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Professional references

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Prof. Dr. Bernd Zolitschka,
Geography Institute,
University of Bremen
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Prof. Dr. Hsuan-Tien Lin,
Department of Computer
Science and Information
Engineering,
National Taiwan University
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Profile URL

[Github](#), [Researchgate](#), [Linkedin](#), [ORCID](#)

Education

Binational doctoral degree: Sept. 2018 - Sept. 2022

Geography Institute, University of Bremen
Department of Geosciences, National Taiwan University

Master of Science: Sept. 2015 - June 2017

Department of Geosciences, National Taiwan University

Bachelor of Science: Sept. 2011 - June 2015

Department of Geosciences, National Taiwan University

Positions

Postdoc researcher: Since Feb. 2023

- Science and Technology Research Institute for DECarbonization, Taiwan

Doctoral researcher: Feb. 2019- Sept. 2022

- GEOPOLAR, Institute of Geography, University of Bremen, Germany

Doctoral researcher: Sept. 2018- Sept. 2022

- Environment and Nanomaterial lab, Department of Geosciences, National Taiwan University, Taiwan

Featured skills

Fundamental background:

Geoscience, Geochemistry, Sedimentology

ML techniques

Conventional ML, Neural network,
High-performance computing

Operation systems:

MacOS, Linux, Windows

Programming:

Pytorch, Scipy, Scikit-learn,
Scikit-image, Matplotlib
Git/Github

Version/collaboration:

Languages

Mandarin Chinese:

native speaker

English:

fluent

German:

beginner (A2)

Publications

- Lee, A.-S. (2022). "Machine learning techniques applied to sediment core scanning data in the framework of sedimentological and paleoceanographical investigations", Dissertation, Fachbereich 08: Sozialwissenschaften (FB 08), Universität Bremen
- Lee, A.-S., W. -S. Chao, S. Y. H. Liou, R. Tiedemann, B. Zolitschka, L. Lembke-Jene (2022). "Quantifying calcium carbonate and organic carbon content in marine sediments from XRF-scanning spectra with a machine learning approach." Scientific Reports.
- Lee, A.-S., D. Enters, J.-J. S. Huang, S. Y. H. Liou, B. Zolitschka (2022). "An automatic sediment-facies classification approach using machine learning and feature engineering." Communications Earth & Environment.
- Zolitschka, B., A.-S. Lee, D. P. Bermúdez and T. Giesecke (2021). "Environmental variability at the margin of the South American monsoon system recorded by a high-resolution sediment record from Lagoa Dourada (South Brazil)." Quaternary Science Reviews 272: 107204.
- Lee, A.-S., D. Enters, J. Titschack and B. Zolitschka (2021). "Facies characterisation of sediments from the East Frisian Wadden Sea (Germany): new insights from down-core scanning techniques." Netherlands Journal of Geosciences 100: e8.
- Lee, A.-S., J.-J. S. Huang, G. Burr, L. C. Kao, K.-Y. Wei and S. Y. H. Liou (2019). "High resolution record of heavy metals from estuary sediments of Nankan River (Taiwan) assessed by rigorous multivariate statistical analysis." Quaternary International 527: 44-51.

Scholarships

- Kontaktstipendium, STIBET Doktoranden, 2022, Der Deutsche Akademische Austauschdienst
- Green Energy Scholarship Programme, 2022, Ørsted Taiwan
- Impulse Grants for Research Projects, 2019, University of Bremen

Projects

- “Tracing intermediate water current changes and sea ice expansion in the Indian Ocean”, since 2023, Repository Core Re-Discovery Program, Japan Drilling Earth Science Consortium and Kochi Core Center (ReC-001)
- “Systematic and comprehensive land database of nation: development and repository”, since 2022, National Science & Technology Council Taiwan (NSTC-111-2119-M-002-018)
- “Introduce machine learning as a bridge connecting conventional methods and down-core scanning techniques in Geoscience: exemplary materials from Germany, Argentina, and Northwestern Pacific Ocean”, since 2021, Ministry of Science & Technology Taiwan (MOST 110-2116-M-002-023)
- “Groundwater stratigraphical investigation in Mid-Taiwan”, 2021, National Science and Technology Center for Disaster Reduction
- “The Wadden Sea archive of landscape evolution, climate change and settlement history: exploration – analysis – predictive modelling”, 2019-2020, Niedersachsen Vorab

Academic conferences

- “Pretraining Foundation Models: Unleashing the Power of Forgotten Spectra for Advanced Geological Applications”, **European Geosciences Union 2024**, Poster
- “Scale up geological research capacity: Machine learning and sediment core scanning techniques”, 2023, **Kochi Core Center Meeting**, Invited talk
- “Applying a Machine Learning Approach to Sediment-Facies Classification of Coastal Sediments from Northern Germany”, 2021, **American Geophysical Union Fall Meeting**, Oral presentation
- “Automatic Classification of Sediment Facies Applying Geochemical Data from Coastal Sediments (East Frisian Wadden Sea, Germany)”, 2021, **Deutsche Quartärvereinigung**, Oral presentation
- “Artificial intelligence for facies classification based on high-resolution data from sediments of the Wadden Sea, Germany”, **Japan Geoscience Union Meeting 2021**, Invited talk
- “New insight into old sediments: facies characterization and paleoenvironmental reconstruction of coastal sediments from the East Frisian Wadden Sea, Germany”, 2019, **International Conference of Drowned Paleo-landscapes: Current Archaeological and Natural Scientific Research in the Wadden Sea and the North Sea Basin**, Poster presentation
- “From wiggles to statistics – a few thoughts and tricks when encountering high-resolution XRF-core scanning data of long sedimentary record”, 2019, **University of Innsbruck**, Invited talk