

Hiroyuki Takeda

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Education

Ph.D. Electrical Engineering, University of California, Santa Cruz, 2006 – Present

M.S. Electrical Engineering, University of California, Santa Cruz, 2006

B.S. Electronics Course in Science and Engineering Department, Kinki (Kindai) University, 2001,
Magna Cum Laude

Research Experience

Research Assistant 2005–Present
Professor Peyman Milanfar University of California, Santa Cruz

Nonparametric kernel regression methods for multi-dimensional data processing and reconstruction

The main purpose is the study of *non-parametric regression* for multi-dimensional data processing and reconstruction. The non-parametric approach is a general tool and it is applicable for a wide variety of problems, such as interpolation, denoising, deblurring, and super-resolution of both images and videos. In addition to applications for those different problems, the research includes development of non-linear processing, in which not only spatial information of the given samples but also radiometric information are taken into account. The non-linear approach significantly improves the performance of regression.

Working Experience

Sharp Laboratories of America, Inc. Camas, WA
Intern June 2008–September 2008
Development of spatio-temporal video upscaling algorithm.

Sharp Laboratories of America, Inc. Camas, WA
Intern June 2007–September 2007
Development of upscaling algorithm for videos.

Motion DSP San Mateo, CA
Technical Assistant 2005–2006
Development of super-resolution algorithm for images and videos.

OUK Co., LTD. Osaka, Japan
Computer Programmer 2000–2001
Development of device drivers for a panoramic camera.

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Publications

Journal Papers

Takeda, H., P. Milanfar, M. Protter, and M. Elad, "Superresolution without Explicit Subpixel Motion Estimation", submitted to IEEE Transactions on Image Processing.

Protter, M., M. Elad, H. Takeda, and P. Milanfar, "Generalizing the Non-Local-Means to Super-Resolution Reconstruction", IEEE Transactions on Image Processing, Vol. 16, No. 2, pp. 36-51, January 2009.

Takeda, H., S. Farsiu, and P. Milanfar, "Deblurring Using Regularized Locally-Adaptive Kernel Regression", IEEE Transactions on Image Processing, Vol. 17, No. 4, pp. 550-563, April 2008.

Takeda, H., S. Farsiu, and P. Milanfar, "Kernel Regression for Image Processing and Reconstruction", IEEE Transactions on Image Processing, Vol. 16, No. 2, pp. 349-366, February 2007.

Conference Papers

Takeda, H., P. Milanfar, "An Adaptive Nonparametric Approach to Restoration and Interpolation for Medical Imaging" submitted to International Symposium on Biomedical Imaging (ISBI), January 2009.

Takeda, H., P van Beek, and P. Milanfar, "Spatio-Temporal Video Interpolation and Denoising Using Motion-Assisted Steering Kernel (MASK) Regression", Proceedings of IEEE International Conference on Image Processing (ICIP), San Diego, CA, October 2008.

Takeda, H., Hae Jong Seo, and Peyman Milanfar, "Statistical Approaches to Quality Assessment for Image Restoration", To Appear in the special session on "Advanced applications of objective video quality metrics and methods" International Conference on Consumer Electronics, Jan. 2008, Las Vegas, NV

Takeda, H., S. Farsiu, and P. Milanfar, "Higher Order Bilateral Filters and Their Properties", Proceedings of the SPIE Conf. on Computational Imaging, San Jose, January 2007.

Takeda, H., S. Farsiu, and P. Milanfar, "Robust Kernel Regression for Restoration and Reconstruction of Images from Sparse Noisy Data", Proceedings of the International Conference on Image Processing (ICIP), Atlanta, GA, October 2006.

Scientific Software

Takeda, H., S. Farsiu, and P. Milanfar (2007): Kernel Regression-Based Image Processing ToolBox for MATLAB, <http://www.soe.ucsc.edu/~htakeda/KernelToolBox.htm>, A experimental program for image denoising and interpolation.

Takeda, H., S. Farsiu, and P. Milanfar (2008): Regularized Kernel Regression-Based Deblurring (AKTV) for MATLAB, <http://www.soe.ucsc.edu/~htakeda/AKTV.htm>, A experimental program for image deblurring.

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Honors and Awards

Class I Information Technology Engineer (currently, Software Design and Development Engineer),
Japan, May 2000

Class II Information Technology Engineer (currently, Fundamental Information Technology Engineer),
Japan, October 1998

Computer Skills

Expert: C++ , MATLAB, \LaTeX ,

Intermediate: Visual C++ , Power Point