RESUME

SHENG LIU
Graduate Research Associate, College of Optical Sciences, University of Arizona

Contact Information

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Education

AUG 2005 –MAY 2010	University of Arizona	Ph.D. candidate in Optical Sciences
SEPT 2001 -- JUL 2004	Tsinghua University	M.S. in Physics
SEPT 1997 -- JUL 2001	Tsinghua University	B.S. in Physics

Research Experiences

AUG 2005 – present Graduate Research Associate, College of Optical Sciences, University of Arizona

Thesis Work:

- Development of variable focus and volumetric three-dimensional (3-D) near-eye display system.

Other Research Highlights:

- Extended depth-of-focus (EDOF) microscopic imaging.
- Aberration analysis for high dynamic range Shack-Hartmann aberrometer.
- Zooming camera without mechanical moving components.

SEPT 2001 -- JUL 2004 Graduate Research Associate, Department of Physics, Tsinghua University, China

- Development of Near-Field Scanning Optical Microscope (NSOM) for biomedical imaging.

Work Experience

JUN 2009 -- AUG 2009 Summer Internship, Utopiacompression Corporation, Los Angeles, USA

- Design and prototype demonstration of a panoramic imaging camera, with hemispherical field of view and uniform high resolution.

Skills

Optical modeling	Experienced in CODE V and LightTools, familiar with Zemax and ASAP
Optical engineering	Lens design, illumination design
Programming	Matlab, Visual C++, OpenGL
Optical lab skills	Optical bench setup, alignment, and testing; image/video capturing & post-processing; PSF/MTF analysis; camera calibration

Certificates

APR 2008	Illumination Design (Advanced Tutorial)	Breault Research Organization
AUG 2007	Introduction to ASAP	Breault Research Organization

Publications

1. **Sheng Liu**, Leonard Brown, and Hong Hua, "Variable focus gaze contingent display with real time depth of field rendering," manuscript in preparation.
2. **Sheng Liu**, and Hong Hua, "A systematic method for designing depth fused multi-focal plane three-dimensional displays," manuscript submitted to *Optics Express*.
3. **Sheng Liu**, Hong Hua, and Dewen Cheng. "A novel prototype for an optical see-through head mounted display with addressable focus cues," *IEEE Transactions on Visualization and Computer Graphics*, 16 (3): 381-393, May/June 2010. (ISMAR 2008 invited paper)
4. Peng Wu, **Sheng Liu**, Edward DeHoog, and Jim Schwiegerling, "Systematic errors analysis for a large dynamic range aberrometer based on aberration theory," *Applied Optics*, 48 (32): 6324-6331, November 2009.
5. **Sheng Liu**, and Hong Hua, "Time-multiplexed dual-focal plane head-mounted display with a liquid lens," *Optics Letters*, 34 (11), 1642-1644, June 2009.

6. **Sheng Liu**, Dewen Cheng and Hong Hua. "An optical see-through head mounted display with addressable focal planes." *The seventh IEEE and ACM International Symposium on Mixed and Augmented Reality* (ISMAR 2008), Cambridge, UK, September 2008, pp.33-42. (Best Student Paper Award, 114 total submissions)
7. **Sheng Liu**, Chunyu Gao and Hong Hua. "Illumination design of a multi-touch sensing projection screen for augmented virtual environments," *Society for Information Display International Symposium, Seminar and Exhibition* (SID 2008), Los Angeles, CA, May 2008.
8. **Sheng Liu** and Hong Hua. "Spatialchromatic foveation for gaze contingent displays," *Eye Tracking Research & Applications Symposium* (ETRA 2008), Proceedings of ACM, Savannah, USA, March 2008.
9. Hong Hua and **Sheng Liu**. "A dual-sensor foveated imaging system," *Applied Optics*, 47 (3): 317-27, January 2008.
10. **Sheng Liu**, Craig Pansing and Hong Hua. "Design of a foveated imaging system using a two-axis MEMS mirror," *SPIE Proceedings of the 2006 International Optical Design Conference* (IODC 2006), Vol. 6342, 63422W-1-W-8, Vancouver, Canada, June 2006.
11. **Sheng Liu**, Jialin Sun, Hongsan Sun, Xiaojing Tan, Shuo Shi, Jihua Guo and Jun Zhao. "First overtone frequency stimulated quartz tuning fork used for shear-force scanning near-field optical microscopy," *Chinese Physics Letters* 20 (11): 1928-1931, November 2003.
12. Xiaojing Tan, Jialin Sun, **Sheng Liu**, Jihua Guo and Hongsan Sun. "Shear force detection using single-tine oscillating tuning fork for scanning near-field optical microscopy," *Chinese Physics Letters* 20 (3): 338-341, March 2003.

Provisional Patent Application

1. Hong Hua, and **Sheng Liu**, "Method for real-time, single-shot extended depth of focus microscopic imaging," U.S. Porvisional Patent Application, March 2010.
2. Hong Hua, and **Sheng Liu**, "Design of an optical see-through head mounted display," U.S. Provisional Patent Application, September 2009.

Awards

SEPT 2008	"Best Student Paper Award" of the 7th IEEE and ACM International Symposium on Mixed and Augmented Reality (ISMAR 2008), IEEE & ACM
SEPT 2008	Graduate and Professional Student Council (GPSC) student travel grant award for ISMAR 2008, University of Arizona
MAR 2008	GPSC student travel grant award for ETRA 2008, University of Arizona
AUG 2007 – MAY 2008	Technology and Research Initiative Fund (TRIF) Imaging Fellowship, University of Arizona

Outreach and Services

Reviewer	Optics Letters 2009
Reviewer	Applied Optics 2009
Reviewer	ACM International Conference on Advances in Computer Entertainment Technology 2009
Reviewer	IEEE & ACM International Symposium on Mixed and Augmented Reality 2008, 2009
Student Volunteer	Frontiers in Optics -- Annual Meeting of the Optical Society of America (OSA) 2005
Student Member	SPIE, OSA

Teaching Experiences

OCT 2009	*Guest Lecturer* Course: 'Projection Displays', 'Laser Displays', '3-D Displays', 'Head-Mounted Displays', in *Introduction to Display Science & Technology* College of Optical Sciences, University of Arizona
JAN 2009 – MAY 2009	*Lab Instructor* Course: 3-hour lab session, in *Advanced Optics Laboratory* College of Optical Sciences, University of Arizona
JUN 2008	*Guest Lecturer* Course: 'Visual acuity', in *Optical sciences summer camp* College of Optical Sciences, University of Arizona
AUG 2004 -- JUN 2005	*Lab Instructor* Course: 3-hour lab session, in *Introductory Electricity and Magnetism* Physics Department, University of Arizona

Personal Values

Strong problem-solving skills, self-motivated, responsible