

# Thomas J. Carter, Ph.D.

## University Address

Computer Science Department  
California State University, Stanislaus  
Turlock, California 95382  
(209) 667-3175/3185

## Home Address

1721 Arbor Way  
Turlock, California 95380  
(209) 632-9166

**Current Position**    **Professor/Chair of Computer Science / Cognitive Studies,**  
California State University, Stanislaus

**Education**    **University of Colorado**, Boulder, Colorado (1977–1981)  
Ph.D. in Mathematics (1981) – “*Localized Homotopy of the Classical Lie Groups*”  
**George Washington University**, Washington, D.C. (1975–1977)  
M.A. in Mathematics (1977)  
**Dartmouth College**, Hanover, New Hampshire (1966–1970)  
B.A. in Philosophy (1970)

**Experience**    • Computer Science Department, CSU Stanislaus (1982-present)  
• Santa Fe Institute Complex Systems Summer School (2000-2013)  
• Mathematics Department, CSU Stanislaus (1981-1982)  
• Instructor, Mathematics Department, University of Colorado (1977-1981)  
• Graduate Teaching Assistant, Mathematics Department, George Washington University (1975-1977)  
• Software Development, Army Corps of Engineers (1976)  
• Computing Consulting, Ultrasystems, Inc. (1973-1975)  
• Administrative Assistant (Computing, budgets, and accounting), Chevy Chase Savings & Loan (1971-1973)

**Research Interests**    Nonlinear dynamical systems and chaos; simulations and computer modeling; information theoretical analysis; large data sets and data mining.

**External Grants**    • Army High Performance Computing Research Center Undergraduate research project – \$81,366 – 2010/11  
Co-PI with Hauselt, Martin & Thomas  
Undergraduate research project – \$78,906 – 2009/10  
Co-PI with Martin & Thomas  
• NSF Laboratory Instrumentation grant, 1989 (co-PI)

**Donations Acquired**    Twenty-five unix workstations (\$375,000) for campus from Convergent Technologies, Inc. (1986)

- Software and tools**
- Computer models/simulations in NetLogo and Repast (ongoing), including economics, synchronization, technology and product adoption, voter dynamics, server utilization, disease spread and immunization, evolution and genomes, dynamics of coupled oscillators, random walks and diffusion limited growth, learning and evolution  
<http://csustan.csustan.edu/~tom/SFI-CSSS/models.html>
  - Information theoretic genome analysis tools (1995-2002);
  - Semaphore and monitor tools outside the unix kernel (1986 - 1987)
  - C implementation of Lispkit lisp interpreter (1985-1986)
  - Forth Interpreter (1984-1985)
- Selected Writings & Lectures**
- "The Effect of Complementary Evolutionarily Stable Strategies", Campbell, Michael and Carter, Thomas (in preparation)
  - "Enzyme Catalysis and the Outcome of Biochemical Reactions" Milanowski, Piotr, Carter, Thomas, and Weber, Georg, Journal of Proteomics & Bioinformatics, 2013, 6:6  
Open access link: <http://www.omicsonline.org/enzyme-catalysis-and-the-outcome-of-biochemical-reactions-jpb.1000271.pdf>
  - Invited Lecture: "Non-ergodic Dynamics" (Nov. 19, 2013)  
Kinnaird Multidisciplinary Research Conference,  
Kinnaird College For Women, Lahore, Pakistan  
<http://csustan.csustan.edu/~tom/Lecture-Notes/Non-Ergodic/Non-Ergodic.pdf>
  - "Nonlinear Systems (and Chaos) - a brief introduction" (2011/2016)  
Lecture notes series with www release  
<http://csustan.csustan.edu/~tom/Lecture-Notes/Nonlinear-Systems/Nonlinear-Systems.pdf>
  - "Clustering" (2011)  
Lecture notes series with www release  
<http://csustan.csustan.edu/~tom/Lecture-Notes/Clustering/Clustering.pdf>
  - "Peripatetic (a random walk in random walks)" (2009)  
Lecture notes series with www release  
<http://csustan.csustan.edu/~tom/Lecture-Notes/Random-Walk/peripatetic.pdf>
  - "Random Walks and High Finance" (2008)  
with derivation of Black-Scholes options pricing model  
Lecture notes series with www release  
<http://csustan.csustan.edu/~tom/Lecture-Notes/Econ102/Econ102.pdf>
  - "Entropy, Power Laws, and Economics" (2007)  
Lecture notes series with www release  
<http://csustan.csustan.edu/~tom/Lecture-Notes/Econ101/Econ101.pdf>

- “An Introduction to Information Theory and Entropy” (2001-16)  
(Santa Fe Institute Complex Systems Summer School)  
<http://csustan.csustan.edu/~tom/Lecture-Notes/Information-Theory/info-lec.pdf>
- Various lectures (2007-present)  
Math and Computer Science Speaker Series, CSU Stanislaus
- “Evolution of Money Distribution in a Simple Economic Model” (Liang, Carter) (2004) NECSI proceedings.
- “Shannon, Claude”, (2003) Entry in Encyclopedia of Cognitive Science, MacMillan Publishers.
- “Introduction to Theory of Computation” (2003-2005)  
Lecture notes series (SFI-CSSS) with www release  
<http://csustan.csustan.edu/~tom/Lecture-Notes/Computation/Computation.pdf>
- “A Brief Survey of Linear Algebra” (2002-2006)  
Lecture notes series (SFI-CSSS) with www release  
<http://csustan.csustan.edu/~tom/Lecture-Notes/Linear-Algebra/lin-alg.pdf>
- “A Brief Introduction to Quantum Computation” (2000-2006)  
Lecture notes series (SFI-CSSS) with www release  
<http://csustan.csustan.edu/~tom/Lecture-Notes/Quantum-Computing/qc-article-2001.pdf>
- “Assessing Risks” (2002)  
Lecture notes series (SFI-CSSS) with www release  
<http://csustan.csustan.edu/~tom/Lecture-Notes/Risks/risks.pdf>
- “Fractional Derivatives” (a brief introduction) (2001)  
Lecture notes series (SFI-CSSS) with www release  
<http://csustan.csustan.edu/~tom/Lecture-Notes/fractional-derivatives/fractional-deriv.pdf>
- “Hallucinogen Flashbacks in theory and practice,” (Myers, Watkins, Carter) (1999 Heffter Review of Psychedelic Research).
- “Applications of Nonlinear Dynamical Systems to Sexual Physiology and Systems,” (Carter, Myers) (1996 - Invited workshop for International Academy of Sex Research, Rotterdam, Holland).
- “Hallucinogen Flashbacks: Reality or Myth,” (Watkins, Carter, Myers) (1995 - Presentation at Society for Neuroscience, San Diego, CA).
- “Application of Chaos Theory and Fractal Dimension Analyses to Male Sexual Psychophysiology,” (Myers, Carter) (1995) Invited Presentation at International Academy of Sex Research, Provincetown, MA.
- “Multimodal Assessment of Body Image: Female and Male Differences,” (Myers, Watkins, Carter) (1995 - Presentation at Western Psychological Association, Los Angeles, CA).
- “Particles and Paradoxes, a Commentary”, Research Report, CSWP (1992) <http://csustan.csustan.edu/~tom/MISC/particle/particle.html>

**Other  
Experi-  
ence**

- Chair, Computer Science Department (1993-present)
- Chair, Faculty Learning Community on Quantitative Reasoning (2013-present)
- Search Committee, Director for Central Valley Math and Science Alliance (2013)
- Ad Hoc Division Collaboration Committee, (2012-2013)
- Chair, Geography Retention, Promotion and Tenure Committee (2011-2012)
- Executive in Charge, College of Natural Sciences (Spring, 2011)
- Chair, Computer Science Department Retention, Promotion, and Tenure Committee (2001-present)
- VPEM Search Committee (2009)
- GE Advisory Group (2008-2011)
- CNS/COS Executive Council (2007-present)
- Summit Program Advisory Group (2008-2011)
- University Facilities Planning Committee (2003-2005, 2008-2013)
- OIT Advisory Group (2008-present)
- WASC IC1 (2006-2010)
- CNS Dean Search Committee (2006)
- ALS Dean Search Committee (2005)
- University Budget Advisory Committee (2002-2005)
- ALS Budget and Personnel Committee (1999-2005) (Chair)
- Administrative Uses Policy Committee (1998-2007)
- CMS Project Management Committee (2000-2010)
- Honors Program Task Force (1998-1999)
- Dean's Advisory Group (1998)
- Speaker of the Faculty/Chair Academic Senate (1995-1996 AY)
- Speaker Elect (1994-1995 AY).
- Strategic Planning Commission (1995-1996)
- University Facilities Planning Committee (1995-1996)
- Chair, Search Committee, Vice Pres. for Business and Finance (Spring and Fall, 1994).
- All Media Institute (1994-1995)
- CSUMB Information Processing planning/working group (1994)
- Banner Project Management Team (1993-2002)
- Network Action Group (1994-2008)
- Chair, University Academic Computing Committee (1986-1994)
- Chair, Faculty Budget Advisory Committee (1992-1993)
- Chair, search committee for Director of Computing (1987)
- Chair, University Academic Computing Committee (1986-2000)
- University rep. to Statewide Academic Computing Planning Committee (1986-1991)
- Faculty mentor program (1987-2000)
- Physics department retention, promotion and tenure committee (1986-1987)
- Academic Calendar Committee (1986)

- Clerk, Academic Senate (1985-1986)
- Marketing and Policy department RPT committee (1985-1986)
- Chair, University Committee on Committees (1984-1985)
- Faculty sponsor, student ACM chapter (1983-1989)
- Department representative to Academic Senate (1982-1985)
- IEEE Computer Dictionary Working Group (Theory section)  
(1986-2000)

Updated January 30, 2017