Curriculum Vitae

Naoki Saito

Business Address:
Department of Mathematics
University of California
One Shields Avenue
Davis, CA 95616-8633
Voice: (530) 754-2121
Fax: (530) 752-6635
Email: nsaito@ucdavis.edu

Education

B.Eng. Department of Mathematical Engineering and Information Physics, University of Tokyo, 1982
Thesis Title: "Dynamical Pattern Formation and Computer Graphics"
Advisor: Jin-ichi Nagumo

M.Eng. Department of Mathematical Engineering and Information Physics, University of Tokyo, 1984
Thesis Title: "On the Behavior of Pulses on the Parallel Active Lines"
Advisor: Jin-ichi Nagumo

Ph.D. Department of Mathematics, Yale University, 1994
Thesis Title: "Local Feature Extraction and Its Applications Using a Library of Bases"
Advisor: Ronald R. Coifman

Appointments

2025–present: Distinguished Professor, Department of Mathematics, University of California, Davis.

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

2019–present: Member of Faculty Advisory Group, UC Davis DataLab.

2014–present: Faculty Member, Graduate Program in Electrical & Computer Engineering, University of California, Davis.

1997–present: Faculty Member, Graduate Program in Statistics, University of California, Davis.

1997–present: Faculty Member, Graduate Group in Applied Mathematics, University of California, Davis.

2001–2025: Professor, Department of Mathematics, University of California, Davis.

2019–2023: Member, UC Davis Center for Data science and Artificial intelligence Research (CeDAR).

2016–2019: Affiliated Faculty Member, The Data Science Initiative, University of California, Davis.

2007–2012: Chair, Graduate Group in Applied Mathematics (GGAM), 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.

Honors

Distinguished Professor, Department of Mathematics, UC Davis, 2025.

Election to *Life* Senior membership of IEEE, Aug. 2023.

2016 Best Author Award from the Japan Society for Industrial and Applied Mathematics (JSIAM) for the article "Applied Harmonic Analysis on Graphs and Networks," (in Japanese), *Bulletin of JSIAM*, vol.25, no.3, pp.6–15, 2015.

2016 Best Paper Award (jointly with Jeff Irion) from the Japan Society for Industrial and Applied Mathematics (JSIAM) for the article "Hierarchical graph Laplacian eigen transforms," *JSIAM Letters*, vol.6, pp.21–24, 2014.

Galois Service Award, UC Davis, 2012.

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

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

Election to Senior membership of IEEE, Dec. 1999.

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

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

Grants

Completed: "Fractographic Analysis of High-Cycle Fatigue in Aircraft Engines," Research Contract from SRI International as a part of US Air Force Office of Scientific Research, Contract No. F49620-98-C-0041, 10/01/98–12/31/99. Total Award Amount: $83,004.

Completed: "Signal Demixing Using Least Statistically-Dependent Bases and Related Techniques," Research Contract from Raytheon Corp., Tucson, AZ. Period: 03/01/00-2/28/01. Total Award Amount: $36,491.

Completed: "Probabilistic Modeling and Computational Methods in Environmental Statistics," (jointly with R. A. Levine and D. F. Layton), Statistics Program, NSF, and Environmental Research Program, EPA, Award No. DMS-9978321. Period: 09/15/99–08/31/02. Total Award Amount: $99,600.

Completed: "Efficient Description, Modeling, and Recognition of Natural Imagery via a Local Basis Library," Computational Mathematics Program, NSF, Award No. DMS-9973032. Period: 08/15/99–07/31/03. Total Award Amount: $70,100.

Completed: "Robust Object Signature Definition using Vector-Valued Sensor Data," ONR Young Investigator Award. N00014-00-1-0469. Period: 06/01/00-05/31/03. Total Award Amount: $300,000.

Completed: "Scientific Computing Research Environments for the Mathematical Sciences (SCREMS)," (jointly with A. Cheer, Z. Bai, E. G. Puckett, S. Shkoller), NSF, Award No. DMS-0079760. Period: 09/05/00-08/31/03. Total Award Amount: $199,993.

Completed: "Image Processing and Analysis on a Circular Domain," UC Davis Faculty Research Grant. Period: 07/01/03-06/30/04. Total Award Amount: $4,000.

Completed: "Polyharmonic Local Sine Transform and Its Applications in High-Dimensional Data Processing," Presidential Early Career Award for Scientists and Engineers (PECASE) extension to ONR Young Investigator Award. N00014-00-1-0469. Period: 06/01/03-12/31/05. Total Award Amount: $200,004.

Completed: "Scientific Computing Research Environments for the Mathematical Sciences(SCREMS)," (jointly with E. G. Puckett, E. Rains, J. De Loera, and Angela Cheer), NSF, Award No. DMS-0532308. Period: 09/15/05–12/31/06. Total Award Amount: $125,007.

Completed: "Training Program in Vision Science," (PI: J. S. Werner; I am one of the 20 preceptors), NIH, Award No. 5 T32 EY015387. Period: 09/30/03–08/31/08. Total Award Amount: $1,088,712.

Completed: "Object-Oriented Image Analysis and Synthesis using Computational Harmonic Analysis and Boundary Value Problems", NSF, Award No. DMS-0410406. Period: 08/01/04–07/31/08. Total Award Amount: $282,492.

Completed: "Analysis and Classification of High-Dimensional Patterns using Fast, Flexible, Adaptable, and Hierarchical Feature Extractors", ONR, Award No N00014-06-1-0615–N00014-07-1-0166. Period: 05/01/06–09/30/09. Total Award Amount: $326,489.

Completed: "A Tight Integration of Wavefield Simulation and Object Classification by Modern Computational Harmonic Analysis Techniques," (co-PI: J Bremer, Jr.), ONR, Award No. N00014-09-1-0318. Period: 01/01/09–12/31/11. Total Award Amount: $449,262.51.

Completed: "Enhancements and Improvements on the Local Discriminant Basis Algorithms for Sonar Waveform Classification," ONR, Award No. N00014-09-1-0041. Period: 10/01/08–09/30/12. Total Award Amount: $224,999.

Completed: "Training Program in Vision Science," (PI: J. S. Werner; I am one of the 22 preceptors), National Eye Institute (NEI) of the NIH, Award No. 5 T32 EY015387. Period: 09/01/08–08/31/13. Total Award Amount: $ 759,607.

Completed: "Vision Research Core Grant," (PI: J. S. Werner; I am one of the other significant contributors), NEI/NIH, Award No. P30 EY012576 Period: 07/01/04–06/30/14. Total amount: $3,686,119.

Completed: "Modern Computational Harmonic Analysis for Data Analysis, Modeling, and Simulation," (co-PI: J. Bremer, Jr.), ONR, Award No. N00014-12-1-0177. Period: 01/01/12–09/30/15. Total Award Amount: $450,000.

Completed: "Statistics in the 21st Century - Objects, Geometry and Computing," (PI: W. Polonik; I am serving as Senior Personnel), NSF, Award No. DMS-1148643. Period: 09/01/12–08/31/20. Total Award Amount: $2,066,115.

Completed: "Training Program in Vision Science," (PI: J. S. Werner; I am one of the 31 preceptors), National Eye Institute (NEI) of the NIH, Award No. 5 T32 EY015387. Period: 09/01/13–08/31/18. Total Award Amount: $1,486,089.

Completed: "Multiscale Basis Dictionaries and Best Bases for Data Analysis on Graphs and Networks," NSF, Award No. DMS-1418779. Period: 08/01/14–07/31/18. Total Award Amount: $475,000.

Completed: "Time-Frequency Feature Extraction from Nonstationary Multiple Time Series and Its Applications," ONR, Award No. N00014-16-1-2255. Period: 02/01/16–01/31/18. Total Award Amount: $150,000.

Completed: "NCS-FO: Probing the Functional Significance of Brain Oscillations through Closed-Loop Phase-Locked Stimulation," (PI: J. Ditterich; co-PIs: N. Saito and W. M. Usrey), NSF, Award No. IIS-1631329. Period: 09/01/16–08/31/21. Amount: $802,272.

Completed: "Needle in Haystack: Fetal Signal Isolation for Transabdominal Fetal Pulse Oximetry (TFO)," (PI: S. Ghiasi; co-PI: N. Saito, H. L. Hedriana, A. Wang, D. L. Farmer), UC Davis CeDAR Seed Grant, Period: 04/21/20–04/20/22. Total Amount: $40,000.

Completed: "Flexible and Sound Computational Harmonic Analysis Tools for Graphs and Networks," NSF, Award No. DMS-1912747, Period: 06/15/19–08/31/24. Total Amount: $400,000.

Completed: "HDR TRIPODS: UC Davis TETRAPODS Institute of Data Science," (co-PIs: A. Amenta, C.-N. Chuah, T. C. M. Lee), NSF, Award No. CCF-1934568, Period: 10/01/19–09/30/24. Total Amount: $1,500,000.

Completed: "Robust Feature Extraction from Acoustic Wavefields for Object Classification," ONR, Award No. N00014-20-1-2381, Period: 06/01/20–08/31/24, Total Amount: $390,000.

Pending: "III:Medium: Time-Series Explainability: From Theory to Practice," (PI: X. Liu; co-PIs: Z. Kong, N. Saito), NSF, Period: 04/01/25–03/31/29. Total Proposed Amount: $1,199,367.

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, Program, and Device," Japan Patent Number 4352110, Grant Date: 8/7/09. US Patent Number 8,059,903, Grant Date: 11/15/11.

Professional Expertise

Technical problem solving: Identifying and defining scientific problems, analyzing and interpreting data by integrating mathematical theory and computer experiments, and presenting results in an intuitive manner.

Interdisciplinary and collaborative strategy for research: Working with scientists and researchers in different disciplines (e.g., biology, medicine, geology, geophysics, defense industries, etc.), creating new ideas from different view points, and forming common threads among my collaborators.

Research interests and expertise: Applied and computational harmonic analysis; graph signal processing and analysis, statistical signal/image processing and analysis; feature extraction, pattern recognition, classification, and regression; data compression; elliptic PDEs, eigenvalue problems, boundary value problems, potential theory; geophysical inverse problems; human and machine perception (auditory and visual systems); computational neuroscience; data sonification.

Computer skills: Mathematical/scientific software development in C++, C, and Fortran; object oriented programming; high-level programming languages (Julia, MATLAB, R, and Wolfram Mathematica); Unix environment; scientific word processing systems (LaTeX).

Experiences and Service Activities

University of California, Davis, CA

Member–Ad hoc Committee for Applied Math Undergraduate Program (2025)

Member–Director Recruitment Advisory Committee for the Institute of Transportation Studies (2025)

Member–Chair Recruitment Advisory Committee for the Department of Physics & Astronomy (2025)

Chair–Building Management Committee for the Physical and Data Sciences Building (2024–present)

Chair–Academic Senate Library Committee (2023–2025)

Member–University Committee on Library and Scholarly Communication (2023–2025)

Member–Undergraduate Program Committee (2023–2024)

Member–Lecturer Search/Evaluation Committee (2022–2023)

SIAM Club Faculty Advisor (2022–2023)

Member–Project Implementation Committee for the Physical Sciences & Engineering Library Renovation 2020 Project (2020–2023)

Member–Faculty Advisory Group for UC Davis DataLab (2020–present)

Chair–Bylaws Subcommittee of Graduate Council (2019–2020)

Member–Graduate Council (2019–2020)

Member–Executive Project Advisory Committee for College of Letters and Science (2019–2024)

Member–Mondavi Center Administrative Advisory Committee (2018–2020, 2022–2025)

Organizer–Mathematics of Data and Decision at Davis (MADDD) Seminar (2019–2021, 2025)

Chair–Academic Senate Committee on Committees (2017–2018)

Member–University Committee on Committees (2017–2018)

Member–Statistics Faculty Search Committee (2009-2010, 2016–2017)

Member–Academic Senate Committee on Committees (2015–2017)

Member–Mathematics Regular Faculty Search Committee (2014–2015)

Member–Math Displays, Career and Other Events Committee (2015–2016)

Chair–Math Displays, Career and Other Events Committee (2012–2014)

Organizer–Joint Mathematics/Statistics Colloquium (2009–2020, 2022, 2023, 2025)

Member–Advisory Committee for the NEI Vision Science Training Grant (2008–2017)

Chair–Graduate Group in Applied Mathematics (2007–2012)

Member–Mathematics Departmental Awards Committee (2007–2008)

Proposal Reviewer–Academic Federation Research Grant Program: Innovative Developmental Awards (2007)

Chair–Mathematics Faculty Representative Committee (2006–2007)

Chair–Universe@UCDavis Initiative Search Committee (2006–2007)

Member–Steering Committee of Universe@UCDavis Initiative (2006–2012)

Representative on Scientific Computing Graduate Courses (2005–present)

Member–Undergraduate Program Committee's Subcommittee on MAT 129 (2005)

Chair–Ad hoc Committee on tenure promotion (2004)

Representative–CSE Retreat (2003, 2007)

Member–CSE Faculty Search Committee (2002–2003)

Internship coordinator–NSF VIGRE grant (2002–2007)

Member–GGAM Brochure Committee (2002)

Peer Reviewer–Teaching evaluation for promotion cases(2001, 2002, 2009, 2011, 2017)

Organizer–Applied & Computational Harmonic Analysis Reading Seminar (2001–present)

Member–NSF VIGRE Research Focus Group on Applied Computational Harmonic Analysis (2002–2004)

Organizer–Applied Mathematics Seminar (2001-2002, 2012, 2017)

Member–Departmental Library Representative (2001–2002, 2018–2019, 2023–2025)

Member–Executive Committee of the College of Letters and Science (2001–2004)

Member–Business Manager Search Committee (2001)

Chair–Mathematics Regular Faculty Search Committee (2000–2001)

Member–Executive Committee, Graduate Program in Statistics (2000–2004)

Member–Executive Committee, Graduate Group in Applied Mathematics (2000–2002, 2006–2007)

Proposal Reviewer–Gertrude Carter Cancer Research Program (2000)

Member–Advisory board of GAANN grant (2000–2012)

Member–Ad hoc committee on tenure promotion (1999, 2000)

Member–Undergraduate Program Committee's Subcommittee on MAT 22AB and MAT 121 (1999)

Member–Institute of Theoretical Dynamics Advisory Committee (1999–2002)

Member–Hiring Committee, Department of Geology (1999)

Graduate Advisors, Graduate Group in Applied Math (1999–2012)

Member–Computer Committee (2000–2002,2003–2004), assisting the department poster project

Chair–Computer Committee (1998–2000) and obtained $90K internal grant at UCD for Instructional Use of Computers

Member–Mathematics Faculty Representative Committee (1998–2000, 2002–2004, 2005–2006)

Graduate Advisors, Division of Statistics (1997–2002)

Schlumberger-Doll Research, Ridgefield, CT

Responsible for research on interpretation methodologies of complex and high volume geological and geophysical datasets for oil and gas reserve estimation.

Conducted research on wavelets and their applications to time-frequency analysis techniques, feature extraction, statistical pattern recognition, classification and regression.

Conducted research on seismic deconvolution, tomography, modeling and inversion.

Conducted research on image processing and analysis including image enhancement, noise removal, data compression, edge detection.

Transformed the research results to software packages and transferred them to the company's engineering centers.

Conducted research on object-oriented programming and scientific programming environment.

Wrote patent memoranda (filed to the US patent office).

Wrote over 20 company reports including five confidential ones.

Department of Mathematics, Yale University, New Haven, CT

Conducted basic research as *Assistance in Research* (1991–94, full and part time) on wavelets and other local basis functions and their applications to statistics and signal processing.

Nippon Schlumberger K.K., Fuchinobe, Japan

Developed seismic interpretation software for reservoir modeling systems using the local Radon transform.

Commercialized the above software and developed its graphical user-interface.

Supervised a junior engineer for 1.5 years.

Toshiba Research Laboratory, Kawasaki, Japan

Compared the performance of compilers including Fortran, APL, PL1, and Lisp, as a *summer intern* (1980).

Teaching Experience

University of California, Davis, CA

Taught MAT 17C "Calculus for Biology and Medicine" (2022, 2024).

Designed and taught the undergraduate topics course MAT 180 "Combinatorics and Geometry via Linear Algebra" (2025).

Designed and taught the undergraduate topics course MAT 180 "Invitation to Classical Analysis" (2019, 2024).

Taught MAT 21B "Integral Calculus" (2013, 2015, 2019, 2020)

Taught MAT 21D "Vector Analysis" (2018, 2023)

Composed and revised syllabus of MAT 207B "Methods of Applied Mathematics" and taught it (2013, 2015, 2018, 2025)

Taught MAT 271 "Applied and Computational Harmonic Analysis" (2006, 2010, 2014, 2016, 2018, 2023).

Designed and taught the graduate topics course MAT 280 "Harmonic Analysis on Graphs and Networks" (2012, 2019).

Taught MAT 129 "Fourier Analysis" (2006, 2010).

Taught MAT 21C "Calculus: Partial Derivatives and Series" (2006, 2008, 2009, 2011, 2014, 2016, 2017).

Revised syllabus of MAT 167 "Applied Linear Algebra" (2007, 2018).

Designed and taught the graduate topics course MAT 280 "Laplacian Eigenfunctions: Theory, Applications, and Computations" (2007).

Supervised one undergraduate student for independent research (2006–2007).

Composed syllabus of "Fourier Analysis" and helped turning this into a regular undergraduate course MAT 129 (2006).

Taught MAT 167 "Applied Linear Algebra" (2006, 2012, 2017).

Taught MAT 167 "Advanced Linear Algebra" (2004).

Composed syllabus of "Applied and Computational Harmonic Analysis" and helped turning this into a regular graduate course MAT 271 (2004).

Designed and taught the graduate course on MAT 280 "Computational Harmonic Analysis" (1999, 2002, 2004).

Revised syllabus of MAT 167 "Advanced Linear Algebra" (2003).

Reviewed syllabus of MAT 121 "Advanced Analysis for the Sciences" (2003).

Taught MAT 121 "Advanced Analysis for the Sciences" (2002).

Taught MAT 167 "Linear Algebra and Applications" (1999, 2002).

Taught and developed the material of the course MAT 229AB "Numerical Methods in Linear Algebra" including applications ranging from image processing to geophysical inverse problems (1997-98, 2000, 2002).

Taught MAT 22B "Differential Equations" (1998, 1999, 2001).

Taught MAT 132A "Introduction to Stochastic Processes" (2001).

Designed and taught the undergraduate course on MAT 180 "Fourier Analysis and Its Applications" (2000).

Taught MAT 128C "Numerical Analysis in Differential Equations" (2000).

Supervised 14 interns from Ecole Polytechnique, Paris (1996–present).

Supervised 18 undergraduate research projects (2002–present).

Schlumberger-Doll Research, Ridgefield, CT

Supervised five summer interns (M.S., Ph.D. students) for signal and image processing projects (1990–96).

Motoyawata Learning School, Ichikawa, Japan

Taught many high school students ranging from 7th to 12th grades as a *Teacher of mathematics* (1977–84, part time).

Consulting Experience

Consultation on computational harmonic analysis and their applications in different industries including Schlumberger, Lockheed Martin Corp., Raytheon, Fast Mathematical Algorithms and Hardware Corp., Plain Sight Systems, Inc., Code Fount, Inc., and TriCircle Company.

List of postdoctoral and graduate students supervised

Former postdoctoral researcher: Jean-Marie Aubry (now at Weta Digital, New Zealand), Xiaoping Shen (now at Ohio University), Katsu Yamatani (now at Meijo University, Japan), Linh Lieu, Zhihua Zhang (now at Shandong University, China), Ian Sammis (now at Google, CA), Stefan Schonsheck (now at CA Office of Energy Infrastructure Safety)

Former postgraduate researcher: Jean-François Remy (now at Roblox, Inc., CA),

Current Ph.D. students: Jared White (GGAM)

Former Ph.D. students: Lin Jen-Jen Chang (Stat; now at Ming Chuan Univ., Taiwan), Brons Larson (GGAM; now at Dell Technologies, San Diego, CA), Noel Smith (Math; now at Risk & Safety Solutions, UC Davis), Xiaodong Xue (GGAM; now at Kite Pharma, Belmont, MA), Jucheng Zhao (GGAM; now at Fannie Mae, Washington, DC), Zhihua Zhang (GGAM; now at Shandong Univ., China), Bradley Marchand (GGAM; now at Naval Surface Warfare Center, Panama City, FL), Ernest Woei (GGAM; now at Broncus Medical, San Jose, CA), Jeff Irion (GGAM; now at Zoox, Foster City, CA), Chelsea Weaver (Math; now at Amazon.com, Seattle, WA), Alex Berrian (GGAM; now at DSP Concepts, Santa Clara, CA), Maria Gonzalez (ECE; now at Caltrans, Oakland, CA), Yiqun Shao (GGAM; now at Meta Platforms, Inc., NYC), Haotian Li (GGAM; now at Meta Platforms, Inc., Menlo Park, CA), David Weber (GGAM; now at Delphi Research Group, Pittsburgh, PA), Eugene Shvarts (GGAM; now at Teleport, Inc., Miami, FL), Wai Ho Chak (GGAM; a postdoc at Dept. Neurology, UC Davis), Brian Knight (GGAM; TBD).

Ph.D. Qualifying Exam Committee: Toyoki Matsuzawa (MAE), Craig Johns (Stat), Todd Gable (Applied Science/Lawrence Livermore), Lin Jen-Jen Chang (Stat), Francisco Rueda (Civil Eng.), Youn-Sha Chan (GGAM), Phil Gullett (Civil Eng.), Brons Larson (GGAM), Stefano Berton (Civil Eng.), Xiajian Nie (Civil Eng.), Scott Beaver (GGAM), Phil Sallee (CS), Ruriko Yoshida (Math), Noel Smith (Math), Thomas Drumright (ECE), Michael Last (Stat), Jucheng Zhao (GGAM), Xiaodong Xue (GGAM), Raymond Guan (GGAM), Sarah Williams (GGAM), Ritesh Sood (ECE), Zhihua Zhang (GGAM), Michael Schneider (Physics), Jeremy Roberson (ECE), Nattapol Sitthimahachaikul (ECE), Dong Chen (Stat), Bradley Marchand (GGAM), Brandon Bozek (Physics), Matt Herman (GGAM), David Lagattuta (Physics), Li Zhang (ECE), Ernest Woei (GGAM), Huy-Dung Han (ECE), Randy Lai (Stat), Andreas Rueetschi (ECE), Khadar Shaik (ECE), Tim Wertz (Math), Andrew Bradshaw (Physics), Stephanie Chan (Stat), Saeed Bagheri (ECE), Chelsea Weaver (Math), Jeff Irion (GGAM), Ryan Halabi (GGAM), Shuyang Ling (GGAM), Cecilia Dao (Stat), Alex Berrian (GGAM), Eugene Shvarts (GGAM), Ben Schiffman (Math), David Weber (GGAM), Stella Dong (GGAM), Tynan Lazarus (Math), Erfan Nourbakhsh (Physics), Yiqun Shao (GGAM), Haotian Li (GGAM), Haolin Chen (GGAM), Haotian Sun (Math), Wai Ho Chak (GGAM), Begum Kasap (ECE), Tait Weicht (GGAM), Brian Knight (GGAM), Stefan Broecker (CS), Zhijie Wang (GGAM), Alexander Richardson (GGAM).

Ph.D. Qualifying Exam Committee Chair: Denis Grishin (GGAM), Wei Yu (GGAM), Jiadong Xu (GGAM), Pengchong Yan (GGAM), Yuji Nakatsukasa (GGAM), Arcade Tseng (GGAM), Mihaela Ifrim (Math), Tom Hunt (GGAM), Lawrence Austria (Math), Joohee Hong (GGAM), Wenjing Liao (GGAM), Lu Li (GGAM), Yang Li (Math), Zheqing Zhang (GGAM), Yunshen Zhou (GGAM), Ji Chen (GGAM), Chao-Ping Lin (GGAM), Zhongruo Wang (GGAM), Xingmei Lou (Stat), Shaofeng Deng (GGAM), Albie Sheng (GGAM), Russell Okino (Stat), Girish Kumar (GGAM), Xue Feng (GGAM), Yuan Ni (GGAM), Xuxing Chen (GGAM), Shizhou Xu (GGAM).

Ph.D. Dissertation Committee: Lin Jen-Jen Chang (Stat, 2000), Brons Larson (GGAM, 2002), Scott Beaver (GGAM, 2004), Denis Grishin (GGAM, 2004), Phil Sallee (CS, 2004), Ruriko Yoshida (Math, 2004), Stephane Lafon (Yale, 2004), Michael Last (Stat, 2005), Yoel Shkolnisky (Tel-Aviv, 2005), Arthur Szlam (Yale, 2006), Noel Smith (Math, 2006), Jucheng Zhao (GGAM, 2006), Wei Yu (GGAM-Stat, 2006), Jiadong Xu (GGAM, 2006), James Bremer (Yale, 2007), Xiaodong Xue (GGAM, 2007), Zhihua Zhang (GGAM, 2007), Raymond Guan (GGAM, 2008), Pengchong Yan (GGAM, 2008), Ritesh Sood (ECE, 2009), Matthew Herman (GGAM, 2009), Bradley Marchand (GGAM, 2010), Neta Rabin (Tel-Aviv, 2010), Blake Hunter (GGAM, 2011), Tom Hunt (GGAM, 2011), Yuji Nakatsukasa (GGAM, 2011), Arcade Tseng (GGAM, 2011), Ernest Woei (GGAM, 2012), Wenjing Liao (GGAM, 2013), Tim Wertz (Math, 2015), Jeff Irion (GGAM, 2015), Chelsea Weaver (Math, 2016), Shuyang Ling (GGAM, 2017), Alex Berrian (GGAM, 2018), Ron Levie (Tel-Aviv, 2018), Maria Gonzalez (ECE, 2018), Yang Li (Math, 2019), Yunshen Zhou (GGAM, 2019), Ji Chen (GGAM, 2020), Ben Schiffman (Math, 2020), Yiqun Shao (GGAM, 2020), Dmitry Shemetov (GGAM, 2021), Haotian Li (GGAM, 2021), Shitong Wei (Stat, 2021), David Weber (GGAM, 2021), Xingmei Lou (Stat, 2022), Eugene Shvarts (GGAM, 2023), Rui Hu (Stat, 2023), Wai Ho Chak (GGAM, 2023). Girish Kumar (GGAM, 2024), Yuan Ni (GGAM, 2024), Shizhou Xu (GGAM, 2024).

Current: Kyle Johnson (GGAM).

MS Thesis Committee: Sean Mullen (GGAM, 2002), Jeffrey Housman (GGAM, 2004), Peng Li (GGAM, 2004), Sarah Williams (GGAM, 2004), Ernest Woei (GGAM, 2007), Zeng Fung Liew (Stat, 2021).

Interns from Ecole Polytechnique: Matthieu Philip (1996), Mohamed Elyes Ben Rayana (1998), Kilani Ben Romdhane (1998), Loïc Amans (1999), Mehdi Charfi (1999), Bertrand Bénichou (2000), Vincent Dandieu (2000), Olivier LeBorne (2001), Jean-François Remy (2001), Laurent Leconte (2002), Franck Nicolas (2002), David Nicault (2003), Jimena Royo Letilier (2008), Julien van Hout (2010), Adrien Hoarau (2011), Vincent Bodin (2013).

Service to the Profession

Served as an extramural reviewer of a full professor promotion case at Univ. Montreal, Canada, May 2025.

Served as an extramural reviewer of a full professor promotion case at Technion, Israel, May 2024.

Served as an extramural reviewer of a tenure promotion case at Harvard Medical School, Feb. 2024.

Served as an extramural reviewer of a tenure promotion case at Univ. Minnesota, Sep. 2023.

Served as an NSF Review Panelist, Feb. 2023; Apr. 2019; Apr. 2016; Mar. 2013; Feb. 2008; Sep. 2005;

Served as an extramural reviewer of a tenure promotion case at Hebrew Univ., Israel, Mar. 2021.

Served as an extramural reviewer of tenure promotion cases at UC San Diego, Nov. 2020; Oct. 2024.

Served as an extramural reviewer of a tenure promotion case at Univ. Montreal, Canada, May 2020.

Invited to the National Academies Keck Futures Initiative (NAKFI) conference "Beyond Boundaries: 15 Years of Exploring Intersections in Science, Engineering, and Medicine," Irvine, CA, 11/08/17–11/11/17.

Program Committee, SPIE Conference on Wavelets and Sparsity XVII, 2016–2017.

Served as an extramural reviewer of a full professor promotion case at Tel-Aviv Univ., Israel, Aug. 2017.

Program Committee, SPIE Conference on Wavelets and Sparsity XVI, Aug. 2015.

Served as a main organizer of the 5-day workshop on "Laplacians and Heat Kernels: Theory and Applications," at the Banff International Research Station (BIRS), Mar. 2015.

Invited to the National Academies Keck Futures Initiative (NAKFI) conference "Collective Behavior: From Cells to Societies," Irvine, CA, 11/13/14–11/15/14.

Member of the Editorial Board of *Journal of Mathematical Imaging and Vision* (2014 – present).

Served as Chair of the SIAM Activity Group on Imaging Science (Jan. 2014 – Dec. 2015).

Delivered a tutorial on "Harmonic Analysis on and of Irregular Domains, Graphs, and Networks" at the IEEE Workshop on Statistical Signal Processing, Gold Coast, Australia, Jun. 2014

Served as a co-organizer of the AMS Special Session on "Applied Harmonic Analysis: Large Data Sets, Signal Processing, and Inverse Problems," at Joint Mathematics Meetings, Baltimore, MD, 01/15/14–01/16/14.

Served as Chair of the SIAM Imaging Science Prize Committee, 2013.

Served as a co-organizer of the minisymposium "Laplacian Spectra for Shape Optimization, Classification, Recognition, and Beyond," SIAM Annual Meeting, San Diego, CA, Jul. 2013.

Served as an extramural reviewer of a full professor promotion case at Princeton Univ. (2013).

Served as an extramural reviewer of a full professor promotion case at Univ. Colorado at Boulder (2013).

Served as an extramural reviewer of a tenure promotion case at Weizmann Institute of Science, Israel (2012).

Served as an extramural reviewer of a tenure promotion case at Bar-Ilan Univ., Israel (2012).

Served as Vice Chair of the SIAM Activity Group on Imaging Science (Jan. 2012 – Dec. 2013).

Served as an extramural reviewer of two full professor promotion cases at Georgia Institute of Technology (2011).

Organized the minisymposium "Harmonic Analysis on Graphs and Networks: Theory and Applications" at International Congress on Industrial and Applied Mathematics (ICIAM), Vancouver, Canada, July 2011.

Invited to the National Academies Keck Futures Initiative (NAKFI) conference: "Seeing the Future with Imaging Science," Irvine, CA, 11/17/10–11/19/10.

Served as an organizer for the IPAM Reunion Conference on "Mathematics of Knowledge and Search Engines," Lake Arrowhead, 06/06/10–06/11/10.

Served as a proposal reviewer for the Israel Science Foundation (2010, 2021).

Served as an extramural reviewer of a full professor appointment case at Duke University (2010).

Served as a chair of the organizing committee of the AMS Special Session on "The Mathematics of Information and Knowledge," at Joint Mathematics Meetings, San Francisco, 01/14/10–01/15/10.

Served as a member of the nominating committee for the SIAM Activity Group on Imaging Science (2009)

Served as an extramural reviewer of a full professor promotion case at UC Berkeley (2009).

Served as an extramural reviewer of a tenure promotion case at Auburn University at Montgomery, AL (2009).

Served as a co-organizer of the special session "Kernel Methods in Data Analysis," at IEEE Workshop on Statistical Signal Processing, Cardiff, Wales, UK, Sep. 2009.

Member of the Editorial Board of *Inverse Problems and Imaging* (2008 – present).

Served as a proposal reviewer for the US-Israel Binational Science Foundation (2009, 2011, 2013).

Served as a co-organizer of the short program "Laplacian Eigenvalues and Eigenfunctions: Theory, Computation, Application," at Institute for Pure & Applied Mathematics, UCLA, 02/09/09–02/13/09.

Served as a co-organizer of the minisymposium "Laplacian Eigenfunctions and Applications in Image Science," 4th SIAM Imaging Science Conf., San Diego, CA, Jul. 2008.

Member of the Editorial Advisory Board of *Applied and Computational Harmonic Analysis* (2007 – present).

Program Committee, SPIE Conference on Wavelets XII, Aug. 2007.

Organized the minisymposium "Laplacian Eigenfunctions and Their Applications" at International Congress on Industrial and Applied Mathematics (ICIAM), Zürich, Switzerland, July 2007.

Served as an extramural reviewer of a tenure promotion case at Ohio University (2007).

Served as an extramural reviewer of a tenure promotion case at Georgia Institute of Technology (2007).

Program Committee, SPIE Conference on Wavelets XI, Aug. 2005.

Served as a reviewer of NSF proposals (one proposal in 2000-2001, three proposals in 1999-2000, one proposal in 2002-2003, two proposals in 2003-2004, three proposals in 2004-2005, 11 proposals in 2005 as a panelist, 7 proposals in 2008 as a panelist, 11 proposals in 2013 as a panelist, 8 proposals in 2016 as a panelist, 9 proposals in 2019 as a panelist, 8 proposals in 2023 as a panelist).

Served as a reviewer of NSERC (Canadian NSF) proposal (2005).

Served as an extramural reviewer of a tenure promotion case at Georgia Institute of Technology (2005).

Served as an extramural reviewer of a tenure promotion case at Univ. of California, Riverside (2005).

Served as an organizer of the special long-term program "Multiscale Geometry and Analysis in High Dimensions" at Institute for Pure & Applied Mathematics, UCLA, 09/07/04–12/17/04.

Chair, Organizing Committee, Workshop on "Multiscale Structures in the Analysis of High-Dimensional Data," Oct. 2004, IPAM. This is the highest rated (by the participants) workshop in the history of IPAM so far.

Member, Organizing Committee, Workshop on "Multiscale Geometry in Image Processing and Coding," Sep. 2004, IPAM.

Member, Organizing Committee, Mini-Workshop on "Bandlimited Functions, PSWFs, and High Order Methods," Nov. 2004, IPAM.

Tutorial Speaker at IPAM Program, Sep. 2004.

Served as an extramural reviewer of a tenure promotion case at Univ. of Colorado at Boulder (2004).

Participated in the invitation-only symposium "Frontiers of Science," organized by the National Academy of Sciences, Nov. 2003.

Session Chairperson at Wavelets and Statistics Conference, Sep. 2003.

Session Chairperson at SPIE Conference on Wavelets X, Aug. 2003.

Program Committee, SPIE Conference on Wavelets X, Aug. 2003.

Participated in the invitation-only workshop on "Approaches to Combat Terrorism: Opportunities for Basic Research," co-organized by NSF and US Intelligence Community, Nov. 2002.

Served as an extramural reviewer of a tenure promotion case at Boston Univ. (2002).

Session Chairperson at SPIE Conference on Wavelets IX, Jul. 2001.

Program Committee, SPIE Conference on Wavelets IX, Jul. 2001.

Session Chairperson at 2nd International Symposium on Frontiers of Time Series Modeling: Nonparametric Approach to Knowledge Discovery, Nara, Japan, Dec. 2000.

Session Chairperson at SPIE Conference on Wavelet Applications in Signal and Image Processing VIII, Jul. 2000.

Program Committee, SPIE Conference on Wavelet Applications in Signal and Image Processing VIII, Jul. 2000.

Session Chairperson at SPIE Conference on Wavelet Applications in Signal and Image Processing VII, Jul. 1999.

Session Chairperson at SPIE Conference on Wavelet Applications in Signal and Image Processing VI, Jul. 1998.

Program Committee, SPIE Conference on Wavelet Applications in Signal and Image Processing VI, Jul. 1998.

Served as a reference for several academic and industrial job seekers (1998-present).

Session Chairperson on "Advances in Wavelet Transform Applications in Geophysics III," American Geophysical Union 1997 Fall Meeting, San Francisco, Dec. 1997.

Served frequently as a referee to many scientific journals including:

- Advances in Computational Mathematics
- Annals of the Institute of Statistical Mathematics
- Applied and Computational Harmonic Analysis
- Computational Statistics and Data Analysis
- EURASIP Journal on Advances in Signal Processing
- Experimental Mathematics
- Geophysics
- Geophysical Research Letters
- IEEE Signal Processing Letters
- IEEE Trans. on Image Processing
- IEEE Trans. on Information Theory
- IEEE Trans. on Medical Imaging
- IEEE Trans. on Signal Processing
- IEEE Trans. on Speech and Audio Processing
- IEEE Trans. on Pattern Analysis and Machine Intelligence
- Information and Inference: A Journal of the IMA
- Involve - A Journal of Mathematics
- Japanese Journal of Applied Statistics
- Journal of Approximation Theory
- Journal of Computational and Graphical Statistics
- Journal of Computational Neuroscience
- Journal of Computer Methods in Applied Mechanics and Engineering
- Journal of Fourier Analysis and Applications
- Journal of Geophysical Research
- Journal of Machine Learning Research
- Journal of Mathematical Imaging and Vision
- Journal of Physics A: Mathematical and Theoretical
- Journal of the Royal Statistical Society, Series B
- Linear Algebra and its Applications
- Optical Engineering
- Pattern Recognition
- Proceedings of the National Academy of Sciences
- Proceedings of the Royal Society of London, Series A
- SIAM Journal on Numerical Analysis
- SIAM Review
- Signal Processing

Service to the Community

Served as Treasurer of Port of Sacramento Japanese School, Oct. 2000–Sep. 2001.

Memberships

Institute of Electrical and Electronics Engineers (IEEE)

Institute of Mathematical Statistics (IMS)

Society for Industrial and Applied Mathematics (SIAM)

Japan Society for Industrial and Applied Mathematics (JSIAM)

Visiting Positions

The Fondation des Treilles, Tourtour, France, Nov. 2026.

Centre Sciences des Données, École Normale Supérieure (Ulm), Paris, France, Oct. 2021–Jan. 2022.

Institute for Pure and Applied Mathematics (IPAM), UCLA, Sep.–Dec. 2007.

Mathematical Science Research Institute (MSRI), Berkeley, Jan.–May 2005.

Institute for Pure and Applied Mathematics (IPAM), UCLA, Sep.–Dec. 2004.

Department of Mathematics, KTH (Royal Institute of Technology), Stockholm, Sweden, Sep.–Oct. 1998.

Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, Aug. 1998.

Conferences and Meetings

Over 245 presentations at national and international conferences, workshops, and seminars including International Congress of Industrial and Applied Mathematicians, Foundations of Computational Mathematics, Joint Mathematics Meetings, Joint Statistical Meetings, IEEE International Conference on Acoustics, Speech, and Signal Processing, SIAM Annual Meeting, SIAM Conference on Imaging Science.

Invited Lectures

Faculty Research Seminar, Dept. Math., UC Davis, May 2025.

Plenary speaker, 8th Graph Signal Processing Workshop, Montréal, Canada, May 2025.

2025 UC Davis Graduate Group in Applied Mathematics Mini-Conference, Davis, CA, Mar. 2025.

2024 UC Davis Peter Hall Conference: Statistics in the Age of AI, Davis, CA, Nov. 2024.

Minisymposium on "Structure-Informed Machine Learning for Imaging and Physical Science," SIAM Conference on Imaging Science, Atlanta, GA, May 2024.

Applied Mathematics Seminar (virtual), Department of Mathematics & Statistics, Florida Intern. Univ., Miami, FL, Apr. 2024.

AMS Special Session on "Geometry and Topology of High-Dimensional Biomedical Data," Joint Mathematics Meeting, San Francisco, CA, Jan. 2024.

Workshop on "Linear Algebraic Graph Theory," Hiroshima Univ., Japan, Sep. 2023.

Minisymposium on "Recent Advances on Multiscale Transforms for Image Analysis," International Congress on Industrial and Applied Mathematics (ICIAM), Tokyo, Japan, Aug. 2023.

Special Session on "Machine Learning and Signal Processing on Graphs and Manifolds," Sampling Theory and Applications (SampTA) Conference, Yale Univ., Jul. 2023.

Workshop on "Foundations of Numerical PDEs," Foundations of Computational Mathematics (FoCM) 2023 Conference, Paris, France, Jun. 2023.

Workshop on "A Multiscale Tour of Harmonic Analysis and Machine Learning Celebrating Stéphane Mallat's 60th Anniversary," Institut des Hautes Études Scientifiques (IHES), Bures-sur-Yvette, France, Apr. 2023.

Applied Mathematics Seminar, Department of Mathematics, Yale Univ., Nov. 2023.

NSF Harnessing Data Revolution (HDR) PI Meeting, Alexandria, VA, Oct. 2022

ONR MCM Virtual Program Review, Applied Research Laboratory, Penn State Univ., State College, PA, Oct. 2022.

Minisymposium on "Geometry of Data: from Manifolds to Graphs," SIAM Conference on Mathematics of Data Science, San Diego, CA, Sep. 2022.

Mathematics & Informatics Center Seminar, Univ. Tokyo, Japan, Aug. 2022.

Workshop on Manifold and Graph-based Learning, the Fields Institute, Toronto, Canada, May 2022.

Faculty Research Seminar (Virtual), Dept. Math., UC Davis, Jan. 2022.

Séminaire Cristollien d'Analyse Multifractale, Université Paris-Est - Créteil Val-de-Marne, France, Dec. 2021.

Seminar, Schlumberger Riboud Product Center, Clamart, France, Nov. 2021.

Data Seminar, Centre Sciences des Données, École Normale Supérieure (Ulm), Paris, France, Nov. 2021.

ONR MCM Virtual Program Review, Arlington, VA / Panama City, FL, Nov. 2021.

Codes and Expansion (CodEx) Seminar (Virtual), A pan-university, remote seminar on the theory and applications of harmonic analysis, combinatorics, and algebra, Sep. 2021.

Colloquium (Virtual), Department of Computational Mathematics, Science and Engineering, Michigan State Univ., East Lansing, MI, Dec. 2020.

Data Science Seminar (Virtual), Institute for Mathematics and its Applications (IMA), Minneapolis, MN, Nov. 2020.

ONR MCM Virtual Program Review, Arlington, VA / Panama City, FL, Oct. 2020.

Special lectures, Collaborative Workshop on "Time-Frequency Frames and Applications in Image Processing," Research Institute for Mathematical Sciences (RIMS), Kyoto, Japan (Virtual), Oct. 2020.

Special lecture, Wavelets Session, Annual Meeting of Japan Society for Industrial and Applied Mathematics (Virtual), Sep. 2020.

Minisymposium on "Multiscale Data Science Inspired by Biological and Physical Systems," SIAM Annual Meeting (Virtual), Jul. 2020.

Minisymposium on "Distance Metrics and Mass Transfer Between High Dimensional Point Clouds," International Congress on Industrial and Applied Mathematics (ICIAM), Valencia, Spain, Jul. 2019.

Plenary speaker, 4th Graph Signal Processing Workshop, Minneapolis, MN, Jun. 2019.

Keynote speaker, 23rd Annual Spring Conference of California Mathematics Council Community Colleges (CMC^3), South Lake Tahoe, Apr. 2019.

Data Institute SF Annual Conference, San Francisco, Mar. 2019.

Seminar, Department of Statistics, UC Davis, Mar. 2019.

Applied Functional Analysis Group Seminar, Technische Universtät Berlin, Jun. 2018.

Plenary speaker, 7th International Conference on Computational Harmonic Analysis, Vanderbilt Univ., May 2018.

Interdisciplinary Distinguished Seminar, ECE Department, North Carolina State Univ., Feb. 2018.

Applied Mathematics Seminar, Department of Mathematics, Yale Univ., Dec. 2017.

Minisymposium on "Graph Laplacians, Spectral Graph Theory, and Applications," SIAM Conference on Analysis of PDEs, Baltimore, MD, Dec. 2017.

Applied Mathematics Seminar, Department of Mathematics, Stanford Univ., Nov. 2017.

Special lecture, Wavelets Session, Annual Meeting of Japan Society for Industrial and Applied Mathematics, Tokyo, Japan, Sep. 2017.

Applied Mathematics Seminar, Naval Postgraduate School, Monterey, CA, Jul. 2017.

Statistics Symposium on Geometry, Statistics, and Data Analysis, UC Davis, May 2017.

Graduate Group in Applied Mathematics (GGAM) Colloquium, UC Davis, Apr. 2017.

Dagstuhl Seminar on Inpainting-Based Image Compression, Schloss Dagstuhl, Germany, Nov. 2016.

BIRS-CMS Workshop on Harmonic Analysis, Big Data, Signal Processing, Oaxaca, Mexico, Oct. 2016.

Data Science Initiative Talk, UC Davis, Jun. 2016.

Applied Mathematics & PDE Seminar, UC Davis, May 2016.

Invited talk, Workshop on Harmonic Analysis, Graphs and Learning, Hausdorff Research Institute for Mathematics, Univ. Bonn, Germany, Mar. 2016.

SIAM minisymposium on "Trends in the Mathematics of Signal Processing and Imaging," Joint Mathematics Meeting, Seattle, WA, Jan. 2016.

Scientific and Statistical Computing Seminar, Univ. Chicago, Nov. 2015.

Applied Mathematics Seminar, Yale Univ., Nov. 2015.

Two special lectures, Wavelets Session, Annual Meeting of Japan Society for Industrial and Applied Mathematics, Kanazawa, Japan, Sep. 2015.

Invited talk, Oberwolfach Workshop on "Applied Harmonic Analysis and Sparse Approximation," Aug. 2015.

Keynote address, SPIE conference on Wavelets and Sparsity XVI, San Diego, Aug. 2015.

Colloquium, Department of Statistics, UC Davis, May 2015.

Workshop on "Laplacians and Heat Kernels: Theory and Applications," Banff International Research Station (BIRS), Canada, Mar. 2015.

Analysis and PDE Seminar, Department of Mathematics, UC Berkeley, Dec. 2014.

Wavelets Session, Annual Meeting of Japan Society for Industrial and Applied Mathematics, Tokyo, Japan, Sep. 2014.

Special intensive lecture series at Tokyo University of Agriculture and Technology, Japan, Aug. 2014.

Workshop on "Topology and Geometry of Networks and Discrete Metric Spaces," Institute for Mathematics & Its Applications (IMA), Minneapolis, MN, May 2014.

Special Session on "Applied Harmonic Analysis: Large Data Sets, Signal Processing, and Inverse Problems," Joint Mathematics Meeting, Baltimore, DE, Jan. 2014.

ONR PI Meeting, Duke Univ., Durham, NC, Sep. 2013.

Wavelets Session, Annual Meeting of Japan Society for Industrial and Applied Mathematics, Fukuoka, Japan, Sep. 2013.

Imaging Measurement Workshop, National Institute for Fusion Science, Toki-shi, Gifu-ken, Japan, Sep. 2013.

Special Lecture on Laplacian eigenfunctions at the Graduate University for Advanced Studies/National Institute for Fusion Science, Toki-shi, Gifu-ken, Japan, Sep. 2013.

Minisymposium on "Laplacian Spectra for Shape Optimization, Classification, Recognition, and Beyond," SIAM Annual Meeting, San Diego, CA, Jul. 2013.

Workshop on "Mathematical Analysis of Inverse Problems in Imaging Science," Tokyo, Japan, Dec. 2012.

AMS Sectional Meeting, Special Session on "The Ubiquitous Laplacian: Theory, Applications, and Computations, " Univ. Arizona, Tucson, AZ, Oct. 2012.

Minisymposium on "Shape Optimization Problems Involving Eigenvalues," SIAM Annual Meeting, Minneapolis, MN, Jul. 2012.

Oberwolfach Workshop on "Applied Harmonic Analysis and Sparse Approximation," Jun. 2012.

Plenary talk, Wavelets Session, Spring Meeting of Japan Society for Industrial and Applied Mathematics, Hakata, Japan, Mar. 2012.

Special Seminar, National Institute for Basic Biology, Okazaki, Japan, Mar. 2012.

Imaging Science Symposium and Bioimaging Forum, National Institute for Basic Biology, Okazaki, Japan, Mar. 2012

Workshop on "Large Scale Multimedia Search," IPAM, UCLA, Jan. 2012.

Colloquium, Department of Applied Mathematics, Univ. Waterloo, Canada, Oct. 2011.

Colloquium, Department of Mathematics, Univ. Arizona, Tucson, AZ, May 2011.

Workshop on "Sampling and Reconstruction: Applications and Advances," Banff International Research Station (BIRS), Canada, Dec. 2010.

Workshop on "Recent development and scientific applications in wavelet analysis," Research Institute for Mathematical Sciences (RIMS), Kyoto, Japan, Oct. 2010.

Wavelets Session, Annual Meeting of Japan Society for Industrial and Applied Mathematics, Tokyo, Japan, Sep. 2010.

Symposium on Geometry Processing 2010, Lyon, France, Jul. 2010.

IPAM-Mathematics of Knowledge and Search Engines Reunion Conference II, Lake Arrowhead, CA, Jun. 2010.

Minisymposium on "Local Scales: Theory and Applications," 5th SIAM Imaging Science Conf., Chicago, IL, Apr. 2010.

Minisymposium on "Surveillance and Security Imaging," 5th SIAM Imaging Science Conf., Chicago, IL, Apr. 2010.

Minisymposium on "Diffusion Geometry/Approximation on Manifolds," 13th Approximation Theory Conference, San Antonio, TX, Mar. 2010.

SIAM Minisymposium on "New Trends in Mathematical Methods in Imaging Science," Joint Mathematics Meetings, San Francisco, CA, Jan. 2010.

Colloquium, Department of Statistics, UC Davis, Nov. 2009.

15th IEEE Workshop on Statistical Signal Processing, Cardiff, Wales, UK, Sep. 2009.

Oberwolfach Workshop on "Challenges in Statistical Theory: Complex Data Structures and Algorithmic Optimization," Aug. 2009.

Special lecture, Department of Mathematical Engineering and Information Physics, University of Tokyo, Jul. 2009.

Plenary talk, 20 Years of Wavelets, DePaul Univ., Chicago, May 2009.

Applied Mathematics Seminar, Department of Mathematics, Stanford Univ., May 2009.

Invited Seminar, Japan Geoscience Institute (JGI), Inc., Tokyo, Japan, Mar. 2009.

Plenary talk, Wavelets Session, Spring Meeting of Japan Society for Industrial and Applied Mathematics, Kyoto, Japan, Mar. 2009.

Workshop on "Laplacian Eigenvalues and Eigenfunctions: Theory, Computation, Application," IPAM, UCLA, Feb. 2009.

Minisymposium on "Laplacian Eigenfunctions and Applications in Image Science," 4th SIAM Imaging Science Conf., San Diego, CA, Jul. 2008.

Minisymposium on "Recent Developments in Underwater Imaging," 4th SIAM Imaging Science Conf., San Diego, CA, Jul. 2008.

TUS International Collaboration Workshop, Tokyo University of Science, Japan, Mar. 2008.

Plenary talk, Wavelets Session, Spring Meeting of Japan Society for Industrial and Applied Mathematics, Tokyo, Japan, Mar. 2008.

Colloquium, Department of Mathematics, Auburn University at Montgomery, AL, Feb. 2008.

IPAM-Mathematics of Knowledge and Search Engines Culminating Conference, Lake Arrowhead, CA, Dec. 2007.

Minisymposium on "Laplacian Eigenfunctions and Their Applications" at International Congress on Industrial and Applied Mathematics (ICIAM), Zürich, Switzerland, Jul. 2007.

IPAM-Multiscale Geometry and Analysis Reunion Conference II, Lake Arrowhead, CA, Jun. 2007.

Workshop on "Image Processing for Random Shapes: Applications to Brain Mapping, Geophysics and Astrophysics," IPAM, UCLA, May 2007.

Workshop on Mathematics of Visual Analysis, MSRI, Berkeley, Oct. 2006.

Applied & Computational Math Seminar, Georgia Tech, Sep. 2006.

Seminar, Naval Surface Warfare Center, Panama City, FL, Sep. 2006.

Seminar, Schlumberger-Doll Research, Ridgefield, CT, Sep. 2006.

Applied Mathematics Seminar, Yale Univ., Sep. 2006.

IPAM-Multiscale Geometry and Analysis Reunion Conference, Lake Arrowhead, CA, Jun. 2006.

Minisymposium on "Recent Developments in Total Variation Based Models," 3rd SIAM Imaging Science Conf., Minneapolis, MN, May 2006.

Applied Math Colloquium, UCLA, Mar. 2006.

Applied Math Seminar, UC Davis, Mar. 2006.

International Workshop on Ecological Informatics for Chaotic and Complex Systems, Tokyo University of Agriculture and Technology, Fuchu, Japan, Mar. 2006.

Seminar, Schlumberger K. K., Fuchinobe, Japan, Feb. 2006.

Mathematical Biology Seminar, UC Davis, Dec. 2005.

Annual Meeting of Japan Society for Industrial and Applied Mathematics, Sendai, Japan, Sep. 2005.

Colloquium, Dept. of Systems Engineering, Shizuoka Univ., Hamamatsu, Japan, Sep. 2005.

Seminar, Schlumberger-Ribaud Product Center, Clamart, France, Jul. 2005.

Sparse Representations in Redundant Systems Workshop, Center for Scientific Computation and Mathematical Modeling, Univ. Maryland, College Park, May 2005.

Colloquium, Department of Statistics, UC Davis, Oct. 2004.

Multiscale Geometry in Image Processing and Coding Workshop, Institute for Pure and Applied Mathematics, UCLA, Sep. 2004.

Computational Harmonic Analysis and Image Analysis Workshop, Tokyo Metropolitan University, Jul. 2004.

Keynote speaker, 2nd International Conference on Computational Harmonic Analysis, Vanderbilt Univ., May 2004.

Applied Mathematics Seminar, Yale Univ., Mar. 2004.

37th Asilomar Conference on Signals, Systems, and Computers, Nov. 2003.

"Wavelets and Statistics" conference, Grenoble, France, Sep. 2003.

Seminar, Université de Paris XII, Creteil, France, Sep. 2003.

ONR Image Processing Thrust Workshop, Univ. Minnesota, May 2003.

Seminar, Schlumberger K. K., Fuchinobe, Japan, Jan. 2003.

Colloquium, Tokyo University of Agriculture and Technology, Jan. 2003.

Minisymposium on "Wavelets and Image Processing," 1st SIAM Conference on Imaging Science, Boston, Mar. 2002.

Colloquium, Mathematics and Computer Science Department, Univ. Nevada, Reno, Dec. 2001.

Colloquium, Mathematics and Statistics Department, CSU Sacramento, Nov. 2001.

Neyman Seminar, Statistics Department, UC Berkeley, Oct. 2001.

Joint Statistical Meeting, Bayesian Statistics Section, Atlanta, Aug. 2001.

SIAM Annual Meeting, San Diego, Jul. 2001.

MSRI Summer Graduate Program "Modern Signal Processing," Berkeley, CA, Jun. 2001.

Sacramento Statistical Association Annual Meeting, Sacramento, Apr. 2001.

2nd Bay Area Scientific Computing Day, Livermore, CA, Feb. 2001.

2nd International Symposium on Frontiers of Time Series Modeling: Nonparametric Approach to Knowledge Discovery, Nara, Japan, Dec. 2000.

Colloquium, Department of Statistics, UC Davis, Oct. 2000.

American Mathematical Society Meeting, Special Session on Computational Wavelet Analysis, Toronto, Canada, Sep. 2000.

ONR Conference on Image Processing: Theory, Analysis and Applications, Los Angeles, IPAM, Sep. 2000.

SPIE conference on Wavelet Applications in Signal and Image Processing, VIII, San Diego, Aug. 2000.

Special Lectures, Mathematics Dept., KTH (Royal Institute of Technology), Stockholm, Sweden, Jun. 2000.

Colloquium, Department of Computer Science, UC Davis, Jun. 2000.

CBMS lectures/conference on Interactions of Harmonic Analysis, Statistical Estimation, and Data Compression, University of Missouri, St. Louis, MO, May, 2000.

DARPA PI meeting, Washington DC., Apr. 2000.

Seminar, Department of Geology, UC Davis, Mar. 2000.

Seminar, Graduate Group in Applied Math, UC Davis, Feb. 2000.

Computational Harmonic Analysis Seminar, Dept. of Applied Math., University of Colorado, Boulder, CO, Dec. 1999.

"Overcomplete Representations and Nonlinear ICA Workshop," Neural Information Processing Systems, Breckenridge, CO, Dec. 1999.

Seminar, Raytheon Corp., Tucson, AZ, Sep. 1999.

SPIE conference on Wavelet Applications in Signal and Image Processing, VII, Denver, Jul. 1999.

DARPA PI meeting, San Francisco, Jul. 1999.

Applied Mathematics Seminar, Mathematics Dept., Stanford University, Dec. 1998.

Colloquium, Mathematics Dept., Sonoma State University, Nov. 1998.

32nd Asilomar Conference on Signals, Systems, and Computers, Nov. 1998.

Mathematical Questions in Signal and Image Processing Programm Seminar, Institut Henri Poincaré, Paris, France, Oct. 1998.

Seminar, Department of Scientific Computing, Uppsala University, Sweden, Sep. 1998.

Seminar, Ericsson, Älvsjö, Sweden, Sep. 1998.

Analysis Seminar, Mathematics Dept., Chalmers University of Technology, Göteborg, Sweden, Sep. 1998.

Wavelet Seminar, Mathematics Dept., KTH (Royal Institute of Technology), Stockholm, Sweden, Sep. 1998.

Schlumberger Cambridge Research, Aug. 1998.

Isaac Newton Institute, Cambridge University, Aug. 1998.

Seminar, Naval Air Warfare Center, May 1998.

Seminar, Division of Statistics, UC Davis, Apr. 1998.

Fourth Biennial Wavelet and Advanced Signal Processing Workshop, dedicated to Louis Auslander, Lockheed-Martin Corp., Orlando, FL., Feb. 1998.

Graduate Student Seminar, Graduate Group in Applied Mathematics, UC Davis, Jan. 1998.

Seminar, Institute of Theoretical Dynamics, UC Davis, Jan. 1998.

Seminar, Mechanical and Aeronautical Engineering, UC Davis, Nov. 1997.

Wavelets and Statistics Workshop, Duke University, Oct. 1997.

Seminar, Division of Applied Mathematics, Brown University, Apr. 1997.

Seminar, Statistics Dept., Rutgers University, Feb. 1997.

Seminar, Mathematics Dept., North Carolina State University, Feb. 1997.

Colloquium, Statistics Dept., University of California at Los Angeles, Feb. 1997.

Seminar, Mathematics Dept., University of California at Davis, Feb. 1997.

Seminar, Dept. Decision Sciences and Engineering Systems, Rensselaer Polytechnique Institute, Feb. 1997.

Colloquium, Mathematics Dept., University of Michigan at Ann Arbor, Feb. 1997.

Applied Mathematics Seminar, Mathematics Dept., University of Michigan at Ann Arbor, Feb. 1997.

Colloquium, Applied Mathematics Dept., University of Colorado at Boulder, Jan. 1997.

Statistics Seminar, Mathematics Dept., Imperial College, Jan. 1997.

Joint Statistical Meeting, Chicago, Aug. 1996.

Seminar, Mathematics Dept., University of Tokyo, Jul. 1996.

Seminar, Program in Applied and Computational Mathematics, Princeton University, May 1996.

Seminar, Statistics Dept., University of Washington, Mar. 1996.

Colloquium, Mathematics Dept., Dartmouth College, Mar. 1996.

Colloquium, Statistics Dept., University of Connecticut at Storrs, Dec. 1995.

Third Biannual Wavelet Workshop: Advanced Topics in Wavelets and Adapted Waveform Analysis, Lockheed Martin Corp., Orlando, FL, Nov. 1995.

International Congress on Industrial and Applied Mathematics, Hamburg, Germany, Jul. 1995.

Western Regional Institute of Mathematical Statistics Meeting, Stanford, CA, Jun. 1995.

Seminar, Mathematics Dept., Royal Institute of Technology (KTH), Stockholm, Sweden, May 1995.

Seminar, Mathematics Dept., Washington University, St. Louis, MO, May 1995.

American Mathematical Society Meeting, Chicago, IL, Mar. 1995.

Seminar, Electrical Engineering Dept., Northwestern University, Mar. 1995.

Seminar, Mathematics Dept., Yale University, Feb. 1995.

Seminar, Geophysics Dept., Stanford University, Jul. 1988.

Publications

Published Articles

1. 1984 **N. Saito**, "Interaction of traveling waves on parallel active lines," *Proceedings of the Workshop on Nonlinear Problems*, (in Japanese), NLP84–17, pp. 9–18, the Institute of Electronics and Communication Engineers of Japan, Tokyo, Japan.
2. 1990 **N. Saito**, "Superresolution of noisy band-limited data by data adaptive regularization and its application to seismic trace inversion," *Proceedings of 1990 International Conference on Acoustics, Speech, and Signal Processing*, vol. 3, pp. 1237–1240.
3. 1990 **N. Saito** and M. A. Cunningham, "Generalized E-filter and its application to edge detection," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 12, pp. 814–817.
4. 1992 **N. Saito** and G. Beylkin, "Multiresolution representations using the auto-correlation functions of compactly supported wavelets," *Proceedings of 1992 International Conference on Acoustics, Speech, and Signal Processing*, vol. 4, pp. 381–384.
5. 1992 G. Beylkin and **N. Saito**, "Wavelets, their autocorrelation functions, and multiresolution representations of signals," in *Intelligent Robots and Computer Vision XI: Biological, Neural Net, and 3-D Methods* (D. P. Casasent, ed.), Proceedings of SPIE, vol. 1826, pp. 39–50.
6. 1993 **N. Saito** and G. Beylkin, "Multiresolution representations using the auto-correlation functions of wavelets," in *Progress in Wavelet Analysis and Applications* (Y. Meyer and S. Roques, eds.), pp. 721–726, Editions Frontieres, B.P.33, 91192 Gif-sur-Yvette Cedex, France.
7. 1993 **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.
8. 1994 **N. Saito**, "Simultaneous noise suppression and signal compression using a library of orthonormal bases and the minimum description length criterion," in *Wavelet Applications* (H. H. Szu, ed.), Proceedings of SPIE, vol. 2242, pp. 224–235.
9. 1994 R. R. Coifman and **N. Saito**, "Constructions of local orthonormal bases for classification and regression," *Comptes Rendus de l'Académie des Sciences, Série I*, vol. 319, pp. 191–196.
10. 1994 **N. Saito** and R. R. Coifman, "Local discriminant bases," in *Wavelet Applications in Signal and Image Processing II* (A. F. Laine and M. A. Unser, eds.), Proceedings of SPIE, vol. 2303, pp. 2–14.
11. 1994 **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.), chap. XI, pp. 299–324, Academic Press, San Diego, CA.
12. 1995 **N. Saito** and R. R. Coifman, "On local orthonormal bases for classification and regression," *Proceedings of 1995 International Conference on Acoustics, Speech, and Signal Processing*, pp. 1529–1532.
13. 1995 **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.
14. 1996 R. R. Coifman and **N. Saito**, "The local Karhunen-Loève Bases," *Proceedings of IEEE International Symposium on Time-Frequency and Time-Scale Analysis*, pp. 129–132.
15. 1996 **N. Saito** and R. R. Coifman,"On local feature extraction for signal classification," in *Applied Analysis* (O. Mahrenholtz and R. Mennicken, eds.), *special issue of Zeitschrift für Angewandte Mathematik und Mechanik*, pp. 453–456, Akademie-Verlag, Berlin.
16. 1997 **N. Saito** and R. R. Coifman, "Improved local discriminant bases using empirical probability density estimation," *1996 Proceedings of the Computing Section of the American Statistical Association*, pp. 312–321, Invited paper.

17. 1997 **N. Saito**, "Classification of geophysical acoustic waveforms using time-frequency atoms," *1996 Proceedings of the Computing Section of the American Statistical Association*, pp. 322–327.

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