

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

2007–: Chair, Graduate Group in Applied Mathematics, University of California, Davis.
2001–: Professor, Department of 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; 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.

Patents

N. Saito, N. N. Bennett, and R. Burrige, "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

Serving as a Vice Chair of the SIAM Activity Group on Imaging Science since 2012.

Serving as a member of Editorial Board of the journal *Inverse Problems and Imaging* since 2008.

Serving as a member of Editorial Advisory Board of the journal *Applied and Computational Harmonic Analysis* since 2007.

Co-organized five minisymposia International Congress of Industrial and Applied Mathematics (ICIAM), Vancouver, Jul. 2011; Zürich, Jul. 2007; SIAM Conference on Imaging Science, San Diego, Jul. 2008; IEEE Workshop on Statistical Signal Processing, Cardiff, Sep. 2009; Joint Mathematics Meetings, San Francisco, Jan. 2010.

Co-organized a week-long program “Laplacian eigenvalues and eigenfunctions: Theory, Computation, Application” at Institute for Pure and Applied Mathematics (IPAM), UCLA, Feb. 2009.

Co-Organized a semester-long program “Multiscale Geometry and Analysis in High Dimensions” at IPAM, UCLA, Fall 2004.

Five Relevant Publications

1. N. Saito and E. Woei, “On the phase transition phenomenon of graph Laplacian eigenfunctions on trees,” *RIMS Kokyuroku*, vol.1743, pp.77–90, 2011.
2. L. Lieu and N. Saito, “Signal ensemble classification using low-dimensional embeddings and Earth Mover’s Distance,” to appear in *Wavelets and Multiscale Analysis: Theory and Applications* (J. Cohen and A. Zayed, eds.), Birkhäuser, 2011.
3. N. Saito and E. Woei, “Analysis of neuronal dendrite patterns using eigenvalues of graph Laplacians,” *Japan SIAM Letters*, vol.1, pp.13–16, 2009. Invited Paper.
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.

List of collaborators within the last 48 months

Keita Ashizawa (Maizuru Nat. College of Tech., Japan), Jean-Marie Aubry (Weta Digital), Bertrand Bénichou (Gaz de France), Nicholas N. Bennett (Schlumberger), Gregory Beylkin (Univ. Colorado, Boulder), James Bremer, Jr. (UC Davis), Leo M. Chalupa (George Washington Univ.), Ronald R. Coifman (Yale), Julie Coombs (UC Davis), Lotfi Hermi (Univ. Arizona), Quyen Huynh (Naval Surface Warfare Center, Panama City, FL), Andrew Ishida (UC Davis), Brons Larson (Fugue Science Group), Jen-Jen Lin (Ming Chuan Univ., Taiwan), Hrushikesh Mhaskar (Cal State LA), Yuji Nakatsukasa (Univ. Manchester, UK), Bruno Olshausen (UC Berkeley), T. S. Ramakrishnan (Schlumberger), Jean-François Remy (Technicolor), Xiaoping Shen (Ohio Univ.), Thomas Strohmer (UC Davis), Yi Wang (Auburn University, Montgomery), Katsu Yamatani (Meijo Univ., Japan).

List of postdoctoral scholars sponsored and graduate students advised over the past five years

Postdoctoral scholars (completed): Xiaodong Xue, Linh Lieu, Zhihua Zhang (my career total: 6)

Ph.D. students (completed): Xiaodong Xue, Zhihua Zhang, Bradley Marchand (my career total: 7)

Current Ph.D. students: Ernest Woei

Current Postdoc: Ian Sammis

Thesis and postdoctoral advisors

B.Eng.,M.Eng.: Jin-ich Nagumo (deceased), Department of Mathematical Engineering and Information Physics, University of Tokyo.

Ph.D.: Ronald R. Coifman, Department of Mathematics, Yale University