Corporation, Santa Clara, CA., Oct. 20-22, 1986.

Two-day short course on CMOS for faculty teaching Mead & Conway's VLSI design methodology, SynMos Corp., Dec. 21-22, 1981.

"Designing and Manufacturing Integrated Circuits - The Total Solution", sponsored by Digital Equipment Corporation, Xerox, VLSI Technology, VALID Logic Systems, Apple Computer, COMSAT, NCA Corporation, and SynMos, Sunnyvale, CA., Oct. 26, 1981.

Logic Symposium II, University Associates Program, Hewlett-Packard, Colorado Springs, CO., May 1978. (*Training on the use of hardware logic analyzers.*)

Revised: January 12, 2006

ACADEMIC EXPERIENCE

- 1991-pres Department Chair, Computer Engineering, Santa Clara University
- 1988-91 Associate Chair, EECS Department, Santa Clara University
- 1981-pres Associate Professor, Santa Clara University
- 1975-81 Assistant Professor, Santa Clara University
- 1974-75 Instructor, Syracuse University
- 1973-74 Teaching Assistant, Syracuse University

INDUSTRIAL EXPERIENCE

- 1987-96 *Owner, **Key Software Products**, Menlo Park, CA.*
Created and marketed several commercial software products for MS-DOS computers: SMTP and NNTP servers, Telnet and FTP clients, SLIP driver; The Last Byte Memory Manager (loads device drivers, etc. into upper memory); O88 (an optimizer for the DeSmet/C-Ware C Compiler); Player Piano (for the Sanyo MBC-550); Windows for CPM/86 (Sanyo MBC-550).
- 1988-89 *Consultant, **Talking Technology Inc.**, Oakland, CA.*
Programmed substantial portions of a touch-tone driven voice mail application.
- 1986-88 *Engineering Consultant, **Microspec Corp.**, Fremont, CA.*
Directed team of programmers to replace character-based user interface with GUI interface on control and data acquisition software for spectrometer attached to scanning electron microscope.
- 1985-86 *Member of Technical Staff, **Singer/Link Division**, Sunnyvale, CA.*
Developed new hardware algorithms and corresponding extensible two-dimensional systolic array of VLSI circuits for pixel processor of real-time raster-scan computer graphics system.
- 1982-83 *Engineering Consultant, **ADAC Laboratories**, Sunnyvale, CA.*
Visited custom and semi-custom IC manufacturers to provide information regarding their status, capabilities, and degree of automation. Surveyed VLSI CAD packages and adapted selected packages to run under VMS operating system. Designed 16x16 VLSI multiplier chip for window-limiting of video data at pixel rates.
- 1981-82 *Engineering Consultant, **Bell Northern Research**, Mountain View, CA.*
Provided market survey and forecasts regarding local area networks and their relation to digital PBX. Proposed modification of BNR/Northern Telecom's SL-1 PBX to allow switching voice using a static allocation of bandwidth combined with a demand-based allocation for data.
- 1979-80 *No Fee Consultant, **XEROX Palo Alto Research Center**, Palo Alto, CA.*
Studied VLSI design methodologies developed by Mead and Conway; brought the technology back to SCU by developing new course and CAD tools on VLSI design.

- 1977-79 *Engineering Consultant, Singer/Link Division, Sunnyvale, CA.*
Developed architecture specification for a new hidden-surface removal algorithm; provided feasibility study for real-time hardware implementation of anti-aliasing and bicubic patch algorithms.
- 1968-75 *Development Engineer/Engineering Consultant, General Electric Co., Binghamton, N.Y.* Designed micro-programmed display processor and significant portions of fail-operational hardware for triple-redundant flight control computer; supervised development of assembler, linker, and loader for same. Sole engineer responsible for hardware during three-month flight test of triple-redundant automatic landing system at the Boeing Company, Seattle. Selected high-level language to be implemented for flight-control applications.

TEXTBOOK

Daniel W. Lewis, "Fundamentals of Embedded Software: Where C and Assembly Meet", Prentice-Hall, 2001. (*This textbook won honorable mention in the 2003 Alpha Sigma Nu book competition.*)

JOURNAL ARTICLES

Daniel W. Lewis, "A Review of Approaches to Teaching FORTRAN", IEEE Transactions on Education, Vol. E-22, No. 1, Feb. 1979, p. 23-25.

Glen G. Langdon, Jr., and Daniel W. Lewis, "An Approach to a Modest Digital Laboratory Adjunct for Logic Design Courses," IEEE Transactions on Education, Vol. E-21, No.1, Feb. 1978, p. 35-36.

CONFERENCE PAPERS

M. Ketabchi, D. Lewis, et al, "Object-Oriented Database Management Support for Software Maintenance and Reverse Engineering," p. 257-260, Proc. COMPCON '89, San Francisco, Feb. 27 – Mar. 3, 1989.

Ivan Pesic and Daniel W. Lewis, "Three Heuristics for Improving Centralized Routing in Large Long-Haul Computer Communications Networks", Proc. National Computer Conference (NCC), May 16-19, 1983, Anaheim, CA., p. 691-704. (*Reprinted by DataPro as a significant work in the area of long-haul computer communications networks.*)

Daniel W. Lewis, "A Hardware Compiler for Mano's RTL", Proc. 1979 Int'l. Symp. On Computer Hardware Description Languages and Their Applications, Palo Alto, CA., Oct. 8-9, 1979.

Daniel W. Lewis and Carl Fussell, "Enhancement of Interactive Computer Systems by Distributed Intelligence", Proc. 2nd Annual Symp. On Small Systems, Dallas, TX, Oct. 1-3, 1979.

Daniel W. Lewis, "An Inexpensive I/O Processor for the PDP-11 Minicomputer", Proc. Int'l. Symp. On Mini and Microcomputers, Montreal, Quebec, Sept. 26-28, 1979.

Daniel W. Lewis, "A Fault-Tolerant Clock Using Standby Sparing", Proc. 9th Int'l. Symp. On Fault-Tolerant Computing, Madison, WI, June 20-22, 1979, p. 33-39.

UNREFEREED PAPERS

Daniel W. Lewis, "Just-In-Time Graduate Education", Computing Research News, Vol. 5, No. 4, Sept. 1993. (*Describes the creation of graduate-level certificate programs earning academic credit.*)

Daniel W. Lewis, "A Hierarchical Microprocessor Laboratory Facility", SIGSMALL, Vol. 6, No. 2, June-August, 1980. (*I was Guest Editor of this issue, featuring articles written exclusively by SCU students and faculty.*)

Daniel W. Lewis, "General Purpose Emulation on the Hewlett-Packard 2100 Minicomputer", SIGMICRO, Vol. 10, No. 1, March 1979, p. 24-31.

TECHNICAL REPORTS

Daniel W. Lewis, "Point Lights, Anti-Aliasing and Interlace Effects", Internal report, Singer/Link Division, Sunnyvale, CA., Sept. 7, 1979. (*Suggested an inexpensive method for improving the dynamic representation of point light sources in real-time raster-scan graphics.*)

Daniel W. Lewis, "A New Priority Circuit", Internal report, Singer/Link Division, Sunnyvale, CA., August 1979. (*Describes a new computer graphics circuit which may be used in processing hidden surfaces to determine the nearest surface, next nearest surface, etc.*)

Daniel W. Lewis, "Bicubic Patches: Final Report", Internal report, Singer/Link Division, Sunnyvale, CA., Sept. 13, 1978. (*Investigated feasibility of implementing bicubic path models of solid surfaces in real-time raster-scan graphics.*)

Daniel W. Lewis, "Blending: An Implementation Study", Internal report, Singer/Link Division, Sunnyvale, CA., Aug. 30, 1977. (*Outlined the first known hardware for real-time anti-aliasing for raster-scan graphics.*)

PRESENTATIONS

Invited Lecture, "Uses of LSI in Computer Graphics", Universite de Nantes, France, Dec. 10, 1980.

Invited Lecture, "VLSI Circuits for Computer Graphics", Institut National de Recherche en Informatique et en Automatique (INRIA), Rocquencourt, France, Oct. 24-28, 1983.

Invited Lecture, "Applications of LSI Circuits to Real-Time Raster-Scan Computer Graphics", Centre Commun d'Etudes de Television et Telecommunication (CCETT), Rennes, France, Dec. 5, 1980.

Invited Lecture, "Applications of LSI Circuits to Real-Time Raster-Scan Computer Graphics", Centre National d'Etudes des Telecommunications (CNET), Grenoble, France, Dec. 2, 1980.

Invited Lecture, "Applications of LSI Circuits to Real-Time Raster-Scan Computer Graphics", Institut National de Recherche en Informatique et en Automatique (IRISA), Universite de Rennes, France, Nov. 7, 1980.

"Trends in Computer Hardware", The Leadership Center, Santa Clara University, Apr. 23, 1980.

"Occupational Opportunities in Computer Science Education", ACM Computer Careers Day, Tandem Computers, Cupertino, CA., Apr. 19, 1980.

Invited Lecture, "Microcomputer Networks", SEMICRO II, sponsored by Nucleo de Computacao Electronica da Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, Nov. 1981.

GRANTS

Project Director, **IBM Corporation**, Santa Teresa Lab, "Student Cooperative Testing Services," \$16,568, Nov. 1993.

Project Director, **IBM Corporation**, Santa Teresa Lab, "Curriculum Development and Student Cooperative Testing Services," \$189,907, Mar. 1993.

Co-PI, **U.S. West Advanced Technologies, Inc.**, "Development of a Software Analysis and Maintenance System Using Automatically Generated Object-Oriented Databases," \$83,975, October 1989.

Co-PI, **U.S. West Advanced Technologies, Inc.**, "Developing and Prototyping Object-Oriented Database Systems for Software Maintenance", \$45,225, May, 1989.

National Science Foundation (NSF) and Centre National de la Recherche Scientifique (CNRS). U.S.-France Exchange of Scientists to conduct research on applications of VLSI methodology to real-time raster-scan computer graphics. Universite de Rennes, France, 1980.

North Atlantic Treaty Organization (NATO). Subsistence grant to attend NATO Advanced Study Institute on Design Methodologies for VLSI Circuits, July 1980, Universite Catholique de Louvain, Louvain-la-Neuve, Belgium.

Principle Investigator, **Santa Clara University**, President's Fund Grant, "Investigation of a Common-Carrier Based Computer Communications Network to Provide Portable Computing Access", \$900, 1979.

Principle Investigator, **Teledyne Semiconductor Corp.**, Mountain View, CA., "Architectural Constraints of Analog-to-Digital Conversion", \$22,908, January 1979.

Principle Investigator, **University of Santa Clara**, President's Fund Grant, "Enhancement of Interactive Computer Systems by Distributed Intelligence", \$2,000, September 1978.

Equipment grant from **Hewlett-Packard**, Colorado Springs, CO., Logic Analyzers valued at \$10,000 February 1978.

HONORS AND AWARDS

Honorable Mention, 2003 Alpha Sigma Nu National Jesuit Book Awards (category: Mathematics/Computer Science), October, 2003. *(There were a total 49 entries from 20 Jesuit colleges and universities. Entries were submitted to one of four categories. Six awards were made: four category winners and two honorable mentions.)*

Recognition for Twenty-Five Years of Service, Santa Clara University, May 2000.

President's Faculty Recognition Award, Santa Clara University, April 20, 1998.

National Defense Education Act (NDEA) Title IV Fellowship, 1972-73.

PROFESSIONAL AND COMMUNITY SERVICE

Advisory Board, **National Youth Leadership Forum on Technology (NYLF/TECH)**, Dec. 2003 to present.

Lego Mindstorm Robotics Club, Stevens Creek Elementary School, Cupertino, CA., 2005-06.

Parent Technology Advisory Committee, **The Harker School**, 2003-04.

Foreign Students Workgroup (Administrators), U.S. Commission on Immigration Reform, San Francisco, CA., Nov. 16, 1995.

Member, Software Industry Coalition, Joint Venture Silicon Valley, 1992-94.

Conference Chair, ACM SIGSMALL Conference, Colorado Springs, CO, Aug. 2-4, 1982.

Member, IEEE/CS Standards Subcommittee on Interface Terminology, 1982.

Program Chair, ACM SIGSMALL Conference, Orlando, FL, 1981.

Guest Editor, Special Issue of SIGMINI, Vol. 6, No. 2, June-August 1980.

Vice Chairman, ACM SIGSMALL, 1981.

Board of Directors, ACM SIGSMALL, 1980-82.

University Liason, National Science Foundation (NSF) CSNET project, 1981.

SANTA CLARA UNIVERSITY SERVICE

Faculty Salary Committee, 2003-present.

Academic Affairs University Policy Committee (Chair), 1998-2001.

Ad Hoc Committee to form Interdisciplinary Minor in Information Technology and Society, 1998-99.

Academic Computing and Technology Committee, 1993-97.

University Honors Council, 1990-92.

University Valedictorian Committee, 1989.

Search Committee for Dean, School of Engineering, 1988-89.

University Faculty Affairs Board, 1987-90.

University Teaching and Learning Committee, 1986-88.

University Task Force on Office Automation, 1982-83.

University Financial Planning Committee, 1981-82.

University Valedictorian Committee, 1981-82.

University Computer Committee, 1981-82.

University Word Processing Committee, 1981-82.

University Library Committee, 1979-81.

University Educational Programs Committee, 1977-79.

University Ad Hoc Computer Committee, 1977-79.