LEE, AN-SHENG (李 安昇)

Degree: PhD
Area of specialization:
Geochemistry & AI

Homepage:
https://dispink.github.io/

Affiliation

Assistant Professor

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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

Assistant professor Since July 2025

- Marine Core Research Institute, Kochi University

Partner developer: Since April 2024

- World Data Center PANGAEA, Germany

Postdoc researcher: Feb. 2023 - June 2025

- Department of Geosciences, National Taiwan University, Taiwan

Doctoral researcher: Feb. 2019 - Sept. 2022

- Institute of Geography, University of Bremen, Germany

Doctoral researcher: Sept. 2018 - Sept. 2022

- Department of Geosciences, National Taiwan University, Taiwan

Featured skills

AI techniques	Data-driven machine learning, Image classification, Tabular regression, Foundation models
Analytical instruments:	XRF core scanning, optical camera, Computed Tomography, ICP-OES, Magnetic susceptibility

Research achievements

Original papers (refereed)

- Lee, A.-S., Y.-W. Pao, H.-T. Lin, S. Y. H. Liou (2025). “Cross-Project Deep-Sea Sediment Geochemistry from XRF Spectra: A Self-supervised Foundation Model (MAX)” JGR: Machine Learning and Computation.
- 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.

Invited presentations

- “Translating XRF into Various Measurements with an Inclusive Self-Supervised Model”, 2025, **南極堆積物コアのデジタル化とAI解析に関するワークショップ**
- “Machine learning and XRF core scanning: breaking barriers between projects”, 2024, **NIOZ & AVAATECH XRF Core Scanning User Meeting**
- “Scale up geological research capacity: Artificial Intelligence and ReCoRD”, 2023, **Kochi Core Center Meeting**
- “Artificial intelligence for facies classification based on high-resolution data from sediments of the Wadden Sea, Germany”, 2021, **Japan Geoscience Union Meeting**
- "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**

Awards

- Kontaktstipendium, STIBET Doktoranden, 2022, Der Deutsche Akademische Austauschdienst
- Green Energy Scholarship Programme, 2022, Ørsted Taiwan
- The Excellent Academic Performance, 2022, Youth Forum at Department of Geosciences, National Taiwan University

Three most cited papers

- 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.
- 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.

Achievement in awarded research funds

- "Systematic and comprehensive land database of nation: development and repository", since 2022, Assigned, National Science & Technology Council Taiwan, 915K USD
- "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, Assigned, Ministry of Science & Technology Taiwan, 160K USD
- "Groundwater stratigraphical investigation in Mid-Taiwan", 2021, Assigned, National Science and Technology Center for Disaster Reduction, 30K USD
- "Impulse Grants for Research Projects", 2019, Representative, University of Bremen, 2K USD (this grant is used for attending the Urbino Summer School in Paleoclimatology)

Other information

International research programs:

- Core-to-Core Program, WarmCCR(2025)
- ReCoRD project, ReC23-03 (2024)
- ReCoRD project, ReC23-01 (2023)
- Urbino summer school in Paleoclimatology in Italy (2019)
- Collaborative field trip with Bremen University in Taiwan (2017)
- Collaborative field trip with Tohoku University in Japan (2014)
- Collaborative field trip with China University of Geosciences, Wuhan in China (2014)

International conferences

- “Leveraging Big Data and Deep Learning for Quantifying XRF Core Scanning Data into Various Geological Proxies”, **Japan Geoscience Union Meeting**, 2025, Poster
- “Pretraining Foundation Models: Unleashing the Power of Forgotten Spectra for Advanced Geological Applications”, **European Geosciences Union Meeting**, 2024, Poster
- “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
- "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

Leadership practices:

- Head organizers of Taiwanese Geoscientists Networking Meeting in EGU, 2024, Vienna (ca. 60 participants)
- Head organizer of Workshop for Taiwan Core Repository, 2023, Taipei (ca. 50 participants)
- Head organizers of Taiwan Geosciences Assembly 2021 (ca. 800 participants)
- Vice president in Association of Taiwanese Geoscientists in Europe since 2020