

SAMSON TIMONER

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Education

- Massachusetts Institute of Technology, Cambridge, MA. Sep. 1998 – Jun. 2003
⇒ Artificial Intelligence Lab, within Elect. Eng. and Comp. Sci. GPA 5.0/5.0
2003 Ph.D. Thesis: *Compact Representations for Fast Non-rigid Registration of Medical Images.*
1999 M.S. Thesis: *Subpixel Motion Estimation From Sequences of Video Images.*
- California Institute of Technology, Pasadena, CA. Sep. 1994 – Jun. 1997
B.S. with Honors, Applied Physics. GPA 4.0/4.0.
Thesis: *Electron Projection for Transfer of Nanometer Scaled Patterns.*

Professional Experience

- Harvard Medical School Summer 2003 – Present
Postdoctoral Fellow: Continuation of Ph.D. research in non-rigid registration for surgical planning, and morphological studies of sub-cortical structures.
- Massachusetts Institute of Technology Sep. 1998 – May 2003
⇒ Ph.D. Research Assistant: Developed new algorithms for representing medical shapes using tetrahedra, shape matching, and statistical shape analysis. Created novel adaptive methods for fast non-rigid registration of medical images.

M.S. Research Assistant: Developed new filter design techniques for sub-nanometer motion estimation of micro-mechanical devices as well as cell motion.
- Swiss Federal Institute of Technology Summer 2001
Visiting Scientist: Develop methods for non-rigid registration of medical data.
- Web Consultant Sep. 1999 – May 2003
Developed Perl/Apache/SQL solutions for student groups.
- IGEN International Jun. 1997 – Aug. 1998
Research Engineer: Contributed to design of inexpensive cartridge to perform multiple blood tests from one drop of blood. Developed mixing methods inside the cartridge.
- Lucent Bell Labs (Murray Hill, NJ) Summer 1996
Technical Associate: Showed it was possible to see and studied individual alkyl-thiols in a self-assembly using an AFM at room temperature and air pressure
- Caltech: Research Assistant 1994 – 1996
Researched making ordered array of 10 nm holes in aluminum oxide using an electrochemical process. Built electron beam projection system.

Caltech: Teaching Assistant Fall 1995, 96
Laboratory instructor for introductory microfabrication class (Aph 9a).

Caltech: Research Assistant 1994 – 1995
Performed molecular dynamics simulations to examine instantaneous inelastic energy loss effects and search for interesting physical phenomena.

Selected Honors and Awards

- ⇒ MIT 50K Business Plan Competition: Semifinalist 2003
- MIT 1K Business Idea Competition: Winner 2002
- ⇒ Fannie and John Hertz Foundation Fellowship 1998 – 2003
- Carnation Scholarship: Full tuition to Caltech 1995, 1996
- Barry M. Goldwater Foundation Scholarship 1996
- Perpall Scientific Speaking Competition: Second Place 1995
- ⇒ Co-Founder of Caltech Entrepreneur Club 1994
- Member of Tau Beta Pi, the National Engineering Honor Society
- Member of Sigma Xi, the Scientific Research Society

Skills

Expertise in: Detection and Estimation, Statistical Classification, Learning Methods, Vision algorithms, 2D and 3D image procession, Numerical methods (fast algorithms), Large collaborative programming projects.

Experience in: C++, Perl, Awk, Tcl/Tk, Fortran, SQL, PostScript, Linux system administration.

Experience in: Electro-chemistry, Bio-chemistry, fluid mechanics, optical tables and optical systems, mechanical design, vacuum systems, micro-fabrication methods, STM, AFM.

Publications

S.J. Timoner, “Compact Representations for Fast Non-rigid Registration of Medical Images”, Ph.D. Thesis, Massachusetts Institute of Technology, May 2003.

S.J. Timoner, et al., “Performance Issues in Shape Classification”, Medical Image Computing and Computer-Assisted Intervention (MICCAI), 2002.

S.J. Timoner, W. Grimson, R. Kikinis, W. Wells, “Fast Linear Elastic Matching Without Landmarks”, Medical Image Computing and Computer-Assisted Intervention (MICCAI), 2001.

S.J. Timoner, D. M. Freeman, “Multi-Image Gradient-Based Algorithms for Motion Estimation”, Optical Engineering, Sept 2001; 40(9):2003-2016.

S.J. Timoner, “Subpixel Motion Estimation From Sequences of Video Images”, Masters Thesis, Massachusetts Institute of Technology, June 1999.

S.J. Timoner, M.H. Shapiro, T.A Tombrello, "Molecular Dynamics Simulations of Inner-Shell Electronic Energy Losses in Cluster Surface Collisions" published in Nuclear Instruments and Methods B: June 1996.

Invited Talks

Compact Representations for the Non-rigid Registration of Medical Images. ERC-CISST seminar series. Johns Hopkins University. April 2003.

Fast Non-Rigid Matching using Adaptive Tetrahedral Meshes. Surgical Planning Lab, Brigham and Women’s Hospital. March 2003.