Felix Lucka

Curriculum Vitae

Personal Information

Born in Hannover, Germany on May 23, 1985, nationality: German

email Felix.Lucka@cwi.nl

homepage felixlucka.github.io

Research Interests

Theoretical Inverse problems, deep learning, variational regularization, compressed sensing, Bayesian inference, mathematical modeling

Methodical Computational optimization, Deep neural networks, Markov chain Monte Carlo, numerics for PDEs

Applications Biomedical imaging and computing

Work Groups

since 2017 **Scientific staff member (tenured) of "Computational Imaging"**, *Centrum Wiskunde & Informatica*, supervisor: Prof. Dr. Tristan van Leeuwen.

2014-2020 **Member of "The Center for Medical Image Computing"**, *Department of Computer Science, University College London*, supervisor: Prof. Dr. Simon Arridge.

2013 **Research Visit to UCLA**, *Department of Mathematics*, invited by Prof. Dr. Andrea Bertozzi and Prof. Dr. Stanley Osher.

2010-2014 **Member of "Workgroup Imaging"**, *Institute of Computational and Applied Mathematics, University of Münster*, headed by Prof. Dr. Martin Burger.

2008-2014 **Member of "SIM-NEURO: Stimulation, Imaging and Modeling of NEUROnal networks in the human brain"**, *Institute for Biomagnetism and Biosignalanalysis, University of Münster*, headed by PD Dr. Carsten H. Wolters.

Five Key Publications

[1] F. Lucka, M. Pérez-Liva, B.E. Treeby, and B.T. Cox. High resolution 3D ultrasonic breast imaging by time-domain full waveform inversion. *Inverse Problems*, 38(2):025008, dec 2021.

[2] F. Lucka, N. Huynh, M. Betcke, E. Zhang, P. Beard, B.T. Cox, and S. Arridge. Enhancing Compressed Sensing 4D Photoacoustic Tomography by Simultaneous Motion Estimation. *SIAM Journal on Imaging Sciences*, 11(4):2224–2253, 2018.

[3] M. Burger and F. Lucka. Maximum a posteriori estimates in linear inverse problems with log-concave priors are proper Bayes estimators. *Inverse Problems*, 30(11):114004, 2014.

[4] F. Lucka. Fast Markov chain Monte Carlo sampling for sparse Bayesian inference in high-dimensional inverse problems using L1-type priors. *Inverse Problems*, 28(12):125012, 2012.

The electronic version of this document contains hyperlinks to institutions, persons and further explanations, e.g., about terms and details of the German academic system.

[5] F. Lucka, S. Pursiainen, M. Burger, and C.H. Wolters. Hierarchical Bayesian inference for the EEG inverse problem using realistic FE head models: Depth localization and source separation for focal primary currents. *NeuroImage*, 61(4):1364–1382, 2012.

PhD Thesis

Title	*Bayesian Inversion in Biomedical Imaging*
Supervisors	Prof. Dr. Martin Burger and PD Dr. Carsten H. Wolters
Sub./Defense	Dec. 2014 / 23.01.2015
Degree	*summa cum laude*

Scientific Activities

Symposia

Lunteren, 2021: *First annual meeting of the Dutch Inverse Problems Community.*

Leiden, 2021: *MUMMERING Workshop on Dynamic Imaging.*

ICIAM, Valencia, 2019: *Deep Learning and Inverse Problems.*

Applied Inverse Problems Conference, Grenoble, 2019: *Tomographic Imaging: Recent Advances, Exciting Applications and New Horizons.*

SIAM Imaging Science, Bologna, 2018: *Imaging with Light and Sound.*

Applied Inverse Problems, Hangzhou, 2017: *New tricks for old problems: Novel computational methods for inverse problems.*

SIAM Imaging Science, Albuquerque, 2016: *Imaging in the fast lane: in pursuit of dynamical information.*

Applied Inverse Problems, Helsinki, 2015: *Bayesian Computation.*

Reviewer

Biomedical Optics Express, Biomedical Physics & Engineering Express, Cognitive Neurodynamics, Computer Methods and Programs in Biomedicine, Computational Statistics and Data, IEEE Transactions on Computational Imaging, IEEE Transactions on Medical Imaging, IEEE Transactions on Image Processing, Inverse Problems, Inverse Problems and Imaging, Inverse Problems in Science and Engineering, Journal of Biomedical Optics, Journal of Computational Methods in Sciences and Engineering, Journal of Computational Physics, Journal of Imaging, Journal of Inverse and Ill-posed Problems, Journal of Mathematical Imaging and Vision, Jounal of Optics, Journal of the Acoustical Society of America, Journal of the Optical Society of America A, Mathematical Problems in Engineering, Medical Physics, NeuroImage, Neurological Research, Optics Express, Physics in Medicine & Biology, SIAM Journal on Imaging Sciences, SIAM Journal on Scientific Computing SPARS.

Referee

Air Force Office of Scientific Research, German National Academic Foundation, University of Innsbruck, Austria, University of Eastern Finland, Finland.

Teaching

2015-2017	Teaching assistant for the lecture *Inverse Problems in Imaging*
2013	Introductory course to Matlab
2012	MSc seminar Mathematical Imaging and Inverse Problems.
since 2012	Supervision of Bachelor and Masters theses.
2009–2010	Student tutor for an exercise for the course *Stochastics*
2007–2008	Student mentor for the courses *Theoretical Physics III and IV*

Education

2005-2011 **Studies in Mathematics with minor in Physics**, *University of Münster*, grade of diploma: 0.85 (with greatest distinction).

2006-2011 **Studies in Physics with minor in Computer Science**, *University of Münster*, grade of intermediate diploma: 1.0.

1995–2004 **Secondary education (Abitur)**, *Gymnasium Mellendorf*, final grade: 1.0.

1991–1995 **Primary education**, *Grundschule Bissendorf*.

Funding and Scholarships

2022-26 **Research funding**, *ITN grant, "Computational Imaging as a training network for smart biomedical devices".*

2020-24 **Research funding**, *NWO-Klein-1 grant, "Translation-Driven Development of Deep Learning for Simultaneous Tomographic Image Reconstruction and Segmentation".*

2019-21 **Research funding**, *CWI PPP, "Deep learning and compressed sensing for ultrasonic nondestructive testing".*

2018-21 **Research funding**, *Co-Applicant in British Heart Foundation New Horizons Grant no. NH/18/1/33511, "Towards comprehensive assessment of heart disease in children using real-time cardiovascular magnetic resonance".*

2011 **Research visit funding**, *Funding for a two week research visit at the RTWH Aachen by the annual meeting of the DMV (German mathematical society).*

2011-2014 **PhD-Scholarship**, *German National Academic Foundation (Studienstiftung des deutschen Volkes).*

2005-2011 **Scholarship**, *German National Academic Foundation (Studienstiftung des deutschen Volkes).*

Experience

since 2022 **Senior staff researcher**, *Centrum Wiskunde & Informatica, Amsterdam.*

2017-2022 **Tenure track researcher**, *Centrum Wiskunde & Informatica, Amsterdam.*

2014-2020 **Research associate**, *Department of Computer Science, University College London.*

2012-2014 **Research assistant**, *Institute for Computational and Applied Mathematics, WWU.*

2009–2010 **Student assistant**, *Institute of Mathematical Statistics, WWU.*

2008–2009 **Student assistant**, *Institute for Biomagnetism and Biosignalanalysis, WWU.*

March 2008 **Internship**, *Max-Planck-Institute for Dynamics and Self-Organization*, Göttingen.

2007–2008 **Student assistant**, *Institute for Theoretical Physics, WWU.*

2004–2005 **Alternative civilian service (Zivildienst)**, *gemeinnützige Gesellschaft für integrative Sozialdienste mbH (GIS), school escort for a disabled child.*

Engagement

University	Students' union (Fachschaft), faculty council (Fachbereichsrat), miscellaneous faculty committees, faculty task force *Public Relations*, faculty task force *Networking*, organizer of the *Lange Nacht der Mathematik* (*Long Night of the Sciences* for mathematics), co-organizer of the awarded project *Studies an die Schulen*
Gymnasium	Student council (Schülervertretung), school president (Schülersprecher)
Miscellaneous	Local youth council (Jugendparament der Gemeinde), miscellaneous political activities

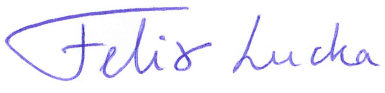
References

Prof. Dr. Tristan van Leeuwen: T.van.Leeuwen@cwi.nl

Prof. Dr. Kees Joost Batenburg: k.j.batenburg@liacs.leidenuniv.nl

Prof. Dr. Simon Arridge: s.arridge@cs.ucl.ac.uk

Prof. Dr. Martin Burger: martin.burger@uni-muenster.de



Amsterdam, November 15, 2022

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