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Curriculum Vitae of
Robert Michael Tanner

Consultant
Chief Academic Counsel for the
Association of Public and Land-grant Universities

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Education

B.S.E.E. with Great Distinction, Stanford University, June 1966
M.S.E.E., Stanford University, June 1967
Ph.D.E.E. with specialization in information theory, Stanford University, Jan. 1971
Honors:
         Tau Beta Pi (President of Stanford Chapter), Phi Beta Kappa
         F. E. Terman Engineering Award
         N.S.F. Graduate Fellowship for four years

Professional Honors

Fellow, National Academy of Inventors
Fellow, California Council on Science and Technology
Life Fellow, Institute of Electrical and Electronic Engineers
Golden Jubilee Paper Award, 50th Anniversary of Information Theory, for
         "A Recursive Approach to Low-Complexity Codes"
Member of Sigma Xi, Phi Kappa Phi

Professional Interests

Academic administration and institutional transformation; intellectual property and
copyright; scholarly communication and the Internet; coding and information theory;
computer simulation models; and educational uses of information technology.

Technical Research Interests

Topics involving information and communication theory and the theory of algorithms and
computational complexity. My main foci have been: a) codes on graphs: highly efficient
error-correcting codes that are amenable to decoding with ultra-concurrent iterative
algorithms; and b) the theoretical and algorithmic reconciliation of block and
convolutional codes. I am recognized as the founder of the subfield "codes on graphs" and
the originator of the code representations now known as "Tanner graphs." Related
interests include: VLSI architectures; pattern recognition; speech recognition; and fault-
tolerant computing.

Employment History

January 2016 to present	Chief Academic Counsel (part-time) Association of Public and Land-grant Universities
January 2011 to Dec. 2015	Vice President for Academic Affairs and Chief Academic Officer Association of Public and Land-grant Universities
July 2002 to Feb. 2011	Provost and Vice Chancellor for Academic Affairs, University of Illinois at Chicago (UIC); Professor of Electrical and Computer Engineering; of Computer Science; of Mathematics, Statistics, & Computer Science; and of Information and Decision Systems
August 2000 to June 2002	Interim Director, University of California, Santa Cruz (UCSC) Silicon Valley Center
Jan. 1999 to June 1999	Visiting Professor, California Institute of Technology, Electrical Engineering
Aug. 1998 to Dec. 1998	Visiting Professor, Massachusetts Institute of Technology, Laboratory for Information and Decision Systems
July 1992 to July 1998	Executive Vice Chancellor, UCSC
July 1989 to July 1992	Academic Vice Chancellor, UCSC
Sept. 1988 to July 1989	Acting Dean of Natural Sciences, UCSC
August 1981 to Sept. 1988	Chair, Computer and Information Sciences, UCSC (sabbatical leave 1982-83 and Fall 1987)
July 1984 to 2002	Professor, Computer Sciences (formerly Computer and Information Sciences), UCSC
(Part-time until 1988)	Consultant to various disk and telecommunication companies (e.g., Optimem, Applied Information Memories, Identronix, Stanford Telecommunications, Ford Aerospace, Technology for Communications International)
Summer 1984	Visiting Scientist, IBM Research, San Jose

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	(error-correction and run-length limited coding)
April 1981 to Sept.1981	Visiting Associate Professor, Stanford University (research on fault-tolerant VLSI, and coding)
July 1978 to July 1984	Associate Professor, UCSC Computer and Information Sciences
July 1971 to July 1978	Assistant Professor, UCSC Computer and Information Sciences
Sept. 1970 to June 1971	Assistant Professor, Electrical Engineering, Tennessee State University, Nashville, Tennessee (an HBCU)

Major University-Related Positions

Vice President for Academic Affairs and Chief Academic Officer, Association of Public and Land-grant Universities, Washington, DC.
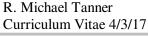Formed a Personalized Learning Consortium of over 20 universities to advance the use of technology in learning. Led Gates Foundation-funded planning projects to improve student learning in college gateway courses and federal student aid. Provide policy advice and direction in matters such as U.S. patent policy, accreditation, federal student aid, accountability, etc. Coordinated programs for provosts from the major U.S. public research universities.
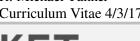
Provost and Vice Chancellor for Academic Affairs, University of Illinois at Chicago, 2002-2011
In charge of the campus budget ($1.7B/yr.) and all academic units, which includes fifteen colleges and schools (Architecture and the Arts, Business Administration, Liberal Arts and Sciences, Engineering, Urban Planning and Public Affairs, Education, Social Work, Nursing, Medicine, Dentistry, Applied Health Sciences, Public Health, Pharmacy, Graduate, Honors) and the library. Multiple support offices (academic computing, planning and budget, faculty human resources, etc.) also report to the Provost. UIC has 16,000 undergraduates and 9,000 graduate and professional students, is in the top 50 U.S. universities as ranked by federal research expenditures, and is the public research university for Chicago.

Co-Chair of the University of Illinois Energy Task Force, 2006-2009
This Task Force of 13 senior leaders and faculty oversaw a comprehensive study of energy procurement, generation, distribution, and consumption for the University of Illinois, an approximately $120M/yr. enterprise, and made recommendations for operational and financing strategies and for reorganization of governance and management.

Interim Director, Silicon Valley Center, 2000-2002

Responsible for overall development of a satellite campus envisioned for the NASA Research Park at NASA/Ames, Moffett Field, CA, including: academic planning; negotiation with NASA concerning the site, housing, and management and ownership of NASA's Laboratory; physical planning; initial budgeting and organizational development; institutional relations; participation in the Collaborative for Higher Education with San José State University & Foothill/DeAnza Community Colleges.

Chair of the University of California Copyright Task Force (1997-99)

A fifteen person committee commissioned by the Associate Provost for Academic Initiatives to examine the changing legal, technological and academic environment pertinent to UC Copyright Policy and prepare a report proposing policy changes.

Executive Vice Chancellor, UC Santa Cruz, 1992-1998

Working closely with the Chancellor, I was the chief operating officer for a campus of 9,500 undergraduates, 1000 graduate students, and 400+ permanent faculty. I acted as Chancellor in the Chancellor's absence. Duties include those of the former Academic Vice Chancellor position and encompassed the business and student services sectors as well. I oversaw and worked directly with the Associate Chancellor for Budget and Planning, the Advancement Office, Vice Chancellor for Business and Administrative Services, Vice Chancellor for Student Affairs, the Assistant Chancellor for Human Resources, the Associate Vice Chancellors for Academic Planning and Programs and for Research, the Associate Vice Chancellor for Undergraduate Affairs, the University Librarian, and the Deans of the Divisions of Humanities, Arts, Natural Sciences, Social Sciences, Graduate Studies, and the School of Engineering. Responsibilities included: academic planning and new program review; fiscal planning and budget ($88M state budget, $35M student fee, $225M total); planning for new construction; space allocations; computer and information resource planning and policy; business and personnel offices; final decisions for faculty hiring, promotions (except tenure), and extraordinary merit increases.

Academic Vice Chancellor, 1989-92

As Academic Vice Chancellor, I administered the academic components of the campus. I oversaw and worked with the Deans of the Divisions of Humanities, Arts, Natural Sciences, Social Sciences, and Graduate Studies and Research, Associate Vice Chancellors for Academic Planning and Programs and for Undergraduate Education, the "Provosts" of each of eight residential colleges, the Dean of Admissions, the Registrar, the Dean of University Extension, the Academic Personnel Office, and the Academic Senate Office. My responsibilities include: academic planning; planning for academic buildings; space management; fiscal planning and budget; fund raising activities; academic personnel and Academic Senate offices; authority for faculty hiring, promotions (except tenure), and merit increases.

Acting Dean of Natural Sciences 1988-89

Administered an academic division comprised of eight departments (Astronomy & Astrophysics, Biology, Chemistry, Computer & Info. Sciences, Computer Engineering, Earth Sciences, Marine Sciences, and Physics), a special Science Communication program, four Organized Research Units (Particle Physics, Tectonics, Marine Sciences, Non-linear Sciences), with on-campus and off-campus facilities. In addition to coordination of the activities of the departments and research directors, my responsibilities included: academic planning; planning for new buildings; space management; fiscal planning and budget; business and personnel offices; recommendations and analyses for faculty hiring, promotions, and merit increases. At that time the Natural Sciences had approximately 120 permanent faculty, a state budget of $10M, and outside contract and grants of $12M.

Chair of Computer and Information Sciences (CIS) (1981-88)
During the period of my service, UCSC added a Computer Engineering program, and the combined permanent faculty grew from seven to twenty. The CIS graduate program tripled in size, from 15 to 45 students, and the external funding increased dramatically.

Chair of the Committee on Educational Policy (1985-87)
The committee is one of the four major Academic Senate Committees at UCSC. It approves all undergraduate courses and degree requirements for the campus. It oversees and suggests legislation pertaining to all aspects of educational policy. It reviews and must approve all courses offered by the University.

Chair of the Committee on Admissions, Financial Aid, and Relations with Schools for three years during the early seventies. In 1982 I worked with Admissions Dean Richard Moll to change the admission criteria for the entire U.C. system. Honors and advanced placement courses received preferential points toward G.P.A. computations.
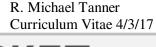
Refereed Journal Publications
"Construction of irregular LDPC codes by quasi-cyclic extension," *IEEE Transactions on Communications,* Vo. 53, No. 4, April 2007, pp. 1479-1483.

"A hybrid coding scheme for the Gilbert-Elliott Channel," *IEEE Transactions on Communications,* Vol. 54, No10, Oct. 2006, pp. 1787-1796.

"LDPC block and convolutional codes based on circulant matrices," with D. Sridhara, A. Sridharan, T. E. Fuja, and D. J. Costello, Jr., *IEEE Transactions Information Theory*, Vol. IT-50, No. 12, Dec. 2004, pp. 2966-2984.

"Minimum distance bound by graph analysis," *IEEE Transactions Information Theory*, *Special Issue on Codes on Graphs*, Feb. 2001, pp. 808-821.

"A transform theory for a class of group-invariant codes," *IEEE Transactions Information Theory*, Vol. IT-34, No. 4, July 1988, pp. 752-775.

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