曾雪峰 Snow H. Tseng

Gender: Birth Date: Citizenship:	Male Nov. 28 th , 1971 USA		Tel: +886-2-3366-3695 Fax:+886-2-2367-1909 snow@cc.ee.ntu.edu.tw		
OBJECTIVE	Investigate the media (e.g.: Tis	Investigate the problem of light scattering in macroscopic random media (e.g.: Tissue optics) by rigorously solving Maxwell's equations			
EDUCATION					
Ph.D. MS BS	Electrical Engineering Physics Physics	Northwestern University University of Chicago National Taiwan University	Evanston, Illinois, June 2005 Chicago, Illinois, April 1997 Taipei, Taiwan, June 1994		
AWARDS					
Best Stud Ame	ent/Resident Paper Awar rican Society of Laser M	rd Iedicine and Surgery	2005		
Gora Gora NSF Awa Murphy H	ng Poster Presentation A don Research Conferenc rd Fellowship	e: Lasers in Medicine and Biolo	2004 29gy 2001 1999		
PROFESSION	AL EXPERIENCE				
Electrical En • Examine • Advise ma • Setup a ne • Teach gra and <i>Light</i>	ngineering, National Ta the optical properties of aster-level graduate study w virtual light scattering duate-level courses in E <i>Scattering in Random M</i>	Liwan University macroscopic random media ents g laboratory English, including: <i>Biomedical</i> . <i>Iedia</i>	Photonics		
Postdoctoral Department • Simulate t the bound	<i>Research Fellow</i> of Physics, University the optical characteristic ary element method (BE	of Illinois at Urbana-Champa s of 3-D photonic crystal struct M)	11/2005 - 02/2006 lign Urbana, IL ture using		
Postdoctoral Computatio • Investigat media	<i>Research Fellow</i> nal Electromagnetics L ion of characteristics of I	aboratory, Northwestern Uni light scattering by closely packe	06/2005 - 10/2005 versity <i>Evanston, IL</i> ed random		
Research Ass Computatio • First-time macroscop Interacted various re • 2D Co • Total s	istant nal Electromagnetics L large-scale rigorous pic random media using with Profs. J. Walsh, search topics, including: wherent backscattering scattering cross-section s	Aboratory, Northwestern Uni simulations of laser scatt the pseudospectral time-domain V. Backman, and A. Taflove study for a bundle geometry cor ned dielectric cylinders	09/1999 - 05/2005 versity Evanston, IL ering by n method. to pursue		

Snow H. Tseng	- page 2	
	snow@cc.ee.ntu.edu.tw	
Scientist/Engineer/Technical Scholar	06/2002 0/2002	
Scientist/Engineer/Technical Scholar	00/2002 - 9/2002	

Medical Physics and Biophysics Division, Lawrence - Livermore National Laboratory

• Developed a full-vector, parallel C++ 3D Pseudo-spectral time-domain code, enabling for the first time large-scale tissue optics simulations— macroscopic light scattering by random biological structures can now be studied by rigorously solving Maxwell's equations

Electrical Engineering Graduate Intern

Interaction Laboratory, Computer Science Laboratory, Sony

- Theoretical and Experimental research of tactile feedback mechanisms for future mobile devices
 - Formulated the first theoretical model for tactile feedback mechanism for mobile devices, providing a foundation to investigate the tactile feedback mechanism
 - Built the first tactile-feedback prototype for Clie (Sony PDA) using AVR8515 micro-controller and piezo actuators, enabling actual human experiments for further development

Systems Engineering Graduate Intern

Systems Engineering Division, Northrop Grumman

- Analyzed the performance of an Infrared Sensing and Tracking system (IRST) of a defensive detection system using MathCad. Developed a theoretical model enabling analytical studies for the optical sensing system of a new IRST system
- Conducted RF chain analysis of a radar system
- Worked on image/video restoration problem using Wiener filter

Research Assistant

Kindletec International Ltd.

- Coordinated and organized meeting minutes and production procedures to meet ISO 9001 standard
- Interviewed engineers and personnel; assembled blueprints for the design of an electronic weighting scale

Research Assistant

Synchrotron Radiation Research Center

- Experimental study on diamond crystal photoemission spectroscopy, responsibilities include: synchrotron UHV experiments and data analysis
- Established a new photoemission spectroscopy laboratory for synchrotron surface science research

COURSEWORK

Relevant courses:	Cardiovascular Instrumentation
	Computational Electrodynamics
	Digital Signal Processing
	Optics and Information Systems
Research project:	Document Text/Halftone Classification Problem
Independent project:	Introduction to Middle Ear Implants
Term project:	Encoding/Decoding Problem of Fax Machines
Term paper:	Comparison of Vectorcardiography & Electrocardiography

6/2000-9/2000 Rolling Meadows, IL

Livermore, CA

06/2001 - 08/2001

Tokyo, Japan

1997-1998 Taipei, Taiwan

1994-1995 Hsinchu, Taiwan

		snow@cc.ee.ntu.edu.tw
Skills		
Computer:	parallel computing, C++, C, Fortran, Matlab, Mat	hCad, Igor, Origin
Language:	English and Mandarin	
TEACHING EXPERIENC	E	
Assistant Professor		02/2006 - present
Graduate Institute of Electro-Optical Engineering and Department of		Taipei, Taiwan
Electrical Engineering, N	Vational Taiwan University	_
 Advise master-level grade 	aduate students	
• Teach graduate-level c	ourses in English, including: Biomedical Photonics	

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1995-1997

and Light Scattering in Random Media

Teaching Assistant

Snow H. Tseng

University of Chicago, Department of Physics	Chicago, IL
• Conducted weekly discussion sessions of general physics for 30 students	-
Undergraduate Tutor	2000-2001
Northwestern University, McCormick School of Engineering	Evanston, IL
Specialization in math and physics	

• Specialization in math and physics

PUBLICATIONS:

- [1] S. H. Tseng, A. Taflove, D. Maitland, V. Backman, J. T. Walsh, "Interpretation of Noise-like Temporal Speckles for Clusters of Closely Packed Randomly Positioned Dielectric Cylinders," Optics Express, 2005. 13(16): pp. 6127-6132.
- [2] S. H. Tseng, A. Taflove, Young L. Kim, V. Backman, and J. T. Walsh, "Simulation of enhanced backscattering of light by numerically solving Maxwell's equations without heuristic approximations," Optics Express, 2005. 13(10): pp. 3666-3672.
- [3] S. H. Tseng, A. Taflove, D. Maitland, V. Backman, J. T. Walsh, "Exact Solution of Maxwell's Equations for Optical Interactions with a Macroscopic Random Medium," Optics Letters, 2004. 29(12): pp. 1393-1395; Optics Letters, 2005. 30(1): pp. 56-57.
- [4] S. H. Tseng, A. Taflove, D. Maitland, V. Backman, J. T. Walsh, "Extracting Geometrical Information of Closely Packed Random Media from Multiply Scattered Light via a Cross-correlation Analysis," (accepted by IEEE Antenna and Wireless Propagation Letters.)
- [5] S. H. Tseng, A. Taflove, D. Maitland, V. Backman, "PSTD Simulations of Multiple Light Scattering in 3-D Macroscopic Random Media," (submitted to Radio Science.)
- [6] S. H. Tseng, A. Taflove, D. Maitland, V. Backman, J. T. Walsh, "A Rigorous Solution of Maxwell's Equations for the Problem of Tissue Optics," (manuscript in preparation.)
- [7] S. H. Tseng, "What information can be extacted from light multiply scattered from a closely packed random medium?" (manuscript in preparation.)
- [8] S. H. Tseng, J. Greene, A Taflove, J. Walsh, "PSTD Simulation of 2-D Scattering by a Random Cluster of Electrically Large Dielectric Cylinders" Proc. IEEE AP-S International Symposium, Columbus, Ohio, June 2003.
- [9] T. Pappas, S. H. Tseng, D. A. Koshiba, "A Robust and Efficient Algorithm for Bi-level Document Block Classification", Image Processing, 2001. Proceedings. 2001 International Conference on, v1, 7-10, Oct. 2001, pp. 1122 –1125.

CONFERENCE EXPERIENCES:

[1] Organizer and Moderator of the discussion group: "The Future of Rigorous Solutions of Maxwell's Equations in Tissue Optics," *NATO Advanced Study Institute: Biophotonics, Ottawa, Canada, 2004*

PROFESSIONAL PRESENTATIONS:

- [1] "What Information Can Possibly Be Obtained from Light Multiply Scattered through Random Media?" Gordon Research Conference: Lasers in Medicine and Biology, July 2006
- [2] "Possibility of Obtaining Microscopic Structural Information from Light Scattered by Random Media of Closely Packed Scatterers," *Institute of Atomic and Molecular Sciences Academia Sinica, Taiwan, May 25th, 2005*
- [3] "Rigorous Computational Solution of Maxwell's Equations Reveals: Possibility of obtaining Microscopic Structural Information from Macroscopic Optical Measurements of Biological Tissues," *Photonics West Symposium, San Jose, California, 2005*
- [4] "When Photons Meet Cells," Photonics West Symposium, San Jose, California, 2005
- [5] "Rigorous Investigation of Tissue Optics," *Lawrence Livermore National Laboratory, Livermore, California, January* 20th, 2005
- [6] "A Novel Research Tool for Tissue Optics," *Beckman Laser Institute, University of California at Irvine, November* 4th, 2004
- [7] "A Rigorous Solution for Tissue Optics: Solving Maxwell's Equations for the Problem of Light Scattering by Macroscopic Biological Random Media," *NATO Advanced Study Institute: Biophotonics, Ottawa, Canada, 2004*
- [8] "Rigorously solving Maxwell's equations for the problem of light scattering by macroscopic random media," *NATO Advanced Study Institute: Biophotonics, Ottawa, Canada, September 2004*
- [9] "First Full-Vector Maxwell's Equations Model of Light Scattering in a Macroscopic Random Medium," SPIE Photonics North Symposium, Ottawa, Canada, September 2004
- [10] "Rigorously solving Maxwell's equations for the problem of light scattering by macroscopic random media," *Center for Cellular Analysis and Modeling, University of Connecticut Health Center, September 2004*
- [11] "Rigorously solving Maxwell's equations for the problem of light scattering by macroscopic random media," *Gordon Research Conference: Lasers in Medicine and Biology, July 2004*
- [12] "Pseudo-spectral time-domain Maxwell's equations solution of Optical Scattering by Tissue-like Structures," 24th Annual Meeting of the American Society for Laser Medicine and Surgery, March 31st, 2004
- [13] "PSTD Simulation of 2-D Scattering by a Random Cluster of Electrically Large Dielectric Cylinders," *IEEE APS International Symposium, Columbus, Ohio, June 2003*
- [14] "Click! Tactile Feedback for Mobile Devices," Sony Computer Science Laboratory, Tokyo, Japan, August 2001
- [15] "Possibilities of Soliton Propagation in Holey Fibers," *Northwestern University, Evanston, IL, May 2000*
- [16] "Electron Paramagnetic Resonance," University of Chicago, Chicago, IL, December, 1996

INVITED TALKS:

- "Extracting Information from Light Multiply Scattered by Macroscopic Random Media," 奈米光學模擬會議, Department of Physics, National Taiwan University, Taiwan, May 18th, 2007
- "利用馬克士威方程式模擬光學散射," ("Optical Simulation by Numerically Solving Maxwell's Equations,") Department of Physics, Chung-Yuan University, Taiwan, May 21, 2007
- "馬克士威與光學散射模擬," ("J. C. Maxwell and Light Scattering Simulation,")
 Department of Optics and Photonics, National Central University, Taoyuan, Taiwan, Oct. 12th, 2007
- "Scattering Characteristics of Macroscopic Random Media Determined via Virtual Optical Experiments," Taiwan-Russian Joint Symposium on Nanostructures for Photonics and Optoelectronics Applications, Taipei, Taiwan, *Nov.* 22nd, 2007
- "以虛擬光學實驗分析巨觀隨機介質的光學性質," ("Virtual Optical Experiments: New View of Biomedical Optics") Department of Physics, National Chung Hsing University, Taichung, Taiwan, December 29th, 2006
- "What Information Is Hidden Within Light Multiply Scattered Through Macroscopic Random Media?" 2006 NCTS December Workshop on Critical Phenomena and Complex Systems, Institute of Physics of Academia Sinica, Taipei, Taiwan, *December 16th*, 2006
- "New Possibilities of Biomedical Photonics," Chiba University, Chiba, Japan, September 12th, 2006
- "New Possibilities for Tissue Optics: Rigorously Analyzing the Problem of Light Scattering by Macroscopic Random Media," G. R. Harrison Spectroscopy Laboratory, Massachusetts Institute of Technology, Boston, July 7th, 2006
- "生醫光學的新展望:由超級電腦虛擬實驗探索生物組織的光學性質," ("Rigorously Analyzing the Problem of Light Scattering by Macroscopic Random Media") Institute of Electro-Optical Engineering, National Chiao Tung University, Taiwan, May 5th, 2006
- "Possibility of Obtaining Microscopic Structural Information from Light Scattered by Dense Random Media," Graduate Institute of Electro-Optical Engineering, National Taiwan University, Taiwan, June 8th, 2005
- "New Possibilities for Tissue Optics: Rigorously Analyzing the Problem of Light Scattering by Macroscopic Random Media," *Research Center of Applied Sciences, Academia Sinica, Taiwan, June 2nd, 2005*
- "Obtaining Optical Characteristics of Macroscopic Biological Random Media from Virtual Experiments," *National Synchrotron Radiation Research Center, Taiwan, May 30th, 2005*