Dr. Konstantin Klemmer

Principal AI Research Engineer @ LGND AI
Assistant Professor (incoming) @ UCL

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Education

Jul 2018 – Jun 2022 | **Center for Urban Science + Progress, New York University, Brooklyn, USA**
Visiting PhD Student
- Research emphasis: Novel methods for identification of and learning from spatial patterns in urban data.
- Supervision: Professor Daniel B. Neill

Oct 2017 – Jun 2022 | **Department of Computer Science, University of Warwick, Coventry, UK**
PhD in Urban Science
- Dissertation: Improving Neural Networks for Geospatial Applications with Geographic Context Embeddings.
- Supervision: Professor Stephen A. Jarvis, Professor Daniel B. Neill, Dr. Hongkai Wen

Nov 2020 – Apr 2021 | **AI4EO Future Lab, Technical University of Munich & DLR, Munich, Germany**
Beyond Fellow
- Research emphasis: Geospatial machine learning and remote sensing for Earth observation.
- Supervision: Professor Xiaoxiang Zhu

Oct 2018 – Sep 2019 | **The Alan Turing Institute, London, UK**
Enrichment Student
- Research emphasis: Machine learning for urban analytics.

Oct 2016 – Sep 2017 | **Imperial College London & University College London, London, UK**
MSc Transport & Business Management
- Dissertation: Isolating the effect of cycling on local business environments in cities (Grade: 74/100)
- Overall Grade: 72/100 (Distinction)

Oct 2012 – Feb 2016 | **University of Freiburg, Freiburg, Germany**
BSc Economics
- Dissertation: Exploring the spatio-temporal dynamics of carsharing utilization: A case study from Amsterdam (Grade: 1.0)
- Overall Grade: 1.7 (Ranked 4th out of 74 in class)

Work Experience

starting Sep 2026 | **University College London, UK**
Assistant Professor (Lecturer), Geospatial AI
- Responsibilities: Assistant Professor (Lecturer) in Geospatial AI at UCL Civil, Environmental and Geomatic Engineering and the UCL AI Center.

Aug 2025 – Ongoing | **LGND AI, San Francisco, USA**
Principal AI Research Engineer
- Responsibilities: Bridging research and product development in AI for Earth applications
- Manager: Dr. Dan Hammer

Dec 2024 – Jul 2025 | **Microsoft Research, Redmond, USA**
Senior Applied Research Scientist
- Responsibilities: Conceptualizing and executing machine learning research projects for industry-relevant applications.
- Manager: Dr. Gayathri Mahalingam

Sep 2022 – Jun 2024 | **Microsoft Research New England, Cambridge, USA**
Postdoctoral Researcher
- Responsibilities: Two-year research fellowship as part of the "ML & Stats" postdoc program.
- Manager: Dr. Nicolo Fusi

Jan 2022 – Jun 2022 | **Department of Computer Science, University of Warwick, Coventry, UK**
EPSRC Mathematical Science Fellow
- Responsibilities: Continuation of research conducted throughout doctoral studies.
- Manager: Dr. Hongkai Wen

Nov 2021 – Apr 2022 | **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Bonn, Germany**
Expert Consultant
- Responsibilities: AI expert consultant on the appraisal mission of the “Fair Forward” initiative, providing feedback on a large funding scheme for the use of AI in sustainability and development applications in low-income countries.

May 2016 – Dec 2019 | **Geospin GmbH, Freiburg, Germany**
Student Fellow
- Responsibilities: Student fellow in a geospatial data analytics startup. Tasks included data science, social media strategy, market research and business development.
- Manager: Dr. Sebastian Wagner (CEO), Dr. Christoph Gebele

May 2014 – Sep 2016 | **Chair of Economic Policy and Constitutional Economics, University of Freiburg, Freiburg, Germany**
Student Assistant
- Responsibilities: Research assistance (econometric modelling, data preparation), administration of the Chair’s website and e-learning modules, event management.
- Manager: Professor Lars P. Feld

Feb 2013 – Apr 2016 | **Chair of Information Systems Research , University of Freiburg, Freiburg, Germany**
Student Assistant
- Responsibilities: Research assistance (data preparation and statistical analysis, data visualization), administration of e-learning modules.
- Manager: Professor Dirk Neumann

Mar 2014 - May 2014 | **Walter Eucken Institute, Freiburg, Germany**
Intern
- Responsibilities: Analysis of scientific articles, data processing, preparation of scientific presentations.
- Manager: Professor Lars P. Feld

Sep 2011 – Aug 2012 | **EVBZ Care Center for People with Disabilities, Steinhöring, Germany**
Federal Voluntary Service
- Responsibilities: Assistance and care for multiply disabled people, carpool supervision, warehousing

Teaching Experience

Oct 2017 – Sep 2018 | **Department of Computer Science, University of Warwick, Coventry, UK**
Teaching Assistant
- Classes: CS118 – Programming for Computer Scientists (Undergraduate), CS909 – Data Mining (postgraduate)

Mar 2013 – Apr 2016 | **Chair of Information Systems Research, University of Freiburg, Freiburg, Germany**
Teaching Assistant
- Classes: Introduction to Information Systems (Undergraduate)
- Head instructor in the final year.

Volunteering & Mentoring

Aug 2020 – Ongoing | **Climate Change AI, Pittsburgh, USA**
Chair of the Communications Committee & Member of the Board of Directors (2021-2023)
- Responsibilities: Leadership role in a fast-growing NGO at the intersection of climate change and artificial intelligence. Tasks include organizational oversight, social media, academic outreach and event organization.

Oct 2020 – Jan 2021
Oct 2019 – Jan 2020
Oct 2018 – Jan 2019 | **Applied Machine Learning Days, Lausanne, Switzerland**
Co-organizer of the "AI & Cities" track
- Responsibilities: Organising full day conference tracks on the impacts of AI on urban living and governance.

Nov 2016 – Sep 2017 | **Imperial College Data Science Society, London, USA**
Team Talent Development
- Responsibilities: Organising and teaching machine learning workshops in R and Python, arranging academic and industry talks, promoting data science and its social impacts.

Sep 2015 – Sep 2016 | **Aktionskreis Freiburger Schule, Freiburg, Germany**
Honorary Staff Member
- Responsibilities: Public relations, social media, event management.

Oct 2014 – Mar 2015 | **Mentoring Program of the Economics Department, University of Freiburg, Freiburg, Germany**
Mentor
- Responsibilities: Group supervision for first-semester undergraduate students.

Oct 2012 – Sep 2016 | **Student's Union of the Economics Department, University of Freiburg, Freiburg, Germany**
Student Representative
- Responsibilities: Elected student representative in various committees such as faculty council or student parliament. Co-president of the Economics Student Union (Oct 2013 – Oct 2015).

Awards & Scholarships

Nov 2020 – Apr 2021 | **Technical University of Munich & DLR, Munich, Germany**
Beyond Fellowship
- Value: €6,000, travel expenses

Oct 2018 – Sep 2019 | **The Alan Turing Institute, London, UK**
Enrichment Student Scholarship
- Value: £5,000

Oct 2017 – Dec 2021 | **Engineering and Physical Sciences Research Council, London, UK**
PhD Scholarship
- Value: Tuition fees

Oct 2017 – Dec 2021 | **University of Warwick, Coventry, UK**
PhD Stipend
- Value: £14,553 pa., research allowance

Talks

- GISRUK 2017 – CDRC Data Challenge, Leicester, UK, April 2018 (contributed talk)
- Data Natives 2018, London, UK, April 2018 (contributed talk)
- WPCCS 2018, Coventry, UK, June 2018 (contributed talk)
- UbiComp 2018 – Workshop "Pervasive Urban Applications", Singapore, October 2018 (contributed talk)
- NeurIPS 2018 – Workshop on Modeling and decision-making in the spatiotemporal domain, Montreal, Canada, December 2018 (contributed talk)
- A blueprint for urban analytics research, The Alan Turing Institute, Newcastle, UK, April 2019 (invited talk)
- ML4SEP Seminar, University of Zurich, Switzerland, January 2020 (invited talk)
- ICLR 2020 – Workshop "Machine Learning in Real Life" (ML-IRL), Addis Ababa, Ethiopia, April 2020 (contributed short talk)
- ICLR 2020 – Workshop "Climate Change AI" – Energy Day, Addis Ababa, Ethiopia, April 2020 (invited short talk)
- AI4EO seminar series, Munich, Germany, November 2020 (invited talk)
- AI4EO seminar series, Munich, Germany, July 2021 (invited talk)
- Royal Geographical Society – Annual Conference, London, UK, September 2021 (contributed talk)
- European Broadcasting Union – Green AI Micro-Workshop, virtual, March 2022 (invited talk)
- TUM.ai – Seminar series, Munich, Germany, July 2022 (invited talk)
- Harvard University – AI-Assisted Decision-Making for Conservation, Cambridge, USA, October 2022 (invited talk)
- University of Southern California – Frontiers of ML and AI, Los Angeles, USA, November 2022 (invited talk)
- TU Berlin – Climate Change & AI Berlin Brandenburg Workshop, virtual, November 2022 (invited talk)
- National Renewable Energy Laboratory – ALIS Seminar, virtual, January 2023 (invited talk)
- Massachusetts Institute of Technology – Slack Lunch Seminar (SLS), Cambridge, USA, March 2023 (invited talk)
- New York University – Machine Learning for Good (ML4G) Lab Seminar, New York, USA, May 2023 (invited talk)
- Microsoft Research – MSR Montreal Seminar, Montreal, Canada, August 2023 (invited talk)
- Mila – Seminar Talk with David Rolnick's research group, Montreal, Canada, August 2023 (invited talk)
- The Alan Turing Institute – Seminar Talk, London, UK, November 2023 (invited talk)
- AGU Annual Meeting – Beyond the Black Box—Advancing Geo-ML by Incorporating Context with Specialized Architectures, Benchmark Datasets, and Tailored Notions of Interpretability, San Francisco, USA, December 2023 (invited talk)
- University of Cambridge – Energy and Environment Group, Cambridge, UK, March 2024 (invited talk)
- Harvard University – Evaluating the Science of Geospatial AI Conference, Cambridge, USA, May 2024 (invited talk)
- Cyber2A – Cyber2A and PDG Webinar, June 2024 (invited talk)
- Copenhagen University – SSL4EO Summer School, Copenhagen, Denmark, July 2024 (invited talk)
- Technical University of Munich – AI4EO Symposium, Munich, Germany, July 2024 (invited talk)
- Cohere For AI – Community Webinar, November 2024 (invited talk)
- LIDS Computing & Sustainability Seminar – MIT, Cambridge, USA, February 2025 (invited talk)
- Workshop on ML for Remote Sensing – ICLR 2025, Singapore, May 2025 (invited talk)
- Workshop AI4C , Como, Italy, June 2025 (invited talk)
- Remote Sensing Seminar Series, Virginia Tech, Blacksburg, USA, February 2026 (invited talk)

Academic Services

Reviewing

- Journals: Nature, Nature Cities, PLOS ONE, Public Transport – Planning and Operations, Computer Vision and Image Understanding, Environmental Data Science, Environment and Planning B: Urban Analytics and City Science, International Journal of Geographic Information Science, Annals of the American Association of Geographers, Violence against Women, Geo-spatial Information Science, ISPRS Journal of Photogrammetry and Remote Sensing
- Conferences: IEEE ITSC, WI, KDD, AAAI, AISTATS, NeurIPS, CVPR, ICML, ICLR

Program Committee

- AAAI'23 Conference - "AI for Social Impact" track
- NeurIPS'19 Workshop "Machine Learning for the Developing World"
- ICLR'20 Workshop "Tackling Climate Change with Machine Learning"
- NeurIPS'20 Workshop "Tackling Climate Change with Machine Learning"
- ICLR'21 Workshop "Tackling Climate Change with Machine Learning"
- NeurIPS'21 Workshop "Tackling Climate Change with Machine Learning"
- NeurIPS'22 Workshop "Tackling Climate Change with Machine Learning"
- NeurIPS'23 Workshop "Tackling Climate Change with Machine Learning"
- ICLR'24 Workshop "Tackling Climate Change with Machine Learning"
- ICLR'24 Workshop "Machine Learning for Remote Sensing"
- CVPR'24 Workshop "EarthVision"
- NeurIPS'24 Workshop "Tackling Climate Change with Machine Learning"

Organization

- Applied Machine Learning Days – AI & Cities track, 2019–2021 (Co-organizer)
- ICLR'20 Workshop "Tackling Climate Change with Machine Learning" – Energy day (Co-organizer)
- NeurIPS'20 Workshop "Machine Learning for the Developing World" – Co-organizer and submissions chair
- NeurIPS'21 Workshop "Machine Learning for the Developing World" – Co-organizer and submissions chair
- ICLR'23 Workshop "Tackling Climate Change with Machine Learning" – Lead organizer
- ICLR'25 Workshop "Tackling Climate Change with Machine Learning" – Lead organizer

Mentoring

Undergraduate: Nathan Safir (University of Georgia)
Postgraduate: Gyri Reiersen (Technical University of Munich), David Mikisch (TU Berlin, Mila), Haoran Zhang (Harvard University), Livia Betti (CU Boulder), Arjun Rao (CU Boulder)

Languages

German (native language), English (fluent), French (advanced), Spanish (basic)

Software

Operating Systems: Windows OS, Linux OS
Statistics, Data Science & Machine Learning: R, Python (PyTorch), SPSS
Other: QGIS, Microsoft Office, LaTeX, PHP, PostgreSQL, HTML, CSS, PostGIS, Git, Docker

Publications

2025

1. **Klemmer, K.**, Rolf, E., Robinson, C., Mackey, L. & Russwurm, M. SatCLIP: Global, General-Purpose Location Embeddings with Satellite Imagery. *Proceedings of the AAAI Conference on Artificial Intelligence* (2025).
2. **Klemmer, K.** *et al.* Earth Embeddings: Towards AI-native Representations of our Planet. *submitted* (2025).
3. **Klemmer, K.** *et al.* ELSA: Local spatial autocorrelation of embeddings. *submitted* (2025).
4. Mickisch, D., **Klemmer, K.**, Teng, M. & Rolnick, D. A Joint Space-Time Encoder for Geographic Time-Series Data. *Tackling Climate Change with Machine Learning Workshop, International Conference on Learning Representations (ICLR)* (2025).
5. Mickisch, D. *et al.* Encoding Spatio-temporal Locations with Orthogonal Function Representations. *submitted* (2025).
6. Rao, A., Rußwurm, M., **Klemmer, K.** & Rolf, E. Measuring the Intrinsic Dimension of Earth Representations. *submitted* (2025).
7. Zhang, H., **Klemmer, K.**, Rolf, E. & Alvarez-Melis, D. Predicting out-of-domain performance under geographic distribution shifts. *Tackling Climate Change with Machine Learning Workshop, International Conference on Learning Representations (ICLR)* (2025).

2024

8. **Klemmer, K.** & Rolf, E. Satellite images reveal untracked human activity on the oceans. *Nature* (2024).
9. Koshiyama, A. *et al.* Towards algorithm auditing: a survey on managing legal, ethical and technological risks of AI, ML and associated algorithms. *Royal Society Open Science* (2024).
10. Rolf, E., **Klemmer, K.**, Robinson, C. & Kerner, H. Mission Critical - Satellite Data is a Distinct Modality in Machine Learning. *Proceedings of the International Conference on Machine Learning (ICML) (Spotlight)* (2024).
11. Russwurm, M., **Klemmer, K.**, Rolf, E., Zbinden, R. & Tuia, D. Geographic Location Encoding with Spherical Harmonics and Sinusoidal Representation Networks. *Proceedings of the International Conference on Learning Representations (ICLR) (Spotlight)* (2024).

2023

12. **Klemmer, K.** & Neill, D. B. Benchmarks and best practices for geospatial predictive modeling with graph neural networks. *submitted* (2023).
13. **Klemmer, K.**, Safir, N. & Neill, D. B. Positional Encoder Graph Neural Networks for Geographic Data. *Proceedings of the International Conference on Artificial Intelligence and Statistics (AISTATS)* (2023).
14. Weiss, M. *et al.* An Investigation of General-Purpose Neural Models for Low-Shot Adaptation in Geospatial Applications. *submitted* (2023).
15. Xu, L. *et al. Reflections from the Workshop on AI-Assisted Decision Making for Conservation* 2023.

2022

16. Cunningham[*], T., **Klemmer[*], K.**, Wen, H. & Ferhatosmanoglu, H. GeoPointGAN: Synthetic Spatial Data with Local Label Differential Privacy. *submitted* (2022).
17. **Klemmer[*], K.**, Xu[*], T., Acciaio, B. & Neill, D. B. SPATE-GAN: Improved Generative Modeling of Dynamic Spatio-Temporal Patterns with an Autoregressive Embedding Loss. *Proceedings of the AAAI Conference on Artificial Intelligence* (2022).
18. Reiersen, G. *et al.* ReforesTree: A Dataset for Estimating Tropical Forest Carbon Stock with Deep Learning and Aerial Imagery. *Proceedings of the AAAI Conference on Artificial Intelligence* (2022).

2021

19. **Klemmer, K.** & Neill, D. B. Auxiliary-task learning for geographic data with autoregressive embeddings. *Proceedings of the ACM International Symposium on Advances in Geographic Information Systems (SIGSPATIAL)* (2021).
20. **Klemmer, K.**, Neill, D. B. & Jarvis, S. A. Understanding spatial patterns in rape reporting delays. *Royal Society Open Science* (2021).
21. **Klemmer, K.**, Saha, S., Kahl, M., Xu, T. & Zhu, X. X. Generative modeling of spatio-temporal weather patterns with extreme event conditioning. *AI: Modeling Oceans and Climate Change (AIMOCC) Workshop, International Conference on Learning Representations (ICLR)* (2021).
22. Luo, M., Du, B., **Klemmer, K.**, Zhu, H. & Wen, H. Deployment Optimization for Shared e-Mobility Systems With Multi-Agent Deep Neural Search. *IEEE Transactions on Intelligent Transportation Systems* (2021).

2020

23. **Klemmer, K.**, Yeboah, G., de Albuquerque, J. P. & Jarvis, S. A. Population Mapping in Informal Settlements with High-Resolution Satellite Imagery and Equitable Ground-Truth. *Machine Learning in Real Life (ML-IRL) Workshop, International Conference on Learning Representations (ICLR)* (2020).
24. Luo, M. *et al.* D3P: Data-driven Demand Prediction for Fast Expanding Electric Vehicle Sharing Systems. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* (2020).

2019

25. **Klemmer, K.**, Koshiyama, A. & Flennerhag, S. Augmenting correlation structures in spatial data using deep generative models. *arXiv Preprint* (2019).

2018

26. **Klemmer, K.**, Brandt, T. & Jarvis, S. Isolating the effect of cycling on local business environments in London. *PLOS ONE* (2018).
27. Munoz-Mendez, F., Han, K., **Klemmer, K.** & Jarvis, S. Community Structures, Interactions and Dynamics in London's Bicycle Sharing Network. *Proceedings of the 2018 ACM International Joint Conference and 2018 International Symposium on Pervasive and Ubiquitous Computing and Wearable Computers (UbiComp)* (2018).

2017

28. Willing, C., **Klemmer, K.**, Brandt, T. & Neumann, D. Moving in time and space – Location intelligence for carsharing decision support. *Decision Support Systems* (2017).

2016

29. **Klemmer, K.**, Willing, C., Wagner, S. & Brandt, T. Explaining Spatio-Temporal Dynamics in Carsharing: A Case Study of Amsterdam. *AMCIS 2016 Proceedings* (2016).

* denotes equal contribution.