Curriculum Vitae of Gitta Kutyniok

Date of birth	September 22, 1972
Place of birth	Bielefeld
Nationality	German
Current position	Bavarian AI Chair (Full Professor)
Affiliation	Ludwig-Maximilians-Universität München
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Fields of interest

Applied harmonic analysis; Approximation theory; Artificial intelligence; Compressed sensing; High-dimensional data analysis; Computability theory, Imaging science; Inverse problems; Machine learning; Numerical analysis of partial differential equations; Applications to life sciences, robotics, and telecommunication

Scientific vita and academic training

10/2020–	Bavarian AI Chair for Mathematical Foundations of AI, LMU Munich
05/2019–	Adjunct Professor in Machine Learning, University of Tromsø, Norway
05/2018–09/2020	Professor of Comp. Science & Elect. Engineering (by courtesy), TU Berlin
09/2014–12/2014	Visiting Professorship (Nachdiplomlecturer) at the ETH Zürich
10/2011–09/2020	Einstein Chair (Full Professor) in Mathematics, TU Berlin
10/2008–09/2011	Full Professor, U Osnabrück
04/2008–09/2008	Heisenberg Fellow, Yale U
10/2007–03/2008	Heisenberg Fellow, Stanford U
04/2007–09/2007	Heisenberg Fellow, Princeton U
10/2005–07/2007	Research Assistant, U Gießen
04/2005–09/2005	Visiting Research Fellow, Georgia Institute of Technology
10/2004–03/2005	Visiting Research Fellow, Washington U in St. Louis
04/2004–09/2004	Research Assistant, U Gießen
01/2002–03/2004	Research Assistant, U Paderborn
08/2001–12/2001	Visiting Assistant Professor, Georgia Institute of Technology
04/1996–07/2001	Research Assistant, U Paderborn

Degrees

2006	Habilitation in Mathematics, U Gießen
2000	PhD in Mathematics, U Paderborn
1996	Diploma in Computer Science and Mathematics, U Paderborn

Awards and Honors (selection)

2023	Invited Lecture at the International Congress on Industrial and Applied Mathematics (ICIAM) 2023
2022	Member of the European Academy of Sciences
2022	EURASIP Best Paper Award for Signal Processing: Image Communication Journal
2022	Invited Lecture at the International Congress of Mathematics (ICM) 2022
2022	Lecturer of the London Mathematical Society (LMS) Invited Lecture Series
2021	Plenary Talk, 8th European Congress of Mathematics, Portoroz, Slovenia
2020	Francqui Chair, Vrije Universiteit Brussel

2019 SIAM Fellow
2016 Member of the Berlin-Brandenburg Academy of Sciences and Humanities
2013 Noether Lecturer at the ÖMG-DMV-Kongress 2013 in Innsbruck
2007 von Kaven-Award of the DFG
2006 Heisenberg Fellowship of the DFG
2006 Research Award: "Prize of the University of Gießen"
2003 Research Prize of the University of Paderborn
1998 Weierstraß Award for Excellence in Teaching

Invited lectures

A total of about 45 plenary lectures, 30 keynote lectures, and 350 invited lectures, of which about 60 are colloquium talks at, for instance, California Institute of Technology, EPFL, ETH Zurich, Georgia Institute of Technology, Princeton U, RWTH Aachen, U Bonn, UCLA, U Münster, U Texas at Austin, U Vienna, and U Warwick.

Editorial work (selection)

Since 2020 Associate Editor, Applied and Computational Harmonic Analysis
Since 2019 Associate Editor, Constructive Approximation
Since 2018 (Associated Editor, since 2022 Section Editor), SIAM Journal on Mathematics of Data Science
Since 2018 Associate Editor, IMA Journal of Numerical Analysis
Since 2018 Associate Editor, SIAM Journal on Imaging Sciences
2016–2020 Senior Associate Editor, IEEE Signal Processing Letters
2016–2020 Associate Editor, IEEE Transactions on Information Theory
Since 2014 Corresponding Editor, Acta Applicandae Mathematicae
Since 2014 Associate Editor, Journal of Approximation Theory
Since 2014 Associate Editor, Journal of Mathematical Imaging and Vision

Additional activities

(Co-)Chair of boards, panels, and large-scale projects (selection)

Since 2022 LMU-Director of the Konrad Zuse School of Excellence in Reliable AI (relAI)
2022–2023 Vice President-at-Large of SIAM
2021–2027 Main Coordinator of the DFG-Priority Programme 2298 "Theoretical Foundations of Deep Learning"
2021–2024 LMU-Director of the ONE MUNICH Strategy Forum Project "Next generation Human-Centered Robotics"
2021–2023 Spokesperson of the Research Focus "Next Generation AI" at the Center for Advanced Studies (CAS) at LMU
Since 2021 Founding Co-Chair, SIAM Activity Group on Data Science
2021 Main Coordinator, Isaac Newton Institute Programme "Mathematics of Deep Learning", Cambridge
2019–2020 Main Coordinator for Mathematical Data Science in MATH+
Since 2019 Founder and Chair, GAMM Activity Group on Computational and Mathematical Methods in Data Science
2018–2020 Chair, SIAM Activity Group on Imaging Sciences
2017–2020 Executive Director, Berlin International Graduate School in Model- and Simulation based Research (BIMoS)
2016–2018 Vice-Chair, SIAM Activity Group on Imaging Sciences
2015–2021 Main Coordinator of the DFG-Priority Programme 1798 "Compressed Sensing in Information Theory"

2014–2020 Founding Scientific Director, Berlin International Graduate School in Model- and Simulation based Research (BIMoS)
2013–2018 Chair, IPODI Selection Committee
Since 2012 Founder and Chair, GAMM Activity Group on Mathematical Signal- and Image Processing

Prize committees (selection)
2021 Chair, SIAG/DATA Prize Selection Committee
2019 Chair, SIAG/Imaging Science Prize Committee
Since 2017 Member, International Jury of the START-Program and Wittgenstein Prize

Main Organizer of Conferences and Workshops (selection)
2020 First International SIAM Conference on "Mathematics of Data Science", Cincinnati
2020 IPAM Workshop on "Deep Learning and Medical Applications", Los Angeles
2019 ICIAM-Panel "The Future of Mathematics in the Age of Machine Learning", Valencia
2019 BMS Summer School "Mathematics of Deep Learning", Berlin
2013– 3 Intl. MATHEON Conferences "Compressed Sensing and its Applications", Berlin
2009– 10 Oberwolfach Workshops and Seminar, 3 Banff Workshops, and 2 Dagstuhl Seminars

Member of boards and panels (selection)
Since 2021 Member of the Scientific Advisory Board for the EPSRC Programme Grant "Mathematics of Deep Learning"
2019–2020 Executive Board, Berlin Mathematics Research Center MATH+
Since 2018 SIAM Committee on Committees and Appointments
Since 2016 Executive Board, CRC/TR 109
2015–2018 Executive Board, Einstein Center for Mathematics Berlin (ECMath)
2015–2020 Managing Board, International Association of Applied Mathematics and Mechanics (GAMM)
2012–2020 Executive Board, Berlin Mathematical School (BMS)

Ten selected publications

1. R. Levie, W. Huang, L. Bucci, M. M. Bronstein, and G. Kutyniok. Transferability of Spectral Graph Convolutional Neural Networks. *J. Mach. Learn. Res.*, to appear (arXiv:1907.12972).
2. S. Kolek, D. A. Nguyen, R. Levie, J. Bruna, and G. Kutyniok. A Rate-Distortion Framework for Explaining Black-box Model Decisions. In: *Springer LNAI Volume: xxAI – beyond explainable AI*, to appear (arXiv:2110.08252).
3. G. Kutyniok, P. Petersen, M. Raslan, and R. Schneider. A Theoretical Analysis of Deep Neural Networks and Parametric PDEs. *Constr. Approx.* **55** (2022), 73–125.
4. T. A. Bubba, G. Kutyniok, M. Lassas, M. März, W. Samek, S. Siltanen, and V. Srinivasan. Learning The Invisible: A Hybrid Deep Learning-Shearlet Framework for Limited Angle CT. *Inverse Probl.* **35** (2019).
5. H. Bölcskei, P. Grohs, G. Kutyniok, and P. Petersen. Optimal Approximation with Sparsely Connected Deep Neural Networks. *SIAM J. Math. Data Sci.* **1** (2019), 8–45.
6. G. Kutyniok, W.-Q Lim, and R. Reisenhofer. ShearLab 3D: Faithful Digital Shearlet Transforms based on Compactly Supported Shearlets. *ACM Trans. Math. Software* **42** (2016), Article No.: 5.
7. P. Grohs and G. Kutyniok. Parabolic Molecules. *Found. Comput. Math.* **14** (2014), 299–337.
8. D. L. Donoho and G. Kutyniok. Microlocal Analysis of the Geometric Separation Problem. *Comm. Pure Appl. Math.* **66** (2013), 1–47.
9. G. Kutyniok and D. Labate. Resolution of the wavefront set using continuous shearlets. *Trans. Amer. Math. Soc.* **361** (2009), 2719–2754.
10. P. G. Casazza, G. Kutyniok, and S. Li. Fusion frames and distributed processing. *Appl. Comput. Harmon. Anal.* **25** (2008), 114–132.