





# Dr. Konstantin Klemmer

Principal AI Research Engineer @ LGND AI

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 konstantinklemmer       konstantinklemmer.github.io

## Education

Jul 2018 – Jun 2022	<b>Center for Urban Science + Progress, New York University, Brooklyn, USA</b> <i>Visiting PhD Student</i> <ul style="list-style-type: none"><li>Research emphasis: Novel methods for identification of and learning from spatial patterns in urban data.</li><li>Supervision: Professor Daniel B. Neill</li></ul>
Oct 2017 – Jun 2022	<b>Department of Computer Science, University of Warwick, Coventry, UK</b> <i>PhD in Urban Science</i> <ul style="list-style-type: none"><li>Dissertation: Improving Neural Networks for Geospatial Applications with Geographic Context Embeddings.</li><li>Supervision: Professor Stephen A. Jarvis, Professor Daniel B. Neill, Dr. Hongkai Wen</li></ul>
Nov 2020 – Apr 2021	<b>AI4EO Future Lab, Technical University of Munich &amp; DLR, Munich, Germany</b> <i>Beyond Fellow</i> <ul style="list-style-type: none"><li>Research emphasis: Geospatial machine learning and remote sensing for Earth observation.</li><li>Supervision: Professor Xiaoxiang Zhu</li></ul>
Oct 2018 – Sep 2019	<b>The Alan Turing Institute, London, UK</b> <i>Enrichment Student</i> <ul style="list-style-type: none"><li>Research emphasis: Machine learning for urban analytics.</li></ul>
Oct 2016 – Sep 2017	<b>Imperial College London &amp; University College London, London, UK</b> <i>MSc Transport &amp; Business Management</i> <ul style="list-style-type: none"><li>Dissertation: Isolating the effect of cycling on local business environments in cities (Grade: 74/100)</li><li>Overall Grade: 72/100 (Distinction)</li></ul>
Oct 2012 – Feb 2016	<b>University of Freiburg, Freiburg, Germany</b> <i>BSc Economics</i> <ul style="list-style-type: none"><li>Dissertation: Exploring the spatio-temporal dynamics of carsharing utilization: A case study from Amsterdam (Grade: 1.0)</li><li>Overall Grade: 1.7 (Ranked 4th out of 74 in class)</li></ul>

## Work Experience

Aug 2025 – Ongoing	<b>LGND AI, San Francisco, USA</b> <i>Principal AI Research Engineer</i> <ul style="list-style-type: none"><li>Responsibilities: Bridging research and product development in AI for Earth applications</li><li>Manager: Dr. Dan Hammer</li></ul>
Dec 2024 – Jul 2025	<b>Microsoft Research, Redmond, USA</b> <i>Senior Applied Research Scientist</i> <ul style="list-style-type: none"><li>Responsibilities: Conceptualizing and executing machine learning research projects for industry-relevant applications.</li><li>Manager: Dr. Gayathri Mahalingam</li></ul>

Sep 2022 – Jun 2024	<b>Microsoft Research New England, Cambridge, USA</b> <i>Postdoctoral Researcher</i> <ul style="list-style-type: none"> <li>Responsibilities: Two-year research fellowship as part of the "ML &amp; Stats" postdoc program.</li> <li>Manager: Dr. Nicolo Fusi</li> </ul>
Jan 2022 – Jun 2022	<b>Department of Computer Science, University of Warwick, Coventry, UK</b> <i>EPSRC Mathematical Science Fellow</i> <ul style="list-style-type: none"> <li>Responsibilities: Continuation of research conducted throughout doctoral studies.</li> <li>Manager: Dr. Hongkai Wen</li> </ul>
Nov 2021 – Apr 2022	<b>Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Bonn, Germany</b> <i>Expert Consultant</i> <ul style="list-style-type: none"> <li>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.</li> </ul>
May 2016 – Dec 2019	<b>Geospin GmbH, Freiburg, Germany</b> <i>Student Fellow</i> <ul style="list-style-type: none"> <li>Responsibilities: Student fellow in a geospatial data analytics startup. Tasks included data science, social media strategy, market research and business development.</li> <li>Manager: Dr. Sebastian Wagner (CEO), Dr. Christoph Gebele</li> </ul>
May 2014 – Sep 2016	<b>Chair of Economic Policy and Constitutional Economics, University of Freiburg, Freiburg, Germany</b> <i>Student Assistant</i> <ul style="list-style-type: none"> <li>Responsibilities: Research assistance (econometric modelling, data preparation), administration of the Chair’s website and e-learning modules, event management.</li> <li>Manager: Professor Lars P. Feld</li> </ul>
Feb 2013 – Apr 2016	<b>Chair of Information Systems Research , University of Freiburg, Freiburg, Germany</b> <i>Student Assistant</i> <ul style="list-style-type: none"> <li>Responsibilities: Research assistance (data preparation and statistical analysis, data visualization), administration of e-learning modules.</li> <li>Manager: Professor Dirk Neumann</li> </ul>
Mar 2014 - May 2014	<b>Walter Eucken Institute, Freiburg, Germany</b> <i>Intern</i> <ul style="list-style-type: none"> <li>Responsibilities: Analysis of scientific articles, data processing, preparation of scientific presentations.</li> <li>Manager: Professor Lars P. Feld</li> </ul>
Sep 2011 – Aug 2012	<b>EVZ Care Center for People with Disabilities, Steinhöring, Germany</b> <i>Federal Voluntary Service</i> <ul style="list-style-type: none"> <li>Responsibilities: Assistance and care for multiply disabled people, carpool supervision, warehousing</li> </ul>

## Teaching Experience

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Oct 2017 – Sep 2018	<b>Department of Computer Science, University of Warwick, Coventry, UK</b> <i>Teaching Assistant</i> <ul style="list-style-type: none"> <li>Classes: CS1118 – Programming for Computer Scientists (Undergraduate), CS909 – Data Mining (postgraduate)</li> </ul>
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Mar 2013 – Apr 2016	<b>Chair of Information Systems Research, University of Freiburg, Freiburg, Germany</b> <i>Teaching Assistant</i> <ul style="list-style-type: none"> <li>Classes: Introduction to Information Systems (Undergraduate)</li> <li>Head instructor in the final year.</li> </ul>
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## Volunteering & Mentoring

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Aug 2020 – Ongoing	<b>Climate Change AI, Pittsburgh, USA</b> <i>Chair of the Communications Committee &amp; Member of the Board of Directors (2021-2023)</i> <ul style="list-style-type: none"> <li>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.</li> </ul>
Oct 2020 – Jan 2021	<b>Applied Machine Learning Days, Lausanne, Switzerland</b>
Oct 2019 – Jan 2020	<i>Co-organizer of the "AI &amp; Cities" track</i>
Oct 2018 – Jan 2019	<ul style="list-style-type: none"> <li>Responsibilities: Organising full day conference tracks on the impacts of AI on urban living and governance.</li> </ul>
Nov 2016 – Sep 2017	<b>Imperial College Data Science Society, London, USA</b> <i>Team Talent Development</i> <ul style="list-style-type: none"> <li>Responsibilities: Organising and teaching machine learning workshops in R and Python, arranging academic and industry talks, promoting data science and its social impacts.</li> </ul>
Sep 2015 – Sep 2016	<b>Aktionskreis Freiburger Schule, Freiburg, Germany</b> <i>Honorary Staff Member</i> <ul style="list-style-type: none"> <li>Responsibilities: Public relations, social media, event management.</li> </ul>
Oct 2014 – Mar 2015	<b>Mentoring Program of the Economics Department, University of Freiburg, Freiburg, Germany</b> <i>Mentor</i> <ul style="list-style-type: none"> <li>Responsibilities: Group supervision for first-semester undergraduate students.</li> </ul>
Oct 2012 – Sep 2016	<b>Student's Union of the Economics Department, University of Freiburg, Freiburg, Germany</b> <i>Student Representative</i> <ul style="list-style-type: none"> <li>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).</li> </ul>

## Awards & Scholarships

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Nov 2020 – Apr 2021	<b>Technical University of Munich &amp; DLR, Munich, Germany</b> <i>Beyond Fellowship</i> <ul style="list-style-type: none"> <li>Value: €6,000, travel expenses</li> </ul>
Oct 2018 – Sep 2019	<b>The Alan Turing Institute, London, UK</b> <i>Enrichment Student Scholarship</i> <ul style="list-style-type: none"> <li>Value: £5,000</li> </ul>
Oct 2017 – Dec 2021	<b>Engineering and Physical Sciences Research Council, London, UK</b> <i>PhD Scholarship</i> <ul style="list-style-type: none"> <li>Value: Tuition fees</li> </ul>
Oct 2017 – Dec 2021	<b>University of Warwick, Coventry, UK</b> <i>PhD Stipend</i> <ul style="list-style-type: none"> <li>Value: £14,553 pa., research allowance</li> </ul>

## Talks

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- 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)

## Academic Services

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### 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

### 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

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**Undergraduate:** Nathan Safir (University of Georgia)

**Postgraduate:** Gyri Reiersen (Technical University of Munich), David Mikisch (TU Berlin, Mila), Haoran Zhang (Harvard University)

## Languages

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

## Software

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**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

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| 2025 | <ol style="list-style-type: none"> <li>1. <b>Klemmer, K.</b>, Rolf, E., Robinson, C., Mackey, L. &amp; Russwurm, M. SatCLIP: Global, General-Purpose Location Embeddings with Satellite Imagery. <i>Proceedings of the AAAI Conference on Artificial Intelligence</i> (2025).</li> <li>2. Mickisch, D., <b>Klemmer, K.</b>, Teng, M. &amp; Rolnick, D. A Joint Space-Time Encoder for Geographic Time-Series Data. <i>Tackling Climate Change with Machine Learning Workshop, International Conference on Learning Representations (ICLR)</i> (2025).</li> <li>3. Zhang, H., <b>Klemmer, K.</b>, Rolf, E. &amp; Alvarez-Melis, D. Predicting out-of-domain performance under geographic distribution shifts. <i>Tackling Climate Change with Machine Learning Workshop, International Conference on Learning Representations (ICLR)</i> (2025).</li> </ol>   |
| 2024 | <ol style="list-style-type: none"> <li>4. <b>Klemmer, K.</b> &amp; Rolf, E. Satellite images reveal untracked human activity on the oceans. <i>Nature</i> (2024).</li> <li>5. Koshiyama, A. <i>et al.</i> Towards algorithm auditing: a survey on managing legal, ethical and technological risks of AI, ML and associated algorithms. <i>Royal Society Open Science</i> (2024).</li> <li>6. Rolf, E., <b>Klemmer, K.</b>, Robinson, C. &amp; Kerner, H. Mission Critical - Satellite Data is a Distinct Modality in Machine Learning. <i>Proceedings of the International Conference on Machine Learning (ICML) (Spotlight)</i> (2024).</li> <li>7. Russwurm, M., <b>Klemmer, K.</b>, Rolf, E., Zbinden, R. &amp; Tuia, D. Geographic Location Encoding with Spherical Harmonics and Sinusoidal Representation Networks. <i>Proceedings of the International Conference on Learning Representations (ICLR) (Spotlight)</i> (2024).</li> </ol>   |
| 2023 | <ol style="list-style-type: none"> <li>8. <b>Klemmer, K.</b> &amp; Neill, D. B. Benchmarks and best practices for geospatial predictive modeling with graph neural networks. <i>submitted</i> (2023).</li> <li>9. <b>Klemmer, K.</b>, Safir, N. &amp; Neill, D. B. Positional Encoder Graph Neural Networks for Geographic Data. <i>Proceedings of the International Conference on Artificial Intelligence and Statistics (AISTATS)</i> (2023).</li> <li>10. Weiss, M. <i>et al.</i> An Investigation of General-Purpose Neural Models for Low-Shot Adaptation in Geospatial Applications. <i>submitted</i> (2023).</li> <li>11. Xu, L. <i>et al.</i> <i>Reflections from the Workshop on AI-Assisted Decision Making for Conservation</i> 2023.</li> </ol>  |
| 2022 | <ol style="list-style-type: none"> <li>12. Cunningham*, T., <b>Klemmer*</b>, K., Wen, H. &amp; Ferhatosmanoglu, H. GeoPointGAN: Synthetic Spatial Data with Local Label Differential Privacy. <i>submitted</i> (2022).</li> <li>13. <b>Klemmer*</b>, K., Xu*, T., Acciaio, B. &amp; Neill, D. B. SPATE-GAN: Improved Generative Modeling of Dynamic Spatio-Temporal Patterns with an Autoregressive Embedding Loss. <i>Proceedings of the AAAI Conference on Artificial Intelligence</i> (2022).</li> <li>14. Reiersen, G. <i>et al.</i> ReforesTree: A Dataset for Estimating Tropical Forest Carbon Stock with Deep Learning and Aerial Imagery. <i>Proceedings of the AAAI Conference on Artificial Intelligence</i> (2022).</li> </ol>   |
| 2021 | <ol style="list-style-type: none"> <li>15. <b>Klemmer, K.</b> &amp; Neill, D. B. Auxiliary-task learning for geographic data with autoregressive embeddings. <i>Proceedings of the ACM International Symposium on Advances in Geographic Information Systems (SIGSPATIAL)</i> (2021).</li> <li>16. <b>Klemmer, K.</b>, Neill, D. B. &amp; Jarvis, S. A. Understanding spatial patterns in rape reporting delays. <i>Royal Society Open Science</i> (2021).</li> <li>17. <b>Klemmer, K.</b>, Saha, S., Kahl, M., Xu, T. &amp; Zhu, X. X. Generative modeling of spatio-temporal weather patterns with extreme event conditioning. <i>AI: Modeling Oceans and Climate Change (AIMOCC) Workshop, International Conference on Learning Representations (ICLR)</i> (2021).</li> <li>18. Luo, M., Du, B., <b>Klemmer, K.</b>, Zhu, H. &amp; Wen, H. Deployment Optimization for Shared e-Mobility Systems With Multi-Agent Deep Neural Search. <i>IEEE Transactions on Intelligent Transportation Systems</i> (2021).</li> </ol> |

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| 2020 | 19. <b>Klemmer, K.</b> , Yeboah, G., de Albuquerque, J. P. & Jarvis, S. A. Population Mapping in Informal Settlements with High-Resolution Satellite Imagery and Equitable Ground-Truth. <i>Machine Learning in Real Life (ML-IRL) Workshop, International Conference on Learning Representations (ICLR)</i> (2020).                  |
|      | 20. Luo, M. <i>et al.</i> D3P: Data-driven Demand Prediction for Fast Expanding Electric Vehicle Sharing Systems. <i>Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies</i> (2020).  |
| 2019 | 21. <b>Klemmer, K.</b> , Koshiyama, A. & Flennerhag, S. Augmenting correlation structures in spatial data using deep generative models. <i>arXiv Preprint</i> (2019).   |
| 2018 | 22. <b>Klemmer, K.</b> , Brandt, T. & Jarvis, S. Isolating the effect of cycling on local business environments in London. <i>PLOS ONE</i> (2018).  |
|      | 23. Munoz-Mendez, F., Han, K., <b>Klemmer, K.</b> & Jarvis, S. Community Structures, Interactions and Dynamics in London's Bicycle Sharing Network. <i>Proceedings of the 2018 ACM International Joint Conference and 2018 International Symposium on Pervasive and Ubiquitous Computing and Wearable Computers (UbiComp)</i> (2018). |
| 2017 | 24. Willing, C., <b>Klemmer, K.</b> , Brandt, T. & Neumann, D. Moving in time and space – Location intelligence for carsharing decision support. <i>Decision Support Systems</i> (2017).  |
| 2016 | 25. <b>Klemmer, K.</b> , Willing, C., Wagner, S. & Brandt, T. Explaining Spatio-Temporal Dynamics in Carsharing: A Case Study of Amsterdam. <i>AMCIS 2016 Proceedings</i> (2016).   |

\* denotes equal contribution.