

YANAN CHU

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Research interests: Coastal Geomorphology and Erosion Processes; Estuarine and Sediment Dynamics; Flood Risk Assessment & Management; Remote Sensing for Environmental Monitoring & Water Resources

EDUCATION

Ocean University of China, Qingdao, China

Aug. 2023 - Jun. 2026

- **GPA:** 3.9/4.0 (**Rank:** 2/36) *M.Eng., Civil Engineering*
- **Awards:** National Scholarship, Asia and Pacific Mathematical Contest in Modelling 1st Prize, Huawei Cup China Postgraduate Mathematical Contest in Modelling 1st Prize and 2nd Prize, Science and Technology Competition Scholarship 1st Prize and 2nd Prize, Outstanding Graduate Student (Top 10%)
- **Core Courses:** Urban Disaster Prevention and Management, Data Warehouse and Data Mining, Statistical Learning Methods, Numerical Computing Methods, Multi-Objective Decision Making

Qingdao University of Technology, Qingdao, China

Sep. 2019 - Jun. 2023

- **GPA:** 4.5/5.0 (**Rank:** 2/131) *B.Eng., Engineering Cost*
- **Awards:** National Scholarship, Provincial Outstanding Graduate, University Outstanding Graduate, 8th National College BIM Graduation Design Innovation Competition 1st Prize
- **Core Courses:** Structural Mechanics, Engineering Mechanics, Engineering Structures

PUBLICATIONS

- [1]Sun, H., **Chu, Y.**, Liang, B., Wang, H., & Fan, C. (2025). A human-machine collaborative approach for high-resolution monitoring of suspended sediment dynamics in data-scarce and optically complex waters. *International Journal of Applied Earth Observation and Geoinformation*, 142, 104714. <https://doi.org/10.1016/j.jag.2025.104714> (**SCI, IF=8.6, JCR Q1**)
- [2]Sun, H., **Chu, Y.**, Fan, C., Wang, H., & Liang, B. (2025). Geo-adaptive deep learning for regional-scale bathymetric modeling in optically and morphologically challenging waters: A case study of the Yellow River Estuary. *Journal of Hydrology: Regional Studies*, 62, 102931. <https://doi.org/10.1016/j.ejrh.2025.102931> (**SCI, IF=5.0, JCR Q1**)
- [3]Sun, H., Zhao, Z., Ruan, X., **Chu, Y.**, & Fan, C. (2025). Large-scale evaluation of beach morphodynamic evolution and environmental drivers along China's Eastern Coast through long-term Landsat analysis. *Earth's Future*, 13(9), e2025EF006058. <https://doi.org/10.1029/2025EF006058> (**SCI, IF=8.2, JCR Q1**)
- [4]Sun, H., Chen, Y., **Chu, Y.**, & Liang, B. (2026). A multi-scale deep learning framework for real-time post-earthquake damage estimation leveraging wavelet-driven GoogLeNet-FC. *Soil Dynamics and Earthquake Engineering*, 204, 110084. <https://doi.org/10.1016/j.soildyn.2025.110084> (**SCI, IF=4.6, JCR Q1**)
- [5]Sun, H., Yan, Y., Qu, Y., Yao, W., Wang, H., **Chu, Y.**, & Liang, B. (2026). Causality-aware spatiotemporal graph attention modeling for multi-station storm surge forecasting under typhoon forcing. *Coastal Engineering*, 208, 105020. <https://doi.org/10.1016/j.coastaleng.2026.105020>. (**SCI, IF=5.6, JCR Q1**)
- [6]Sun, H., Li, Z., **Chu, Y.**, Ruan, X., Wang, J., & Fan, C. (2025). An accuracy-enhanced risk assessment framework for compound flood peak-volume effects using a mixed copula-probabilistic approach: A case study of the Yangtze River Basin, China. *Natural Hazards*, 121(11), 12635-12664. <https://doi.org/10.1007/s11069-025-07294-0> (**SCI, IF=3.7, JCR Q2**)
- [7]Sun, H., Chu, Z., Ruan, X., **Chu, Y.**, & Fan, C. (2025). Evolution of flood risk and dynamic assessment in the Poyang Lake Basin driven by land use changes. *Journal of Safety and Environment*, 1-14. <https://doi.org/10.13637/j.issn.1009-6094.2025.0458> (**PKU Core Journal in Chinese**)

MANUSCRIPTS

- [1]Sun, H., **Chu, Y.**, Wang, H., Yao, W., Fan, C., Li, Z., & Liang, B. (Under Revision). A copula-based multivariate scenario framework for revealing underestimated flood risks in the Miluo River Basin, China. *Journal of Safety Science and Resilience*. (**SCI, IF=6.3, JCR Q1**)

PATENTS & SOFTWARE COPYRIGHTS

- [1]**Chu, Y.**, Liang, B., Sun, H., & Wang, Z. (2025). An optical method for monitoring suspended sediments in complex aquatic environments based on human-machine collaboration (Patent No. CN120356100B)

- [2]Sun, H., Liang, B., **Chu, Y.**, & Wang, Z. (2025). Water depth inversion of high-sediment-laden water bodies based on multispectral remote sensing method (Patent No. CN119762975B)
- [3]Sun, H., Liang, B., Chen, Y., Wang, Z., & **Chu, Y.** (2025). Seismic damage assessment method based on wavelet transform and deep convolutional neural network (Patent No. CN120524697B)
- [4]**Chu, Y.** (2022). Multidimensional on-line analytical processing software for engineering cost V1.0. 2022SR1217069. National Copyright Administration of the People's Republic of China
- [5]Chen, Y., **Chu, Y.**, Sun, P., Han, M., Wang, J., & Wang, S. (2022). Community smart parking construction system based on new infrastructure-optimised ETC technology V1.0. 2022SR0775456. National Copyright Administration of the People's Republic of China

RESEARCH EXPERIENCE

Correlation study of the floating multi-body system on fluid-structure interaction at the near field and multi-body motions

Jan. 2021 - Dec. 2024

Adviser: Prof. Hai Sun, National Science Foundation of China (Grant No.: 52071307)

- Utilised ANSYS Fluent for numerical simulations to analyse parameter correlations in the floating multi-body system, conducting sensitivity tests to validate key variables
- Applied MATLAB for post-processing of simulation results, visualising correlation trends between near-field fluid forces and multi-body motion parameters to support mechanism analysis

Research on real-time simulation and coupled risk quantitative model of the overtopping flood caused by extreme ocean storm surge based on data-driven

Jan. 2020 - Dec. 2022

Adviser: Prof. Hai Sun, National Science Foundation of China (Grant No.: 41906185)

- Integrated Holland model with ERA5 wind field data ($0.25^{\circ} \times 0.25^{\circ}$ resolution) and applied MIKE 21 to simulate storm surge inundation processes, outputting hourly surge levels
- Developed an integrated ArcGIS-based inundation model using Manning's equation, incorporating geographic data such as terrain slope and surface roughness, to simulate storm surge flooding and delineate inundation extents

Construction of Qidong Road Community intelligent parking system based on new infrastructure and optimised ETC technology

Jul. 2021 - Apr. 2022

Adviser: Prof. Lingli Gao, National Undergraduate Training Programme for Innovation and Entrepreneurship

- Designed an intelligent parking system integrating new infrastructure and optimised ETC technology for Qidong Road Community (0.18 km², 6,000 residents, 396 parking spaces), improving parking without impacting roads
- Established a coordinated mechanism combining geomagnetic detectors, NB-IoT, and LPR systems to sense occupancy, transmit real-time data, and collect licence plate information

Research on disaster mechanism and disaster prevention countermeasures of multi-source storm surge along Shandong Coast

Jan. 2018 - Dec. 2021

Adviser: Prof. Hai Sun, Shandong Joint Fund of National Natural Science Foundation of China (Grant No.: U1706226)

- Analysed multi-source factors of coastal storm surges to study their disaster-causing mechanisms, revealing key influencing factors and underlying principles
- Collected and organised storm surge-related data, including historical storm surge records, meteorological data, and marine observation data, to support research foundations

PROFESSIONAL ACTIVITIES

Academic Forum on Smart and Ecological Water Conservancy and Harmonious Rivers and Lakes

Apr. 2025

- Presented research on active-passive multispectral remote sensing for full-section bathymetry in the high-sediment Yellow River Estuary, highlighting multi-source data fusion and nonlinear inversion techniques

The 2nd Global Health Forum (GHF) of the Boao Forum for Asia

Jun. 2021

- Assisted with participant registration, badge management, and on-site guidance for 68 attendees, improving communication and organizational skills

SKILLS

Technical Skills: ArcGIS, ENVI, MIKE21, Python, MATLAB, SPSS, Adobe Premiere Pro, Adobe Photoshop

Languages: English (fluent), Mandarin (native)