



CV

Michael Jendryke, Dr.

DOB: July 23, 1984, Germany | Married, 2 kids

Co-Founder & CTO at GeoInsight

Expert in DGGs, AI-driven geospatial analytics, Rust, and scalable data infrastructures. 15+ years of experience in software architecture, data science, and interoperability standards (OGC, ISO). Leading GeoInsight to transform geospatial data into actionable intelligence.

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Kaiserstr. 25, 59505 Bad Sassendorf, Germany

CO-FOUNDER | CTO | GEOSPATIAL DATA SCIENTIST & ENGINEER

Innovative and results-driven **geospatial technology leader** with **15+ years of international experience** in **geospatial data science, data engineering, and software development**. Expertise in **Discrete Global Grid Systems (DGGS), AI-driven spatial analytics, and high-performance computing with Rust**. Specialized in **integrating and optimizing large-scale geospatial data**, developing **scalable APIs**, and leading **full-stack software architecture** for complex spatial data infrastructures. Strong background in **SQL, Python, Rust, and Linux** with a deep understanding of **interoperability standards (OGC, ISO)** and distributed computing. Proven ability to **lead teams, secure funding (€1.4M+ in grants), and drive research-to-market innovation**. Combining **technical excellence with strategic leadership**, currently spearheading **Geolnsight**, a startup focused on transforming geospatial data into actionable intelligence.

PROFESSIONAL EXPERIENCE

CO-FOUNDER & CTO

Geolnsight, Germany/Switzerland

May 2022 – present

- **Led the technical vision** and architecture of Geolnsight, developing **scalable software solutions** with **Rust, DGGS, and machine learning** for geospatial applications.
- Designed and optimized **databases, APIs, and algorithms** for high-performance spatial data processing.
- Spearheaded **customer acquisition and business strategy**, securing partnerships, conducting market research, and expanding the company's footprint.
- Managed **product development lifecycle**, from **ideation to execution**, ensuring alignment with industry standards (OGC, ISO).
- **Led funding and grant writing efforts**, successfully acquiring resources for research and product development.
- Oversaw **financial management and operations**, including budgeting, bookkeeping, and legal compliance.
- Built and mentored a **cross-functional team**, fostering a culture of innovation, collaboration, and problem-solving.
- Actively contributed to the **Open Geospatial Consortium (OGC)**, shaping interoperability standards for next-generation geospatial technologies.

ENTREPRENEUR | INDEPENDENT CONSULTANT

Germany/worldwide

Dec 2019 – present

- Developed a **discrete global grid spatial database** with **billions of hexagonal cells** for large-scale geospatial analytics.
- Conducted **multi-source geospatial data research using deep learning**, resulting in SCI-listed publications.
- Led **three research projects** on big geospatial data and **machine learning**, including mapping hate crimes & hate groups in the USA.
- Supervised **four Master's and PhD students** in **data science and remote sensing**, guiding research and manuscript preparation.
- Facilitated **international collaboration** by helping establish contact between **Wuhan University and UNITAR** for **MoU negotiations**.
- Taught **data science programming tutorials** on **Python and PostgreSQL** to **20+ students**, enhancing technical expertise.

RESEARCHER & CO-FOUNDER

Ruhr University Bochum, Germany

Jun 2021 – Dec 2023

- Led a **2.5-year, €1.4M research project** with a team of **up to 6 people**, focused on bringing **Discrete Global Grid Systems (DGGS) to market** as a university spin-off.
- **Designed and developed software architecture**, writing extensive code while steering the **technical vision and innovation**.
- Conducted **market research and customer interviews**, expanding the international partner network to assess commercialization potential.
- Negotiated with **university administration, HR, and funding agencies** to ensure seamless project execution.
- Managed the transition from **academic research to business development**, laying the foundation for the spin-off.

POSTDOCTORAL RESEARCHER

Wuhan University, China

Nov 2017 – Nov 2019

- Developed a **discrete global grid spatial database** with **billions of hexagonal cells** for large-scale geospatial analytics.
- Conducted **multi-source geospatial data research using deep learning**, resulting in SCI-listed publications.
- Led **three research projects** on big geospatial data and **machine learning**, including mapping hate crimes & hate groups in the USA.
- Supervised **four Master's and PhD students** in **data science and remote sensing**, guiding research and manuscript preparation.
- Facilitated **international collaboration** by helping establish contact between **Wuhan University and UNITAR** for **MoU negotiations**.
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DATA MANAGEMENT OFFICER

World Health Organization, Switzerland

Nov 2013 – Mar 2014

- Improved **geospatial data integrity** for WHO's **Polio Eradication Program** by fixing **50+ administrative country boundary layers** at levels 2 and 3, ensuring **topological accuracy** and historical consistency.
- Increased **case-to-place matching accuracy** from **80% to 95%**, enhancing outbreak monitoring and response effectiveness.
- Developed a **geodatabase backend** to **geolocate and analyze all recorded polio cases**, enabling multi-temporal spatial analysis for epidemiological insights.
- You can find my contributions to WHO's administrative boundary data on [their website](#).

VISITING RESEARCHER

Wuhan University, China

Feb 2011 – Jul 2011

- Developed a **prototype algorithm enabling the processing of high-resolution TerraSAR-X Spotlight Mode imagery** for applications requiring **sub-meter resolution**.
- Implemented the prototype in **MATLAB and Python**, then extended it as a **C++ add-on for the Delft Object-oriented Radar Interferometric Software (DORIS)**, now used internally and externally.
- **Published and presented** the paper "Using Open-Source Components to Process Interferometric TerraSAR-X Spotlight Data" at the TerraSAR-X & TanDEM-X Science Meeting (DLR).
- Built **connections within China's geospatial research community**, supporting student exchange and collaboration.
- Organized and led a **weekly English support group for 25+ students and teachers**, improving their language skills.

Feb 2025

REMOTE SENSING ANALYST @UNOSAT

UN Institute for Training and Research, Switzerland

Aug 2009 – Feb 2011

- Analyzed and visualized **20+ natural disasters**, including the **2010 Haiti earthquake** and **2011 Pakistan floods**, using optical and microwave satellite data. Delivered actionable insights to ground teams under **48-hour time constraints**.
- Conducted **flood mapping with advanced remote sensing**, ensuring **less than 3% reported errors** in field verification.
- Assessed civil conflicts in **Sri Lanka, Kyrgyzstan, and South Sudan** via high-resolution satellite imagery, contributing intelligence for **UN security reports**.
- Developed training materials, tutorials, and datasets for **remote sensing methodology courses**.

WATER RESOURCES ANALYST

Assoc. for Water and Rural Development (AWARD), South Africa

Jun 2007 – Oct 2007

- Conducted the **first-ever land cover change analysis** for six South African villages using historical aerial imagery and GIS, revealing **urban expansion and agricultural decline** during Apartheid.
- Co-Authored a **150-page water resource management guide**, simplifying government policies for stakeholders.
- Delivered spatial analysis that **influenced financial development negotiations**.

EDUCATION & PROFESSIONAL DEVELOPMENT

DOCTOR OF ENGINEERING (DR.-ING.) – PHOTOGRAMMETRY & REMOTE SENSING

Wuhan University, China

Jun 2012 – Jan 2017

Main project: *Inferring Shanghai's Urban Vibrancy Using Microwave Remote Sensing and Big Social Sensing Data* – Created an **urban vibrancy index** by analyzing **-1TB of remote sensing data** and **110+ million location-based social media messages** using **SQL, C#, and C++**.

Key coursework: Advanced Remote Sensing, Spatial Statistics & Analysis, Spatiotemporal Big Data Analytics, Data Science.

Skills & achievements: Scientific writing & communication, proposal writing, PhD project management (2+ years), problem-solving, analytical thinking.

MASTER OF SCIENCE – GEOGRAPHY & GEOMATICS

Ruhr University Bochum, Germany

Sep 2008 – Oct 2010

Main project: *System Development for Flood Analysis Using Radar Remote Sensing Data* – Developed and optimized **flood detection algorithms** for **UNOSAT**, improving processing time and accuracy.

GPA: 3.65/4.00 (Top 15% of students in my province, resulting in a **25% student loan reduction**).

Skills & coursework: Remote Sensing, GIS, Spatial Analysis, Cartography.

BACHELOR OF SCIENCE – GEOGRAPHY

Ruhr University Bochum, Germany

Sep 2005 – Aug 2008

Main project: *Spatial Investigation of Six South African Settlements – A Qualitative Aerial Photo Analysis* – Baseline research on settlement development, used by AWARD and other institutions.

Skills & coursework: Physical & Human Geography, Geosciences, Geomatics.

Internship: Conducted **GIS-based land cover analysis** in South Africa.

PUBLICATIONS & ACADEMIC ACHIEVEMENTS

Feb 2025

PEER-REVIEWED JOURNAL ARTICLES

Gino Caspari, João dos Santos Manuel, Ana Gago-Silva, [Michael Jendryke](#). 2024. "Employing discrete global grid systems for reproducible data obfuscation." *Nature Scientific Data* 11, 509 (2024). [DOI](#).

[Michael Jendryke](#) and Stephen C. McClure. 2021. "Spatial Prediction of Sparse Events Using a Discrete Global Grid System; a Case Study of Hate Crimes in the USA." *International Journal of Digital Earth* 0 (0): 1–17. [DOI](#).

Li, Xi, Xiya Li, Deren Li, Xiaojun He, and [Michael Jendryke](#). 2019. "A Preliminary Investigation of Luojia-1 Night-Time Light Imagery." *Remote Sensing Letters* 10 (6): 526–35. [DOI](#).

Caspari, Gino, Simon Donato, and [Michael Jendryke](#). 2019. "Remote Sensing and Citizen Science for Assessing Land Use Change in the Musandam (Oman)." *Journal of Arid Environments*. [DOI](#).

[Michael Jendryke](#) and Stephen C. McClure. 2019. "Mapping crime – Hate crimes and hate groups in the USA: A spatial analysis with gridded data" *Applied Geography* 111 (3). [DOI](#).

Liu, Shanshan, Xi Li, Noam Levin, and [Michael Jendryke](#). 2019. "Tracing Cultural Festival Patterns Using Time-Series of VIIRS Monthly Products." *Remote Sensing Letters* 10 (12): 1172–81. [DOI](#).

Balz, Timo, Prosper Washaya, and [Michael Jendryke](#). 2019. "Urban Change Monitoring Using Globally Available Sentinel-1 Imagery." In *BGDDS 2018 – 2018 International Workshop on Big Geospatial Data and Data Science*. [DOI](#).

Zhu, Ruoxin, Diao Lin, [Michael Jendryke](#), Chenyu Zuo, Linfang Ding, and Liqiu Meng. 2018. "Geo-Tagged Social Media Data-Based Analytical Approach for Perceiving Impacts of Social Events." *ISPRS International Journal of Geo-Information* 8 (1): 15. [DOI](#).

Li, Xi, Shanshan Liu, [Michael Jendryke](#), Deren Li, and Chuanqing Wu. 2018. "Night-Time Light Dynamics during the Iraqi Civil War." *Remote Sensing* 10 (6). [DOI](#).

Caspari, Gino, and [Michael Jendryke](#). 2017. "Archsphere – A Cluster Algorithm for Archaeological Applications." *Journal of Archaeological Science: Reports* 14 (May): 181–88. [DOI](#).

[Michael Jendryke](#), Timo Balz, and Mingsheng Liao. 2017. "Big Location-Based Social Media Messages from China's Sina Weibo Network: Collection, Storage, Visualization, and Potential Ways of Analysis." *Transactions in GIS* 21 (4): 825–34. [DOI](#).

[Michael Jendryke](#), Stephen C. McClure, Timo Balz, and Mingsheng Liao. 2017. "Monitoring the Built-up Environment of Shanghai on the Street-Block Level Using SAR and Volunteered Geographic Information." *International Journal of Digital Earth* 10 (7): 675–86. [DOI](#).

[Michael Jendryke](#), Timo Balz, Stephen C. McClure, and Mingsheng Liao. 2017. "Putting People in the Picture: Combining Big Location-Based Social Media Data and Remote Sensing Imagery for Enhanced Contextual Urban Information in Shanghai." *Computers, Environment and Urban Systems* 62: 99–112. [DOI](#).

[Michael Jendryke](#), Stephen C McClure, Timo Balz, and Mingsheng Liao. 2016. "Monitoring the Built-up Environment of Shanghai on the Street-Block Level Using SAR and Volunteered Geographic Information." *International Journal of Digital Earth* 0 (0): 1–12. [DOI](#).

Wei, Lianhuan, Mingsheng Liao, Timo Balz, Kang Liu, and [Michael Jendryke](#). 2013. "High-Resolution Tomosar & PS-LnSAR Analysis in Urban Areas." In *European Space Agency, (Special Publication) ESA SP. Vol. 704 SP*.

[Michael Jendryke](#), Timo Balz, Houjun Jiang, Mingsheng Liao, and Uwe Stilla. 2013. "Using Open-Source Components to Process Interferometric TerraSAR-X Spotlight Data." *International Journal of Antennas and Propagation* 2013. [DOI](#).

Balz, Timo, Lianhuan Wei, [Michael Jendryke](#), Daniele Perissin, and Mingsheng Liao. 2012. "Tomosar and PS-InSAR Analysis of High-Rise Buildings in Berlin." In *Proc. IGARSS 2012*, 447–50. IEEE. [DOI](#).

Michael Jendryke, Timo Balz, Mingsheng Liao, and Uwe Stilla. 2003. "Measuring Shanghai's Urban Growth since 2003 Using ENVISAT ASAR." In International Symposium on Remote Sensing of Environment ISRSE35, 1-7.

PROCEEDINGS

Michael Jendryke, Timo Balz, and Mingsheng Liao (2016) *Observing urban built-up change in Shanghai with SAR imagery*, Proceedings IGARSS 2016, Beijing, pp. 1788-1791, 2016.

Michael Jendryke, Mingsheng Liao, and Timo Balz (2013) *Using ENVISAT ASAR for urbanization surveillance in Shanghai*, Proc. 2013 Dragon Symposium, Palermo, Italy

Timo Balz, Lianhuan Wei, Michael Jendryke, Daniele Perissin, and Mingsheng Liao (2012) *TomoSAR and PS-InSAR analysis of high-rise buildings in Berlin*, IGARSS 2012 Proceedings

Lianhuan Wei, Mingsheng Liao, Timo Balz, K. Liu, and Michael Jendryke (2012) *High-resolution TomoSAR & PS-InSAR analysis in urban areas*, Proceedings Dragon 2&3 Symposium, Beijing, China

PRESENTATIONS

Michael Jendryke (2019) *Breaking the Wall of Where – Predicting hate crimes*, Falling Walls Innovation Lab, Shanghai, China

Michael Jendryke, and Xi Li (2017) *Observing China's urban development using big data*, ISPRS Workshop on Collaborative and Dynamic Land Cover Information Services Supporting UN Sustainable Development Goals, Jinan, China

Michael Jendryke, Guan Lin, Xi Li, Yidong Lou, and Deren Li (2016) *Benefits of Geospatial Technology in the One Belt One Road Initiative*, Wuhan University – Chinese Scholarship Council Meeting for Doctoral Students, Wuhan, China

Michael Jendryke, and Mingsheng Liao (2016) *Urban vibrancy inference from remote sensing and big social sensing data*, Ministry of Science and Technology – National Science Foundation of China, Annual Key Project Report, Beijing, China

Michael Jendryke, Timo Balz, and Mingsheng Liao (2016) *Urban vibrancy inference from remote sensing and big social sensing data*. School of Remote Sensing and Information Engineering – Doctoral Forum, Wuhan, China

Michael Jendryke, Timo Balz, and Mingsheng Liao (2016) *Collecting, visualizing, and analyzing location-based social media messages from China's Sina Weibo network*, International Symposium on Digital Earth – Digital Earth Summit, Beijing, China

Michael Jendryke, Timo Balz, Stephen McClure, and Mingsheng Liao (2015) *Combining Mobile Social Media Messages and Remote Sensing Results to Identify Urbanization Patterns in China*, American Association of Geographers Annual Meeting AAG, Chicago, USA

Michael Jendryke, Timo Balz, and Mingsheng Liao (2015) *Urban Dynamics in China*. LIESMARS Geoscience Café – Wuhan University, Wuhan, China

Michael Jendryke, Timo Balz, Mingsheng Liao, and Zhang Lu (2013) *Interferometric Processing of TanDEM-X Bi-Static Pairs Using an Open-Source Platform*. TerraSAR-X/TanDEM-X Meeting DLR, Oberpfaffenhofen, Germany

Michael Jendryke, Timo Balz, Mingsheng Liao and Uwe Stilla (2013) *Measuring Shanghai's urban growth since 2003 using ENVISAT ASAR*. International Symposium of Remote Sensing of the Environment ISRSE, Beijing, China

Michael Jendryke, and Wendi Petersen (2010) *Satellite Derived Analysis and Mapping Population Dynamics*, United Nations Fund for Population Activities UNFPA Expert Meeting: Population Dynamics and Climate Change II: Building for Adaption, Mexico City, Mexico (invited talk)

MAPS

- ESRI Inc. (2011) ESRI Map Book Volume 26, pp. 93–95 <http://www.esri.com/mapmuseum>
- UNITAR/UNOSAT (2009–2011) Maps at <https://www.unitar.org/unosat/maps> (Contributions to maps as part of the team)

ACKNOWLEDGEMENTS

- Du Toit D; Pollard S (2012) Public participation in the drafting of catchment management strategies made simple!
- Da Silva, A (2011) Land Use/Land Cover Modelling and Prediction
- Aigner, E. (2010) As Floodwaters Recede, a Crisis Emerges. The New York Times, Sept. 25
- Carvajal, D. (2010) Unrelenting misery in Pakistan. Int. Herald Tribune pp. 4, Aug. 28./29.
- Gall, C. (2010) Extent of the Flooding in Pakistan. The New York Times pp. A10, Aug. 20
- Shankar, R (2010) Accuracy Assessment of Post-Earthquake Building Damage Classification in Haiti

JOURNAL REVIEWER

- Computers, Environment and Urban Systems
- Transactions in GIS
- Geoinformatics & Geostatistics: An Overview
- IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
- MDPI Remote Sensing

PROFESSIONAL MEMBERSHIP

- Deutsche Gesellschaft für Kartographie DGfK (German Association for Cartography)
- Open Source Geospatial Foundation (OSGeo)

SKILLS & TRAININGS

SKILLS & EXPERTISE

Entrepreneurship & Leadership

Start-up Strategy | Market Research | Customer Acquisition | Business Development | Grant Writing | Fundraising | Research Leadership | Product Development | Partner & Stakeholder Engagement | Open Geospatial Consortium (OGC) | Open Source Contributions

Geospatial & Remote Sensing

Discrete Global Grid Systems (DGGS) | Geospatial Data Processing | Spatial Indexing | Remote Sensing | GIS | Image Processing | Spatial Statistics | Earth Observation | SAR/InSAR | LiDAR | Multi-temporal Analysis | Cartography

Software & Databases

PostgreSQL/PostGIS | DuckDB | Apache Accumulo | GeoMesa | QGIS | ESRI/ArcGIS | GDAL/OGR | ERDAS | Apache Hadoop HDFS | Cloud-based Geospatial Processing

Programming & Development

Rust | Python | C++ | C# | PL/SQL | JavaScript | MATLAB | BASH | HTML/CSS | GDAL/OGR | TensorFlow/Keras | NumPy | Pandas | SQLAlchemy | Matplotlib | PySQL | API Development | Software Architecture | High-Performance Computing (HPC)

Languages & Communication

German (Native) | English (Fluent) | Chinese (Beginner) | Technical Writing | Public Speaking | Scientific Communication

TRAININGS

2011	Google: Advanced training on KML generation, Geneva, Switzerland	3 days
2010	ERDAS: General software introduction, Geneva, Switzerland	3 days
2009	ESA: Next ESA SAR Toolbox (NEST), Frascati, Rome, Italy	3 days
2009	ESRI: GeoPortal version 9.x, Nyon, Switzerland	3 days

GRANTS & HONORS

2024	European Space Agency Business Incubator	50,000 EUR
2024	(Business) EXIST Forschungstransfer II (Research Transfer Grant)	180,000 EUR
2022	(University) EXIST Forschungstransfer I (Research Transfer Grant)	1,100,000 EUR
2018/19	LIEMARS Star Lake Research Grant	15,000 EUR
2016	Publication Award – LIEMARS Star Lake Award	1,500 EUR
2012–2016	Doctoral scholarship – Chinese Scholarship Council	per y -14,000 EUR
2012–2014	Doctoral scholarship – German Academic Exchange Service	per y -7,000 EUR
2010	Top 10% of all students in NRW cut BAföG student loan by	25%
2009	UN short term grant – German Academic Exchange Service	-1,000 EUR

VOLUNTEERING

Co-hosted English Corner: an informal group of students who want to improve their oral English, at Wuhan University. Weekly meetings and special events such as baseball or Halloween parties.

FURTHER LINKS

CURRENT

- My Company: <https://geoinsight.ai>
- Personal website: <https://michael.jendryke.de>
- ResearchGate: https://www.researchgate.net/profile/Michael_Jendryke
- LinkedIn: <https://www.linkedin.com/in/michaeljendryke/>
- Github: <https://github.com/michaeljendryke>

FROM PREVIOUS WORK

- UNOSAT Maps: <https://www.unitar.org/unosat/maps>
- Prof. Xi Li's group: http://www.lmars.whu.edu.cn/prof_web/lixi/en/intlcollab.html

Michael Jendryke

Michael Jendryke, Dr.