Biographical Sketch

Naoki Saito

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Education

B.Eng. (Mathematical Engineering) 1982, University of Tokyo, Japan.

M.Eng. (Mathematical Engineering) 1984, University of Tokyo, Japan.

Ph.D. (Applied Mathematics) 1994, Yale University.

Appointments

2019–present: Director, UC Davis TETRAPODS Institute of Data Science (UCD4IDS).

2019–present: Member, UC Davis Center for Data science and Artificial intelligence Research (CeDAR).

2016–present: Member, Faculty Advisory Group, UC Davis DataLab.

2001–present: Professor, Department of Mathematics, University of California, Davis.

2013–present Affiliated faculty member, Graduate Program in Electrical and Computer Engineering, University of California, Davis.

1997–present: Faculty member, Graduate Group in Applied Mathematics; Affiliated faculty member, Graduate Program in Statistics, University of California, Davis.

2007–2012: Chair, Graduate Group in Applied Mathematics, University of California, Davis.

1997–2001: Associate Professor, Department of Mathematics, University of California, Davis.

1994–97: Research Scientist, Schlumberger-Doll Research, Ridgefield, CT.

1986–94: Associate Research Scientist, Schlumberger-Doll Research, Ridgefield, CT.

1984–86: Software Development Engineer, Nippon Schlumberger K.K., Fuchinobe, Japan.

Field of Research

Applied and Computational Harmonic Analysis; Pattern Recognition and Feature Extraction; Statistical Signal and Image Processing; Laplacian Eigenvalue Problems; Human and Machine Perception; Geophysical Inverse Problems.

Honors received

Best Paper Award for the Wavelet Applications in Signal and Image Processing II, SPIE - The International Society for Optical Engineering, International Symposium, Jul. 1994.

The Henri G. Doll Award (The highest honor in the technical papers within the Schlumberger organization), Jun. 1997.

Senior Member, IEEE, Dec. 1999.

Office of Naval Research Young Investigator Award, Feb. 2000.

Presidential Early Career Award for Scientists and Engineers (PECASE), Oct. 2000.

Best Author Award from the Japan Society for Industrial and Applied Mathematics (JSIAM), Sep. 2016.

JSIAM Letters Best Paper Award (jointly with Jeff Irion) from the Japan Society for Industrial and Applied Mathematics (JSIAM), Sep. 2016.

Patents

N. Saito, N. N. Bennett, and R. Burridge, "Methods of Determining Dips and Azimuths of Fractures from Borehole Images," US Patent Number 5,960,371, Grant Date: 9/28/99.

T. S. Ramakrishnan, R. Ramamoorthy, N. Saito, and C. Flaum, "Method for Interpreting Carbonate Reservoirs," US Patent Number 6,088,656, Grant Date: 7/11/00, also UK Patent Number GB2346230, Grant Date: 12/19/00.

N. Saito, A. Rabaute, and T. S. Ramakrishnan, "Method for Interpreting Petrophysical Data," UK Patent Number GB2345776, Grant Date: 1/16/01.

K. Yamatani and N. Saito, "Data Compression/Decompression Method, Program, and Device," Japan Patent Number 4352110, Grant Date: 8/7/09. US Patent Number 8,059,903, Grant Date: 11/15/11.

Synergistic Activities

Served as Chair of SIAG/IS (term: Jan. 2014–Dec. 2015); served as Vice Chair of SIAG/IS (term: Jan. 2012–Dec. 2013).

Serving as a member of Editorial Board of the following journals: *Applied and Computational Harmonic Analysis* (since 2007); *Inverse Problems and Imaging* (since 2008); *Journal of Mathematical Imaging and Vision* (since 2014).

Five Relevant Publications

1. A. Cloninger, H. Li, and N. Saito, "Natural graph wavelet packet dictionaries," a part of "Topical Collection: Harmonic Analysis on Combinatorial Graphs," *Journal of Fourier Analysis and Applications*, vol. 27, Article #41, 2021.

2. J. Irion and N. Saito, "Efficient approximation and denoising of graph signals using the multiscale basis dictionaries," *IEEE Transactions on Signal and Information Processing over Networks*, vol. 3, no. 3, pp. 607–616, 2017.

3. N. Saito and Y. Shao, "eGHWT: The Extended Generalized Haar–Walsh Transform," *Journal of Mathematical Imaging and Vision*, vol. 64, no. 3, pp. 261–283, 2022.

4. N. Saito, "Data analysis and representation on a general domain using eigenfunctions of Laplacian," *Applied and Computational Harmonic Analysis*, vol. 25, no. 1, pp. 68–97, 2008.

5. K. Yamatani and N. Saito, "Improvement of DCT-based compression algorithms using Poisson's equation," *IEEE Trans. Image Processing*, vol. 15, no. 12, pp.3672–3689, 2006.

Five Additional Publications

1. N. Saito, R. R. Coifman, F. B. Geshwind, and F. Warner "Discriminant feature extraction using empirical probability density estimation and a local basis library," *Pattern Recognition*, vol. 35, pp. 2841–2852, 2002.

2. N. Saito, "Image approximation and modeling via least statistically-dependent bases," *Pattern Recognition*, vol. 34, no. 9, pp. 1765–1784, 2001.

3. N. Saito and R. R. Coifman, "Local discriminant bases and their applications," *Journal of Mathematical Imaging and Vision*, vol. 5, no. 4, pp.337–358, Invited paper, 1995.

4. N. Saito, "Simultaneous noise suppression and signal compression using a library of orthonormal bases and the minimum description length criterion," in *Wavelets in Geophysics* (E. Foufoula-Georgiou and P. Kumar, eds.), ch. XI, pp. 299–324, Academic Press, San Diego, CA, 1994.

5. N. Saito and G. Beylkin, "Multiresolution representations using the auto-correlation functions of compactly supported wavelets," *IEEE Transactions on Signal Processing*, vol. 41, pp. 3584–3590, 1993; Erratum: vol. 45, no. 3, p. 768, 1997.