Biographical Sketch — Thomas J. Peters – 5/7/08

PROFESSIONAL PREPARATION

New College, University of South Florida, Mathematics, *B.A.*, 1973.
University of Rhode Island, Mathematics, *M.S.*, 1978.
Wesleyan University, Mathematics (Topology), *Ph.D.*, 1982.

APPOINTMENTS

University of Connecticut (9/89 –):
Professor, Computer Science & Engineering, Mathematics, (9/06 –),
Professor, Mathematics (9/06 –).
Kerner Graphics, San Rafael, CA: Co-founder and Senior Scientist (5/07 –),
Charles Stark Draper Laboratory, Cambridge, MA, Research Staff (8/88 - 8/89).
Computervision Corporation, Bedford, MA, Senior Technical Staff (6/84 - 7/88).
University of Hartford, Assistant Professor of Mathematics, (9/82 - 6/83).

SELECTED PUBLICATIONS (Many available on `www.cse.uconn.edu/~tpeters`.)

Primary to Computational Topology Research

Preserving computational topology by subdivision of quadratic and cubic Bézier curves, E. L. F. Moore, T. J. Peters, J. A. Roulier, Computing, Springer Wien, Special issue on Geometric Modeling (Dagstuhl 2005) Volume 79, Numbers 2-4 / April, 2007, 317-323, Special editors: S. Hahmann, G. Brunnett, G. Farin and R. Goldman, invited article.

Computational Topology, D. Blackmore and T. J. Peters, Open Problems in Topology II, Elsevier, 2006, pp. 491 - 546, invited article.

Computational topology for isotopic surface reconstruction, Abe, K., Bisceglio, J., Ferguson, D. R., Peters, T. J., Russell, A. C., Sakkalis, T., Theoretical Computer Science, Special Issue – Spatial Representation: Discrete vs. Continuous Computational Models, Edited by R. Kopperman, P. Panangaden, M.B. Smyth, D. Spreen and J. Webster, 365 (3), 184 – 198, 2006, invited article.

Mathematics for Industry: Challenges and Frontiers, monograph, Edited by D. R. Ferguson and T. J. Peters, Society for Industrial and Applied Mathematics, ISBN 0-89971-598-9, 2005.

Computational topology for reconstruction of surfaces with boundary: integrating experiments and theory, Abe, K., Bisceglio, J., Peters, T. J., Russell, A. C., Ferguson, D. R., Sakkalis, T., IEEE Shape Modeling International, IEEE Computer Society, 288 - 297, June 2005.

Other Significant Publications

Isotopic approximations and interval solids, Sakkalis, T., Peters, T. J., Bisceglio, J., invited article, Computer Aided Design, Special issue – Solid Modeling Theory and Applications, 36 (11), 1089-1100, 2004.

Computational topology for regular closed sets (within the I-TANGO project), Peters, T. J., Bisceglio, J., Ferguson, D. R., Hoffmann, C. M., Maekawa, T., Patrikalakis, N. M., Sakkalis, T. & Stewart, N. F., invited article, Topology Atlas, vol. 9 (1), 1 - 12, 2004, `http://at.yorku.ca/t/a/i/c/50.htm`.

Computational topology: ambient isotopic approximation of 2-manifolds, Amenta, N., Peters, T. J., and Russell, A., invited article, Theoretical Computer Science, 305, 3-15, 2003.

Equivalence of topological form for curvilinear geometric objects, Andersson, L.-E., Peters, T. J. & Stewart, N. F., International Journal of Computational Geometry & Applications, 10(6), 609 – 622, 2000.

Game strategies yield remote points, Dow, A. and Peters, T. J., Topology and Its Applications, (27), 1987, 245 – 256.

SYNERGISTIC ACTITIVIES

Dr. Peters holds joint appointments in computer science and mathematics. He participates vigorously in both communities. This perspective is crucial to unifying the intellectual abstractions for this research.

As *Senior Technical Staff* of the Fortune 500 Company, Computervision, Dr. Peters was the primary liaison between research scientists at the University of Utah and Computervision. The Utah academicians had world class graphics knowledge but they lacked product direction. The Computervision need was to reduce graphics generation on complex engineering design models from tens of minutes to a few seconds. This need was prompted by two symptoms:

1. Valuable design engineers would leave their work stations while the graphics were being slowly generated, thus losing important and expensive human productivity.
2. Massive amounts of disk space were being used, as the engineers preferred to save all images rather than wait to regenerate them. While this may seem quaint by today's standards, conserving disk space was an economic imperative then.

Dr. Peters led this collaborative project and will rely on similar skills to integrate this project across the participating parties, particularly in spanning the range of academic research, industrial relevance, educational innovation and STEM recruitment.

COLLABORATORS & OTHER AFFILIATIONS:

Collaborators: K. Abe (UConn), N. Amenta (UC-Davis), J. Bisceglio (BlueSky Studios), D. Blackmore (NJIT), D. R. Ferguson (retired), C. M. Hoffmann (Purdue), R. D. Kopperman (CUNY), T. Maekawa (Yokohama National University), E. L. F. Moore (Dassault Systemes), N. Nobel (Kerner Graphics), N. M. Patrikalakis (MIT), J. A. Roulier (UConn), A. C. Russell (UConn), T. Sakkalis (Agricultural University of Athens), N. F. Stewart (UMontreal).

My Doctoral Advisor: W. W. Comfort, Wesleyan University

Doctoral Students Advised (3): E. L. F. Moore '06 (Dassault Systemes), D. M. Needham '97 (U. S. Naval Academy), S. M. Dorney '94 (NASA).