Mario Teixeira Parente

Curriculum Vitae

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Experience

04/2024 – today *Entrix GmbH*
Senior Data Scientist
Optimization, time series analysis

10/2023 – 03/2024 *Ludwig-Maximilians-Universität München* (LMU)
Interim Professor for Computational Statistics and Data Science (W2)
Advanced mathematical methods in statistics (German),
Optimization in Machine Learning (English)

03/2021 – 09/2023 *University of Applied Sciences Munich* (HM)
Lecturer
Uncertainty Quantification (English), Linear Algebra (German)

10/2020 – 09/2023 *Jülich Centre for Neutron Science* (JCNS)
Postdoctoral researcher
Machine learning-based data acquisition of neutron experiments

10/2016 – 09/2020 *Technical University of Munich* (TUM)
Scientific employee
Research and teaching in applied mathematics

Education

10/2016 – 09/2020 *Technical University of Munich* (TUM)
Mathematics (Dr. rer. nat.)
PhD Thesis Active Subspaces in Bayesian Inverse Problems

10/2013 – 04/2016 *Ludwig-Maximilians-Universität München* (LMU)
Mathematics (M.Sc.)
Master Thesis Brownian Motion and the Dirichlet Problem

10/2010 – 09/2013 *University of Applied Sciences Munich* (HM)
Scientific Computing (B.Sc.)
Bachelor Thesis N.V. Krylov's Proof of the de Moivre-Laplace Theorem

Scholarships

04/2012 – 05/2016 **German Academic Scholarship Foundation** (Studienstiftung des deutschen Volkes)
04/2012 – 04/2016 **Max Weber Program of the State of Bavaria** (Max Weber-Programm Bayern)
10/2011 – 03/2012 **Deutschlandstipendium**

Volunteering

10/2021 – now **Mentor for the Max Weber Program of the State of Bavaria**. Supervision of scholarship holders. Munich

2016 – now **Committee member for admissions seminars of the German Academic Scholarship Foundation**. Evaluation of personal interviews and group discussions. Germany

03/2015 – 02/2016 **Volunteer at Salesianum München**. Support for refugees and other disadvantaged young people

Teaching

Winter 2023/24 **Advanced mathematical methods in statistics** (German). *Interim Professor*. LMU

Winter 2023/24 **Optimization in Machine Learning** (English). *Interim Professor*. LMU
Summer 2023 **Fundamentals of Uncertainty Quantification** (English). *Lecturer*. HM
Winter 2022/23 **Linear Algebra** (German). *Lecturer*. HM
Summer 2022 **Fundamentals of Uncertainty Quantification** (English). *Lecturer*. HM
Winter 2021/22 **Linear Algebra** (German). *Lecturer*. HM
Summer 2021 **Fundamentals of Uncertainty Quantification** (English). *Lecturer*. HM
Summer 2020 **Mathematical Models for UQ in Hydrology** (English). *Module construction*. TUM
Winter 2019/20 **Introduction to Numerical Linear Algebra** (German). *Exercise coordinator*. TUM
Summer 2019 **Numerics of PDEs for Engineers** (German). *Exercise coordinator*. TUM
Winter 2018/19 **Modeling and Simulation with ODEs** (German). *Tutor*. TUM
Summer 2018 **Numerics of ODEs** (German). *Tutor*. TUM
Winter 2017/18 **Introduction to Numerical Linear Algebra** (German). *Tutor*. TUM
Summer 2017 **Introduction to Programming** (German). *Tutor*. TUM
Summer 2017 **Seminar: UQ with Efficient Monte Carlo Methods** (English). TUM
Winter 2015/16 **Stochastics** (German). *Tutor*. LMU
Winter 2014/15 **Analysis I** (German). *Tutor*. LMU
Winter 2011/12 **Linear Algebra** (German). *Tutor*. HM
Winter 2011/12 **Software Engineering** (German). *Tutor*. HM

Certificates

2017 – 2019 **Certificate for Teaching in Higher Education of the Bavarian Universities**. *Advanced level*. TUM ProLehre
2017 – 2019 **Certificate for Teaching in Higher Education of the Bavarian Universities**. *Introductory level*. TUM ProLehre

Journal articles

2023 **TP., M.**, Brandl, G., Franz, C., Stuhr, U., Ganeva, M. & Schneidewind, A., (2023). Active learning-assisted neutron spectroscopy with log-Gaussian processes. *Nature Communications* **14**, 2246. doi: 10.1038/s41467-023-37418-8
2022 **TP., M.**, Schneidewind, A., Brandl, G., Franz, C., Noack, M., Boehm, M., & Ganeva, M. (2022). Benchmarking autonomous scattering experiments illustrated on TAS. *Frontiers in Materials* **8**, 772014. doi: 10.3389/fmats.2021.772014
2020 **TP., M.**, Wallin, J., & Wohlmuth, B. (2020). Generalized bounds for active subspaces. *Electronic Journal of Statistics* **14**(1), 917–943. doi: 10.1214/20-EJS1684
2020 Bittner, D., **TP., M.**, Mattis, S., Wohlmuth, B., & Chiogna, G. (2020). Identifying relevant hydrological and catchment properties in active subspaces: An inference study of a lumped karst aquifer model. *Advances in Water Resources* **135**, 103472. doi: 10.1016/j.advwatres.2019.103472
2019 **TP., M.**, Bittner, D., Mattis, S., Chiogna, G., & Wohlmuth, B. (2019). Bayesian calibration and sensitivity analysis for a karst aquifer model using active subspaces. *Water Resources Research* **55**(8), 7086–7107. doi: 10.1029/2019WR024739
2019 **TP., M.**, Mattis, S., Gupta, S., Deusner, C., & Wohlmuth, B. (2019). Efficient parameter estimation for a methane hydrate model with active subspaces. *Computational Geosciences* **23**(2), 355–372. doi: 10.1007/s10596-018-9769-x

Conferences / Talks

06/2023 **Helmholtz AI Conference 2023**. *Active learning-assisted neutron spectroscopy with log-Gaussian processes*. Helmholtz AI, Helmholtz Association
04/2023 **Machine Learning Workshop**. *Active learning-assisted neutron spectroscopy with log-Gaussian processes*. Lawrence Berkeley National Laboratory
03/2023 **ECNS 2023**. *AI-assisted neutron spectroscopy - Log-Gaussian processes for TAS*. Heinz Maier-Leibnitz Zentrum

10/2022 **JCNS Workshop** (invited talk). *AI-assisted neutron spectroscopy - Log-Gaussian processes for TAS*. Jülich Centre for Neutron Science

12/2021 **MLZ User Meeting**. *Benchmarking autonomous TAS experiments*. Heinz Maier-Leibnitz Zentrum

11/2021 **Workshop on SAXS@XFELs and HI & HE laser driven matter**. *Benchmarking autonomous TAS experiments*. Helmholtz-Zentrum Dresden-Rossendorf

10/2021 **Workshop on Innovative Inelastic Neutron Scattering**. *Benchmarking autonomous scattering experiments illustrated on TAS*. Institut Laue-Langevin

02/2021 **Workshop on Autonomous Discovery in Science and Engineering**. *Autonomous Experiments for Neutron Three-Axis Spectrometers (TAS) with Log-Gaussian Processes*. Center for Advanced Mathematics for Energy Research Applications, Lawrence Berkeley National Laboratory

03/2020 **SIAM UQ 2020**. *Solving a Bayesian Inverse Problem for a Karst Aquifer Model with Active Subspaces*. Garching (canceled due to outbreak of SARS-CoV-2)

05/2019 **Statistics Seminar**. *Active subspaces in Bayesian inverse problems*. Department of Statistics, Lund University

03/2018 **M2 Oberseminar**. *Active subspaces for Bayesian inversion, Application for a methane hydrate model*. Garching

Awards / Prizes

12/2023 **Helmholtz AI Award.** Best Paper 2023

Trainings

03/2017 **Parallel Programming of High Performance Systems**. Leibniz Computing Centre (LRZ)

02/2017 **Advanced C++ with Focus on Software Engineering**. Regionales RechenZentrum Erlangen (RRZE)

Other experiences

05/2019 **Research stay abroad**. Department of Statistics, Lund University. Topic: Theory of active subspaces

02/2019 – 03/2018 **Research stay abroad**. University of Texas at Austin (UT). Project: UNcertainties due to boundary conditions in predicting MIXing in groundwater (UNMIX)

06/2016 – 09/2016 **Student assistant**. HM. Project: Modeling and simulation of pedestrian movement

04/2016 – 05/2016 **Research internship**. Yale University (USA). Topic: Image processing of nanoscopic images in cell biology

10/2012 – 11/2013 **Student assistant**. HM. Project: Modeling and simulation of pedestrian movement

Kirchheim b. München, April 28, 2024