



Personal and contact information

PERSONAL INFORMATION	Date of birth: 27.08.1987 Nationality: Indian Family status: Married; no children
AFFILIATION	Technical University of Munich Department of Informatics and Munich Data Science Institute
WORK ADDRESS AND CONTACT	Technical University of Munich Boltzmannstr. 3 85748 Garching, Germany Phone: +49 (0) 89 289 17236 Email: ghoshdas@in.tum.de

Education and employment

SINCE SEP 2019	Assistant Professor (tenure track) of Theoretical Foundations of Artificial Intelligence at Department of Informatics, TU Munich
MAY 2016 – AUG 2019	Post doctoral researcher at Theoretical Machine Learning group, Department of Computer Science, University of Tübingen
AUG 2012 – APR 2016	Ph.D. in Computer Science at Department of Computer Science & Automation, Indian Institute of Science
AUG 2010 – JUL 2012	Master in System Science & Automation at Indian Institute of Science
JUL 2006 – MAY 2010	Bachelor in Electrical Engineering at Jadavpur University, Kolkata

Awards, fellowships and memberships

SINCE 2020	Member of ELLIS (European Laboratory for Learning and Intelligent Systems)
2018-2022	Fellow in Eliteprogramm für Postdocs of the Baden-Württemberg Foundation
2017	Commendation certificate from Indian Institute of Science for outstanding doctoral thesis. Thesis also nominated for ACM India doctoral dissertation award
2013 – 2016	Google Ph.D. Fellow in statistical learning theory (one of 39 candidates worldwide awarded in 2013)

2013	N. R. Khambati medal for best Masters student in Department of Electrical Engineering, Indian Institute of Science
2010	S. K. Basu medal for highest marks in laboratory and practical examinations of Bachelors (Electrical) in Jadavpur University
2010	All India Rank 4 (out of 52000 candidates) in Graduate Aptitude Test in Engineering (Electrical), India

Research grants

Major grants (above 100k)

GERMAN RESEARCH FOUNDATION (DFG) SEP 2021 – AUG 2024	PI (sole investigator) for Individual Project under DFG Priority Programme Theoretical foundations of deep learning (SPP 2298) Amount: 214,200 EUR Project: Statistical foundations of unsupervised and semi-supervised deep learning
GERMAN RESEARCH FOUNDATION & FRENCH NATIONAL RESEARCH AGENCY JAN 2022 – DEC 2024	Co-I for French-German Collaboration for Joint Projects (PRCI) Amount (personal share): 112,000 EUR Project: ASCAI: Active and batch segmentation, clustering, and seriation: toward unified foundations in AI Investigators: A. Carpentier (PI), N. Verzelen (PI), E. Gassiat, D.Ghoshdastidar, G. Blanchard, C. Giraud
GERMAN RESEARCH FOUNDATION (DFG) AUG 2021 – JAN 2024	PI for DFG Research Training Group ConVeY: Continuous verification of cyber physical systems (GRK 2428) Amount (personal share): approx 171,000 EUR PIs: H. Seidl (spokesperson), S. Albers, M. Althoff, D. Beyer, J. Esparza, J. Kretinsky, T. Nipkow, M. Zamani, D. Ghoshdastidar
BADEN-WÜRTTEMBERG FOUNDATION NOV 2018 – MAR 2022	PI (sole investigator) for Baden-Württemberg Eliteprogramm für Postdocs Amount: 127,000 EUR Project: Clustering large evolving graphs
GERMAN RESEARCH FOUNDATION (DFG) UNDER REVIEW	PI (sole investigator) for DFG Individual Research Grant Amount (requested): 231,300 EUR Project: Statistical, computational and algorithmic aspects of kernel clustering

Funding up to 100k

MUNICH DATA SCIENCE INSTITUTE (MDSI) JUL 2019 – OCT 2020	PI for Seed Grant for project: Netrium: Precise and fast model prediction with machine learning Amount: approx 35,000 EUR Investigators: S. Mertens (PI), D. Ghoshdastidar (PI), P. Eller
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BADEN-WÜRTTEMBERG
FOUNDATION
JUL 2019 – OCT 2020

Co-I for BW Eliteprogramm cooperation project: Interdisciplinary
assessment of product similarity measures for network similarity
Amount: 10,000 EUR
Investigators: N. Stricker (PI), D. Ghoshdastidar

GOOGLE
JUL 2013 – APR 2016

Google India Ph.D. Fellowship in Statistical learning theory
Amount: approx 1,500,000 INR (18,000 EUR) covering 4-year PhD

Publications

Peer-reviewed publications in journals / conference proceedings

1. P. Esser, L. C. Vankadara and D. Ghoshdastidar. Learning theory can (sometimes) explain generalisation in graph neural networks. In A. Beygelzimer, P. Liang, J. W. Vaughan and Y. Dauphin (Eds.) *Advances in Neural Information Processing Systems (Neurips)*, 34:To appear, 2021.
2. L. C. Vankadara, S. Bordt, U. von Luxburg and D. Ghoshdastidar. Recovery guarantees for kernel-based clustering under non-parametric mixture models. In A. Banerjee and K. Fukumizu (Eds.) *International Conference on Artificial Intelligence and Statistics (AISTATS)*, PMLR 130:3817–3825, 2021.
3. M. Perrot, P. Esser and D. Ghoshdastidar. Near-optimal comparison based clustering. In H. Larochelle, M. Ranzato, R. Hadsell, M. F. Balcan and H. Lin (Eds.) *Advances in Neural Information Processing Systems (Neurips)*, 33:19388–19399, 2020.
4. D. Ghoshdastidar, M. Gutzeit, A. Carpentier and U. von Luxburg. Two-sample hypothesis testing for inhomogeneous random graphs. *The Annals of Statistics*, 48(4):2208–2229, 2020.
5. L. C. Vankadara and D. Ghoshdastidar. On the optimality of kernels for high-dimensional clustering. In S. Chiappa and R. Calandra (Eds.) *International Conference on Artificial Intelligence and Statistics (AISTATS)*, PMLR 108:2185–2195, 2020.
6. D. Ghoshdastidar, M. Perrot, and U. von Luxburg. Foundations of comparison-based hierarchical clustering. In H. Wallach, H. Larochelle, A. Beygelzimer, F. d’Alché-Buc, E. Fox and R. Garnett (Eds.) *Advances in Neural Information Processing Systems (Neurips)*, 32:7456–7466, 2019.
7. D. Ghoshdastidar and U. von Luxburg. Practical methods for graph two-sample testing. In S. Bengio, H. Wallach, H. Larochelle, K. Grauman and N. Cesa-Bianchi (Eds.), *Advances in Neural Information Processing Systems (Neurips)*, 31:3019–3028, 2018.
8. D. Ghoshdastidar, and A. Dukkipati. Consistency of spectral hypergraph partitioning under planted partition model. *The Annals of Statistics*, 45(1):289–315, 2017.
9. D. Ghoshdastidar and A. Dukkipati. Uniform hypergraph partitioning: Provable tensor methods and sampling techniques. *The Journal of Machine Learning Research*, 18(50):1–41, 2017.
10. S. Haghir, D. Ghoshdastidar and U. von Luxburg. Comparison based nearest neighbor search. In A. Singh and J. Zhu (Eds.), *International Conference on Artificial Intelligence and Statistics (AISTATS)*, PMLR 54:851–859, 2017.

11. D. Ghoshdastidar, M. Gutzeit, A. Carpentier and U. von Luxburg. Two-sample tests for large random graphs using network statistics. In S. Kale, O. Shamir and K. Chaudhuri (Eds.), *Annual Conference on Learning Theory (COLT)*, PMLR 65:954-977, 2017.
12. A. Dukkipati, D. Ghoshdastidar, and J. Krishnan. Mixture modelling with compact support distributions for unsupervised learning. In *Proceedings of International Joint Conference on Neural Networks (IJCNN)*, pp. 2706-2713, IEEE, 2016.
13. D. Ghoshdastidar, A. P. Adsul, and A. Dukkipati. Learning with Jensen-Tsallis kernels. *IEEE Transactions on Neural Networks and Learning Systems*, 27(10):2108-2119, IEEE, 2016.
14. D. Ghoshdastidar and A. Dukkipati. Spectral clustering using multilinear SVD: Analysis, approximations and applications. In B. Bonet and S. Koenig (Eds.) *AAAI Conference on Artificial Intelligence*, pp. 2610-2616, 2015.
15. D. Ghoshdastidar and A. Dukkipati. A provable generalized tensor spectral method for uniform hypergraph partitioning. In F. Bach and D. Blei (Eds.), *International Conference on Machine Learning (ICML)*, PMLR 37:400-409, 2015.
16. D. Ghoshdastidar, A. Dukkipati, A. P. Adsul and A. S. Vijayan. Spectral clustering with Jensen-type kernels and their multi-point extensions. In *IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 1472-1477, IEEE, 2014.
17. D. Ghoshdastidar and A. Dukkipati. Consistency of spectral partitioning of uniform hypergraphs under planted partition model. In Z. Ghahramani, M. Welling, C. Cortes, N. D. Lawrence and K. Q. Weinberger (Eds.), *Advances in Neural Information Processing Systems (NIPS)*, 27:397-405, 2014.
18. D. Ghoshdastidar, A. Dukkipati, and S. Bhatnagar. Smoothed functional algorithms for stochastic optimization using q-Gaussian distributions. *ACM Transactions on Modeling and Computer Simulation (TOMACS)*, 24(3):Article 17, ACM, 2014.
19. D. Ghoshdastidar, A. Dukkipati, and S. Bhatnagar. Newton based stochastic optimization using q-Gaussian smoothed functional algorithms. *Automatica*, 50(10):2606-2614, Elsevier, 2014.
20. A. Dukkipati, G. Pandey, D. Ghoshdastidar, P. Koley, and D. M. V. Satya Sriram. Generative maximum entropy learning for multiclass classification. In *IEEE International Conference on Data Mining (ICDM)*, pp. 141-150, IEEE, 2013.
21. D. Ghoshdastidar and A. Dukkipati. On power-law kernels, corresponding reproducing kernel Hilbert space and applications. In *AAAI Conference on Artificial Intelligence*, 2013.
22. D. Ghoshdastidar, A. Dukkipati and S. Bhatnagar. q-Gaussian based smoothed functional algorithm for stochastic optimization. In *International Symposium on Information Theory (ISIT)*, pp. 1059-1063, IEEE, 2012.

Preprints, workshop papers, works under review

1. S. Huber, S. H. Suyu, D. Ghoshdastidar, S. Taubenberger, V. Bonvin, J. H. H. Chan, M. Kromer, U. M. Noebauer, S. A. Sim and L. Leal-Taixe. HOLISMOKES - VII. Time-delay

measurement of strongly lensed SNe Ia using machine learning. Revised for *Astronomy & Astrophysics*, Preprint at *arXiv:2108.02789*.

2. M. Sabanayagam, L. C. Vankadara and D. Ghoshdastidar. Graphon based clustering and testing of networks: Algorithms and theory. Under review at *ICLR 2022*, Preprint at *arXiv:2110.02722*.
3. L. C. Vankadara, P. M. Faller, L. Minorics, D. Ghoshdastidar and D. Janzing. Causal forecasting: Generalization bounds for autoregressive models. Under review at *AISTATS 2022*.
4. M. Sabanayagam, P. Esser and D. Ghoshdastidar. New insights into graph convolutional networks using neural tangent kernels. Preprint at *arXiv:2110.04060*.
5. N. Ayday and D. Ghoshdastidar. Improvement on incremental spectral clustering. In *Lernen, Wissen, Daten, Analysen (LWDA), 2021*.
6. V. Starlinger, C. de la Rua Lope and D Ghoshdastidar. Machine learning benchmark to assess the environmental impact of cars. In *AAAI 2021 workshop on AI for Urban Mobility (AI4UM)*.
7. D. Ghoshdastidar and U. von Luxburg. Do nonparametric two-sample tests work for small sample size? A study on random graphs. *NIPS-2016 workshop on Adaptive and Scalable Nonparametric Methods in ML*.
8. D. Ghoshdastidar and A. Dukkipati. Coloring random non-uniform bipartite hypergraphs. Preprint at *arXiv:1507.00763*.

Invited talks, chaired sessions at workshops / conferences

DEC 2021	14th International Conference on Computational and Methodological Statistics (CMStatistics 2021), King's College London, UK
DEC 2021	IISc Deep Reinforcement Learning workshop, Indian Institute of Science, India
SEP 2021	(Session chair) Indo-German Workshop on AI, Virtual (organised by German and Indian ministries of research – IGSTC, BMBF, DST)
OCT 2020	Workshop on state of the art in sampling and clustering, Max Planck Institute for Physics, Munich, Germany
JUN 2020	International Summit on Data Science & AI, IIT Madras, India
FEB 2020	Probability and Statistics seminar, Universite Cote d'Azur, Nice, France
MAY 2019	Conference on Random matrix theory: Applications in the Information Era, Krakow, Poland
OCT 2017	Mathematical statistics research seminar, Weierstrass Institute, Berlin, Germany
SEP 2016	Dagstuhl seminar on Foundations of Unsupervised Learning, Wadern, Germany

MAR 2015 ACM-IKDD Conference on Data Sciences, Bangalore, India
 OCT 2012 Bangalore Probability Seminar, Bangalore, India

Research supervision

Ph.D. theses

SINCE AUG 2021 Mahalakshmi Sabanayagam (TU Munich)
 Topic: Theory of deep learning and robust machine learning

SINCE DEC 2019 Pascal Mattia Esser (TU Munich)
 Topic: Statistical foundations of unsupervised and semi-supervised deep learning

SINCE DEC 2018 Leena Chennuru Vankadara (University of Tübingen)
 Topic: Learning theory for kernel methods and over-parametrised models

Supervised student theses / internships

MASTER THESES Maximilian Fleissner, Mahalakshmi Sabanayagam, Valentin Starlinger (TUM, 2021); Parul Bhalla (TUM, 2020)
 Mentored: Nithish Pai (IISc, 2015); Ajay Adsul, Jinu Krishnan (IISc, 2014); Aparna Vijayan, Saurav Mondal (IISc, 2013)

BACHELOR THESES Nil Ayday (TUM, 2021); Demir Senturk (TUM, 2020)

INTERNSHIP, GUIDED RESEARCH Alicia Dimroth (TUM, 2021); Aishik Mandal, Samyak Jain (2021, German Academic Exchange); Amrita Bhattacharjee (2021); Mahalakshmi Sabanayagam (TUM, 2020)

Teaching

TU MUNICH

Lectures (Master level):

Statistical foundations of learning	Winter 2019, Summer 2020, 2021
Efficient Algorithms & Data Structures	Winter 2020 (500+ students)
Complexity theory	Summer 2021

Lecture (Bachelor level):

Gems of Informatics 3: Modelling and analysis of real-world graphs	Winter 2020, 2021
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Seminar (Master level):

Theoretical advances in deep learning	Summer 2020, 2021
Advanced complexity theory	Winter 2021

UNIVERSITY OF
TÜBINGEN

Lecture (Master level):

Statistical network analysis Winter 2018

Seminar (Master level):

Statistical inference on networks Summer 2018

Crowdsourcing algorithms and their sta- Winter 2016
tistical analysis

INDIAN INST. OF SCIENCE

Teaching assistant for lecture:

Probability and statistics Fall 2013,2014,2015

Professional activities and memberships

ENGAGEMENT IN
DIVERSITY, INCLUSIVITY

Deputy Gender Equality Officer at TU Munich Department of In-
formatics

SCIENTIFIC ADVISORY
BOARD / CORE MEMBER

Scientific Advisory Board of IGSTC Indo-German Workshop on AI
Advisory Board of International AIQT Foundation
Core member of Munich Data Science Institute
Core principal investigator of Munich School for Data Science

SELECTION / REVIEW
COMMITTEE

Seed Grant for New African Principal Investigators (SG- NAPI)
TUM MDSI Seed Grants, TUM Global Postdoc Fellowship
International Max Planck Research School for Intelligent Systems

REVIEWING FOR
SCIENTIFIC PUBLICATIONS
(SELECTED)

Journals: Annals of Statistics; Journal of Royal Statistical Soci-
ety; Journal of Machine Learning Research; IEEE Trans. Informa-
tion Theory; IEEE Trans. on Signal Processing
Conferences: ICML; NeurIPS; COLT; AISTATS; ICLR; IJCAI