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Faculty of Engineering, Niigata University
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Personal Information

Nationality Japan

Gender Male

Designation Associate Professor

Education

Ph.D Tokyo Metropolitan University, Nov. 1998

Dissertation: “*Linear-Phase Paraunitary Filter Banks for Image Processing*”

Committee: Hitoshi KIYA, Akinori NISHIHARA, Akihiko YAMADA and Norio TAGAWA

M.E. Tokyo Metropolitan University, Mar. 1995

B.E. Tokyo Metropolitan University, Mar. 1993

Experience

Niigata University, Department of Electrical and Electronic Engineering, Faculty of Engineering, Associate Professor, Feb. 2001 - present.

University of Florence, Department of System and Information, Faculty of Engineering, Visiting Researcher, Oct. 2003 - Sep. 2004.

Niigata University, Department of Electrical and Electronic Engineering, Faculty of Engineering, Research Associate, Oct. 1999 - Jan. 2001.

Tokyo Metropolitan University, Department of Electric Engineering, Graduate School of Engineering, Research Associate, Apr. 1997 - Oct. 1999.

Tokyo Metropolitan University, Department of Electronic and Information Engineering, Faculty of Engineering, Research Associate, Jan. 1997 - Mar. 1997.

Field of Research Interest

Multidimensional Signal and Image Processing, Information and Network Engineering

Major Publications

Peer-Reviewed Journal Papers

1. S. Muramatsu, K. Furuya and N. Yuki: “Multidimensional Nonseparable Oversampled Lapped Transforms: Theory and Design,” *IEEE Trans. on Signal Process.*, Vol.65, No.5, pp.1251-1264, Mar. 2017
2. N. Aizawa, S. Muramatsu and M. Yukawa: “Image Restoration with Multiple DirLOTs,” *IEICE Trans. on Fundamentals*, Vol.E96-A, No.10, pp.1954-1961, Oct. 2013
3. S. Muramatsu, D. Han, T. Kobayashi and H. Kikuchi: “Directional Lapped Orthogonal Transform: Theory and Design,” *IEEE Trans. on Image Process.*, Vol.21, No.5, pp.2434-2448, May 2012

4. S. Muramatsu, T. Kobayashi, M. Hiki and H. Kikuchi: "Boundary Operation of 2-D Non-separable Linear-phase Paraunitary Filter Banks," *IEEE Trans. on Image Process.*, Vol.21, No.4, pp.2314-2318, Apr. 2012
5. H. Watanabe and S. Muramatsu: "Fast Algorithm and Efficient Implementation of GMM-Based Pattern Classifiers," *Journal of Signal Processing Systems*, Springer, Vol.63, No.1, pp.107-116(10), DOI: 10.1007/s11265-009-0439-z, Apr. 2011
6. A. Adachi, S. Muramatsu and H. Kikuchi: "Constraints of Second-Order Vanishing Moments on Lattice Structures for Non-separable Orthogonal Symmetric Wavelets," *IEICE Trans. Fundamentals*, Vol. E92-A, No. 3, pp.788-797, Mar. 2009
7. T. Ishida, S. Muramatsu and H. Kikuchi: "Motion-JPEG2000 Codec Compensated for Interlaced Scanning Videos," *IEEE Trans. on Image Processing*, Vol. 14, No. 12, pp. 2179-2191, Dec. 2005
8. S. Muramatsu, T. Ishida and H. Kikuchi: "Invertible Deinterlacing with Sampling-Density Preservation: Theory and Design," *IEEE Trans. on Signal Processing*, Vol.51, No.9, pp.2343-2356, Sep. 2003
9. S. Muramatsu, A. Yamada and H. Kiya: "A Design Method of Multidimensional Linear-Phase Paraunitary Filter Banks with a Lattice Structure," *IEEE Trans. on Signal Processing*, Vol.47, No.3, pp.690-700, Mar. 1999
10. S. Muramatsu, H. Kiya: "Extended Overlap-Add and -Save Method for Multirate Signal Processing," *IEEE Trans. on Signal Process.*, Vol.45, No.9, pp.2376-2380, Sep 1997

Proceedings

1. S. Muramatsu, M. Ishii and Z. Chen: "Efficient Parameter Optimization for Example-based Design of Nonseparable Oversampled Lapped Transform," *Proc. of IEEE Int. Conf. on Image Process.*, pp.3618-3622, Sep. 2016
2. S. Muramatsu, "Structured Dictionary Learning with 2-D Non-separable Oversampled Lapped Transform," *Proc. of IEEE Intl. Conf. on Acoustics, Speech and Signal Process.*, pp.2643-2647, May 2014
3. S. Muramatsu and N. Aizawa: "Image Restoration with 2-D Non-separable Oversampled Lapped Transforms," *Proc. of IEEE Intl. Conf. on Image Process.*, pp.1051-1055 Sep. 2013
4. S. Muramatsu and N. Aizawa, "Lattice Structures for 2-D Non-separable Oversampled Lapped Transforms," *Proc. of IEEE Intl. Conf. on Acoustics, Speech and Signal Process.*, pp.5632-5636, May 2013
5. S. Muramatsu, N. Aizawa and M. Yukawa: "Image Restoration with Union of Directional Orthonormal DWTs," *Proc. of APSIPA Annual Summit and Conf.*, Dec. 2012
6. S. Muramatsu: "SURE-LET Image Denoising with Multiple Directional LOTs," *Proc. of Picture Coding Symposium* , pp.229-232, May 2012
7. S. Muramatsu and D. Han: "Image Denoising with Union of Directional Orthonormal DWTs," *Proc. of IEEE Intl. Conf. on Acoustics, Speech and Signal Process.*, pp.1089-1092, 2012
8. S. Muramatsu, T. Kobayashi, D. Han and H. Kikuchi: "Design Method of Directional GenLOT with Trend Vanishing Moments," *Proc. of APSIPA Annual Summit and Conf.*, pp.692-701, Dec. 2010
9. S. Muramatsu and M. Hiki: "Block-Wise Implementation of Directional GenLOT," *Proc. of IEEE Intl. Conf. on Image Process.*, pp.3977-3980, Nov. 2009
10. S. Muramatsu and H. Watanabe: "Fast Algorithm for GMM-Based Pattern Classifier," *Proc. of IEEE Intl. Conf. on Acoustics, Speech and Signal Process.*, pp.633-636, Apr. 2009

Grants

1. “Learning-Based Design and Implementation of Non-separable Oversampled Lapped Transforms for Multidimensional Signal Restoration,” *JSPS Kakenhi*, Research Project No. 26420347, Apr. 2014 - Mar. 2017
2. “Design and Real-Time Implementation of 2-D Orthogonal Transforms with Trend Vanishing Moments for High-Functioning Image Representation,” *JSPS Kakenhi*, Research Project No. 23560443, Apr. 2011 - Mar. 2014
3. “Scalable Coding of Interlaced Videos for Retrieval and Editing,” *JSPS Kakenhi*, Research Project No. 14750283, Apr. 2002 - Mar. 2004
4. “Digital Signal Processing Architecture for Wavelet Transforms,” *JSPS Kakenhi*, Research Project No. 12750322, Apr. 2000 - Mar. 2002

Professional Activities

Membership

- Senior Member of the Institute of Electrical and Electronics Engineers, Inc. (IEEE)
 - Treasurer, Signal Processing Society Tokyo Joint Chapter, Since 2017
- Senior Member of the Institute of Electronics, Information and Communication Engineers (IEICE)
 - Vice-chair, Technical Group on Signal Processing, Since May 2016
- Member of the Asia-Pacific Signal and Information Processing Association (APSIPA)
- Member of the Institute of Image Information and Television Engineers (ITE)

Journal Editorship

- Editor, *Special Section of Selected Papers from the 18th Workshop on Circuits and Systems in Karuizawa*, IEICE Trans. on Fundamentals, 2005
- Associate Editor, *Special Section on Signal Processing on Irregular Sampling Grids*, IEICE Trans. on Fundamentals, 2016-2017
- Associate Editor, *Special Section on Recent Advances in Image Sampling and Reconstruction*, IEICE Trans. on Fundamentals, 2015-2016
- Associate Editor, IEICE Trans. on Fundamentals, 2009-2013
- Associate Editor, ITE Trans. on Media Technology and Applications, 2013
- Associate Editor, *Special Section on the Latest Advances in Fundamental Theories of Signal Processing*, IEICE Trans. on Fundamentals, 2008
- Associate Editor, *Special Section on Signal Processing*, IEICE Trans. on Fundamentals, 2007-2008
- Associate Editor, *Special Section on Signal Processing for Audio and Visual Systems and Its Implementations*, IEICE Trans. on Fundamentals, 2007
- Associate Editor, *Special Section on Papers Selected from the 21st Symposium on Signal Processing*, IEICE Trans. on Fundamentals, 2006-2007
- Associate Editor, *Special Section on Applications and Implementations of Digital Signal Processing*, IEICE Trans. on Fundamentals, 2003
- Associate Editor, *Special Section on Papers Selected from ITC-CSCC*, IEICE Trans. on Fundamentals, 2002-2003

- Associate Editor, *Special Section of Selected Papers from the 15th Workshop on Circuits and Systems in Karuizawa*, IEICE Trans. on Fundamentals, 2002
- Reviewer, IEEE Trans. on Signal Process.
- Reviewer, IEEE Trans. on Image Process.
- Reviewer, IEEE Signal Processing Letters
- Reviewer, IEEE Trans. on Circuits and Systems I
- Reviewer, IEEE Trans. on Circuits and Systems for Video Tech.
- Reviewer, Signal Processing, Elsevier
- Reviewer, Digital Signal Processing, Elsevier
- Reviewer, Journal of Computational and Applied Mathematics, Elsevier
- Reviewer, International Journal of Electronics and Communications, Elsevier
- Reviewer, APSIPA Trans. on Signal and Information Processing
- Reviewer, WSPC Journal of Circuits, Systems, and Computers
- Reviewer, IEICE Trans. on Fundamentals
- Reviewer, IEICE Trans. on Communications
- Reviewer, IEICE Trans. on Information and Systems
- Reviewer, ITE Trans. on Media Technology and Applications

Conference Program Committee

- ITC-CSCC TPC Co-chair, 2017
- IEEE 6th Global Conference on Consumer Electronics Organized Session Co-Chair: *Emerging Technologies for Image & Video Processing*, 2017
- APSIPA ASC Special Session Organizer: *Advanced Topics in Volumetric Image Processing*, 2015
- APSIPA ASC Special Session Organizer: *Recent Advances in Non-Linear and Multi-Dimensional Signal Processing*, 2014
- APSIPA ASC Special Session Organizer: *Recent Advances in Multirate Processing and Transforms*, 2013
- APSIPA ASC Special Session Organizer: *Recent Advances in Signal Representations - Filters, Transforms and Sparse Representations*, 2010
- IEEE ISPACS Special Session Organizer: *Advanced Wavelet Transforms and Their Applications*, 2009
- IEEE Pacific Rim Symposium on Image and Video Technology, 2007-2008
- IEEE International Symposium on Intelligent Signal Processing and Communication Systems 2006,2009

Advising

Takuma ISHIDA Ph.D, Niigata University, 23 Mar. 2006 (Primary advisor)

Dissertation: “*Scalable Video Coding with Invertible Sampling Lattice Conversion*”

Minoru HIKI Ph.D, Niigata University, 23 Mar. 2010 (Primary advisor)

Dissertation: “*A Study on a Motion-Compensated Spatiotemporal Non-Separable Filtering*”

Hidenori WATANABE Ph.D, Niigata University, 25 Mar. 2013 (Primary advisor)

Dissertation: “*Efficient Arithmetic of Gaussian Mixture Model for Pattern Recognition and Machine Learning*”

Zhiyu CHEN Ph.D, Niigata University, 24 Sep. 2015 (Primary advisor)

Dissertation: “*Image Restoration with Multiple Directional Transforms*”

Miscellaneous

- Contribution to MATLAB Central File Exchange

EmbVision Tutorial Tutorial documents of video streaming processing on MATLAB/Simulink for training beginners,

<http://www.mathworks.com/matlabcentral/fileexchange/52693-embvision-tutorial>, 2015

SaivDr Package System object definitions for sparsity-aware image and volume data restoration,

<http://www.mathworks.com/matlabcentral/fileexchange/45084-saivdr-package>, 2014

DirLOT Toolbox MATLAB class definitions for directional lapped orthogonal transforms,

<http://www.mathworks.com/matlabcentral/fileexchange/32603-dirLOT-toolbox>, 2011

Last updated: May 16, 2017