

Sina Farsiu

CONTACT INFORMATION

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CAREER GOALS

I am seeking a career that will allow me to work with an energetic team developing solutions to challenging and diverse problems. I am looking for a research oriented position, where I can apply my skills and experience in solving real-world image/signal processing and computer vision problems.

PROFESSIONAL EXPERIENCE

University of California, Santa Cruz, CA

Postdoctoral Scholar in Electrical Engineering Department

January, 2006 - Present

Published papers and developed software in the area of image/signal processing

- Efficient Multi-Frame Image Fusion and Enhancement:
 - Super-resolution.
 - Demosaicing.
 - Video Processing.
 - Motion Estimation.
- Enhanced Imaging and Detection Through Turbid Media (sponsored by DARPA):
 - Low photon count imaging
 - Statistical analysis of photon count imaging systems
 - Time-resolved imaging through turbid media.
 - Ballistic photon detection.
 - Coherent imaging through turbid media.
 - Adaptive Sampling Theory

University of California, Santa Cruz, CA

Research Assistant in Electrical Engineering Department

September, 2001 - December, 2005

Published papers and developed software in the area of image processing (sponsored by the Center for Adaptive Optics (CFAO))

- Efficient Multi-Frame Image Fusion and Enhancement:
 - Super-resolution.
 - Demosaicing.
 - Video Processing.
 - Motion Estimation.

MotionDSP, San Mateo, CA

Consulting Engineer

April 2005-June 2006

Research and software development for multi-frame image reconstruction from digital videos.

KLA-Tencor, San Jose, CA

Summer Intern.

June-September, 2004

Research and software development for multi-frame image reconstruction of optical and electron beam microscopy images.

EDUCATION

University of California, Santa Cruz, California

Ph.D., Electrical Engineering, December 2005

- Advisor: Prof. Peyman Milanfar

Thesis Title: A Fast and Robust Framework for Image Fusion and Enhancement

University of Tehran(UT), Tehran, Iran

M.Sc., Biomedical Engineering, June, 2001 (with honors)

- Advisor: Prof. Caro Lucas

Thesis Title: Prediction Of Lupus Nephritis In Patients With Systemic Lupus Erythematosus Using Artificial Intelligence.

Sharif University of Technology(SUT), Tehran, Iran

B.S., Electrical Engineering, September, 1999

HONORS AND
AWARDS

- University of California Regents Fellowship (Fall 2001)
- Center for Adaptive Optics Fellowship (Fall 2001-2005)
- UT: Ranked first among graduate students of class 1999, Biomedical Engineering Department, UT.

DEVELOPED
SOFTWARE

MDSP Resolution Enhancement Software (Academic/Commercial licenses are issued for many major corporations and tens of academic institutes). Available in <http://www.soe.ucsc.edu/~milanfar/SR-Software.htm>

PUBLICATIONS

Publications in Journals

- 1: R. Rajimehr, S. Farsiu, L.M. Kouhsari, A. Bidari, C. Lucas, S. Yousefian, F. Bahrami, *Prediction of Lupus Nephritis in Patients with Systemic Lupus Erythematosus Using Artificial Neural Networks*, *Lupus*, vol. 11, no. 8, Page(s): 485-492, August 2002.
- 2: S. Farsiu, D. Robinson, M. Elad, and P. Milanfar, *Fast and Robust Multi-Frame Super-Resolution*, *IEEE Transactions on Image Processing*, vol 13, no 10, Page(s): 485-492, October 2004.
- 3: S. Farsiu, D. Robinson, M. Elad, and P. Milanfar, *Advances and Challenges in Super-Resolution*, *International Journal of Imaging Systems and Technology*, vol. 14, no. 2, Page(s): 47-57, July 2004.
- 4: S. Farsiu, M. Elad, and P. Milanfar, *Multi-Frame Demosaicing and Super-Resolution of Color Images*, *IEEE Trans. on Image Processing*, vol. 15, no. 1, pp. 141-159, Jan. 2006.
- 5: S. Farsiu, M. Elad, and P. Milanfar, *Video-to-Video Dynamic Superresolution for Grayscale and Color Sequences*, *EURASIP Journal on Applied Signal Processing*, Volume 2006, Page(s): 1-15, Feb. 2006.
- 6: H. Takeda, S. Farsiu, and P. Milanfar, *Kernel Regression for Image Processing and Reconstruction*, *IEEE Trans. on Image Processing*, vol. 16, no. 2, pp. 349-366, Feb. 2007.
- 7: D. Robinson, S. Farsiu, P. Milanfar, *Optimal Registration of Aliased Images Using Variable Projection with Applications to Superresolution*, Accepted for publication in *The Computer Journal*, May 2006.
- 8: S. Farsiu, J. Christofferson, B. Eriksson, P. Milanfar, B. Friedlander, A. Shakouri, R. Nowak, *Statistical Detection and Imaging of Objects Hidden in Turbid Media Using Ballistic Photons*, Submitted

to Applied Optics, Feb. 2007.

Publications in Conference Proceedings

- 1: S. Farsiu and P. Milanfar, *Multi-Scale Statistical Detection and Ballistic Imaging Through Turbid Media*, Submitted to IEEE International Conference on Image Processing (ICIP), San Antonio, TX, 2007.
- 2: X. Wang, A. Shakouri, S. Farsiu and P. Milanfar, *Extraction of power dissipation profile in an IC chip from temperature map*, To appear in the Proc. of 23rd Semiconductor Thermal Measurement, Modeling, and Management Symposium, San Jose, CA, March 2007.
- 3: H. Takeda, S. Farsiu, J. Christou, and P. Milanfar, *Super-Drizzle: Applications of Adaptive Kernel Regression Technique in Astronomical Imaging*, To appear in the Proc. of the Advanced Maui Optical and Space Surveillance Technologies Conference, Maui Hawaii, Sept. 2006.
- 4: H. Takeda, S. Farsiu, and P. Milanfar, *Regularized Kernel Regression for Image Deblurring*, Invited Paper, To appear in the Proc. of the 40th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, Oct. 2006.
- 5: H. Takeda, S. Farsiu, and P. Milanfar, *Robust Kernel Regression for Restoration and Reconstruction of Images from Sparse Noisy Data*, IEEE International Conference on Image Processing (ICIP), Atlanta, GA, Page(s): 1257-1260, Oct. 2006.
- 6: S. Farsiu, M. Elad, and P. Milanfar, *A Practical Approach to Super-Resolution*, Invited Paper, Proc. of the SPIE: Visual Communications and Image Processing 2006, San Jose, CA, Page(s): 24-38, January 2006.
- 7: S. Farsiu, M. Elad, and P. Milanfar, *Constrained, Globally Optimal, Multi-Frame Motion Estimation*, Proc. of IEEE Statistical Signal Processing Workshop, Page(s): 396 - 1401, July 2005.
- 8: H. Takeda, S. Farsiu, and P. Milanfar, *Image Denoising by Adaptive Kernel Regression*, Proc. of the 39th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, Page(s): 1660 - 1665, Nov. 2005.
- 9: S. Farsiu, M. Elad, and P. Milanfar, *Multi-Frame Demosaicing and Super-Resolution from Under-Sampled Color Images*, Proceedings of IS&T/SPIE Symposium on Electronic Imaging 2004, San Jose, CA, Volume 5299, Page(s): 222-233, January 2004.
- 10: S. Farsiu, D. Robinson, M. Elad, and P. Milanfar, *Dynamic Demosaicing and Color Superresolution of Video Sequences*, SPIE's 48th Annual Meeting, Denver, CO, Volume 5562, Page(s): 169-178, August 2004.
- 11: S. Farsiu, D. Robinson, M. Elad, and P. Milanfar, *Robust Shift and Add Approach to Super-Resolution* International Symposium on Optical Science and Technology, SPIE's 48th Annual Meeting, San Diego, CA, Volume 5203, Page(s): 121-130, August 2003.
- 12: S. Farsiu, D. Robinson, M. Elad, and P. Milanfar, *Robust Super-Resolution* IEEE International Conference on Image Processing (ICIP), Barcelona. Volume: 2, Page(s): 291-294, September 2003.

Patents (Under Review):

US Patent Application, 11/302073, P. Milanfar, S. Farsiu, D. Robinson, M. Elad , entitled *Robust Reconstruction of High Resolution Grayscale Images from a Sequence of Low-Resolution Frames (Robust Gray Super-Resolution)*

US Patent Application, 11/301811, P. Milanfar, S. Farsiu, M. Elad, entitled *System and Method for Robust Multi-Frame Demosaicing and Color Super-Resolution*

US Patent Application, 11/513833, P. Milanfar, H. Takeda, S. Farsiu, entitled *Kernel Regression For Image Processing And Reconstruction*

US Patent Application, 11/584400, P. Milanfar, S. Farsiu, M. Elad, entitled *Dynamic Reconstruction of High-Resolution Video from Color-Filtered Low-Resolution Video-to-Video Super-Resolution*

RELEVANT GRADUATE COURSEWORK

Digital Image Processing, Digital Signal Processing, Image and Video Coding, Image Analysis and Computer Vision, Medical Imaging Systems, Statistical Signal Processing, Multimedia Systems, Digital Communication, Machine Learning, Computational Methods, Computer Architecture, Stochastic Processes, Physiology, Biomedical Instrumentation and Measurements, Modeling and Simulation of Biological Systems

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

Contributor: Shuttle Columbia Accident Investigation

Reviewer for IEEE Transactions on Image Processing (selected as one of the top 10 reviewers in 2005)

Reviewer for IEEE Transactions on Pattern Analysis and Machine Intelligence

Reviewer for IEEE Transactions on Circuits and Systems for Video Technology

Reviewer for IEEE Transactions on Circuits and Systems I

Reviewer for IEEE Transactions on Multimedia

Reviewer for IEEE Signal Processing Letters

Reviewer for EURASIP Journal on Applied Signal Processing

Reviewer for Signal Image and Video Processing Journal

Reviewer for Signal Processing: Image Communication Journal

Reviewer for Optical Engineering Journal

Reviewer for Eurographics 2005 Conference

Reviewer for ICASSP 2006 Conference

Co-Chair for session on "Super-resolution in Imaging and Video" at Asilomar'06, Asilomar Conference on Signals, Systems, and Computers

Thesis reading committee member for Hiroyuki Takeda, Electrical Engineering, UC Santa Cruz, March 2006

Thesis reading committee member for Michael R. Charest Jr., Electrical Engineering, UC Santa Cruz, June 2006

Co-Chair Postdoctoral Scholar Association (PSA), UCSC, January 2006-Present

Non-voting Member of the UCSC Graduate Council 2006-2007

Member IEEE, SPIE, Center for Adaptive Optics (CFAO)

REFERENCES

Professor Peyman Milanfar,
University of California Santa Cruz, *milanfar@soe.ucsc.edu*,
Phone: 831-459-4929, <http://www.soe.ucsc.edu/~milanfar>

Professor Michael Elad,
The Technion - Israel Institute of Technology, *elad@cs.technion.ac.il*,
Phone: +972-4-829-4169, <http://www.cs.technion.ac.il/~elad>

Professor Ali Shakouri,
University of California Santa Cruz, *ali@soe.ucsc.edu*,
Phone: 831-459-3821, http://quantum.soe.ucsc.edu/ali_info.html

Professor Benjamin Friedlander,
University of California Santa Cruz, *friedlan@ee.ucsc.edu*,
Phone: 831-459-5838, <http://www.cse.ucsc.edu/~friedlan>