

Jingzhe Hu (扈敬哲) - Academic CV

Version Note: This file is translated from the Chinese CV and compiled from ORCID, Google Scholar, and patent certificates.

Information Status: As of June 9, 2026.

Recommended Use: Serves as the primary source of English data for the personal website, group websites, funding/award applications, and general academic purposes.

I. Basic Info

Item	Content
Name	Jingzhe Hu
Chinese Name	扈敬哲
Phone	17658093187
Email	cps.hjz@gmail.com
Location	Zibo, Shandong
Age	26
Gender	Male
Political Status	CPC Member
Institution	Hohai University
Current Phase	Ph.D. Student
Major	Hydrology and Water Resources
ORCID	0009-0008-0867-9667
Google Scholar	Jingzhe Hu / Hohai University
Research Interests	DL, ML, Water quality prediction

II. Profile

Jingzhe Hu is a Ph.D. student majoring in Hydrology and Water Resources at Hohai University, with an academic background including an M.S. in Computer Application Technology and a B.S. in Network Engineering. He has been engaged in interdisciplinary research on hydrology, marine ranching, smart fisheries, and intelligent water quality prediction. His research interests focus on multi-source heterogeneous data-driven modeling, multivariate long-term time series forecasting, watershed hydrology and water quality prediction, dissolved oxygen forecasting, cross-basin transfer learning, Transformer, Graph Neural Networks, multiscale decomposition, and fuzzy-rule attention mechanisms.

His research path reflects the cross-disciplinary integration of "intelligent computer algorithms – hydrology & water quality applications – engineering system implementation": in his undergraduate years, he focused on embedded systems, quadcopters, smart hardware, and electronic design competitions; in his master's phase, he focused on smart fisheries, marine ranch water quality prediction, and deep learning time series modeling; in his doctoral phase, he further expanded to watershed-scale hydrology and water quality multivariate prediction, physics-informed deep learning, cross-basin transfer learning, and monitoring network layout optimization.

As of now, he has published multiple SCI papers in top journals such as Water Research, Computers and Electronics in Agriculture, Ecological Informatics, Expert Systems with Applications, and Ecological Indicators. He holds 3 authorized

invention patents and 1 software copyright. He won the National Second and Third Prizes in the China Graduate Mathematical Modeling Competition, and was named a Shandong Provincial Outstanding Graduate.

III. Research Interests

3.1 Primary Research Areas

- Intelligent Hydrology & Water Resources Forecasting
- Watershed Hydrology & Water Quality Multivariate Prediction
- Long-term Water Quality Forecasting & Cross-basin Transfer Learning
- Water Quality Multi-parameter Time Series Prediction
- Long-term Dissolved Oxygen Forecasting
- Intelligent Sensing for Marine Ranching & Smart Fisheries
- Multi-source Heterogeneous Data Fusion & Decision Support
- Physics-informed Deep Learning
- Spatiotemporal Water Quality Modeling & Monitoring Network Optimization

3.2 Algorithms & Technical Directions

- Transformer and Time Series Prediction Models
- Temporal Fusion Transformer (TFT)
- Graph Convolutional Networks (GCN)
- Time-Graph Convolutional Networks
- Multiscale Decomposition
- Fuzzy-Rule Attention Mechanisms
- Dynamic Adaptive Mechanisms
- Cross-basin Transfer Learning
- Deep Learning & Machine Learning
- Physics-Informed Neural Networks (PINN)
- Multimodal Feature Extraction
- Computer Vision & Underwater Image Analysis

3.3 Engineering & Hardware Directions

- Embedded System Development
- Beidou GNSS Positioning Development
- SDK Development
- A-SPIICE Process
- STM32 / MSP432 / MSP430 Development
- Quadcopter Flight Control Systems
- Quaternion Attitude Estimation

- Kalman Filtering
- Cascade PID Control
- OpenMV Visual Recognition
- PCB & Circuit Design

IV. Education

2025.09 – Present | Hohai University | Major in Hydrology and Water Resources | Ph.D. Student

- Major: Hydrology and Water Resources
- Research Focus: Watershed hydrology and water quality multivariate prediction, intelligent water quality modeling, cross-basin transfer learning, physics-informed deep learning, multi-source heterogeneous water data modeling.
- Academic Identity: Jingzhe Hu, Hohai University.

2022.09 – 2025.07 | Shandong Technology and Business University | Major in Computer Application Technology | Master of Science

- Major: Computer Application Technology
- Research Focus: Deep learning time series forecasting, marine ranch water quality modeling, dissolved oxygen prediction, smart fishery intelligent decision-making, multi-source water quality parameter prediction.
- Key Accomplishments: Published water quality forecasting papers as first author in journals like Ecological Informatics and Computers and Electronics in Agriculture.

2018.09 – 2022.07 | Shandong Technology and Business University | Major in Network Engineering | Bachelor of Science

- Major: Network Engineering
- Research & Practice Focus: Embedded systems, quadcopters, smart hardware, electronic design competitions, IoT application development, smart flower management systems.
- Key Accomplishments: Headed a national-level National Undergraduate Innovation and Entrepreneurship Training Program project; participated in and won multiple awards in electronic design, IoT, Lanqiao Cup, and iCAN innovation competitions.

V. Academic Impact

5.1 ORCID

- ORCID: 0009-0008-0867-9667
- Name: Jingzhe Hu
- Education/Qualification: Hohai University, Nanjing, Jiangsu, CN
- Works recorded on ORCID: 6
- Peer reviews recorded on ORCID: 3 journals

5.2 Google Scholar

- Name: Jingzhe Hu
- Institution: Hohai University
- Research Labels: DL, ML, Water quality prediction
- Total Citations: 75
- h-index: 5
- i10-index: 3
- Time Span: 2021 to Present

5.3 Academic Achievements Overview

Category	Count / Status
Verifiable Journal Papers	6
Conference Abstracts / Preprints	1
Google Scholar Citations	75
Google Scholar h-index	5
Google Scholar i10-index	3
Authorized Invention Patents	3
Software Copyrights	1
Works in ORCID	6
Peer Reviews in ORCID	3 journals

VI. Publications

6.1 Journal Papers

[1] Water Research | First Author | Published

Jingzhe Hu, Y. Li, D. Jiang, D. Zhang, C. Lu, W. Zhi. Multiscale decomposition and fuzzy-rule attention: A transferable cross-basin framework for long-term water quality forecasting. *Water Research*, 2026, 125593. DOI: 10.1016/j.watres.2026.125593

- Role: First Author
- Status: Published / Recorded as journal-article in ORCID
- Date: May 2026
- Journal: *Water Research*
- CAS Division: Tier 1 Top
- JCR Division: Q1
- IF: 14.7
- Google Scholar Status: Listed on profile page as *Water Research*, 125593
- Research Topic: Multiscale decomposition, fuzzy-rule attention, cross-basin transfer, long-term water quality forecasting, watershed environmental modeling

[2] Computers and Electronics in Agriculture | First Author | Published

Jingzhe Hu, Mengdi Li, Lu Liu, Xiaodong Ji, Dashe Li. A long-term multi-input and multi-output predictive model for key water quality factors in an aquaculture environment. *Computers and Electronics in Agriculture*, 2025, 237:110498. DOI: 10.1016/j.compag.2025.110498

- Role: First Author
- Status: Published
- Date: Oct 2025 (ORCID)
- CAS Division: Tier 1 Top
- JCR Division: Q1
- IF: 8.4
- Citations (Scholar): 6
- Research Topic: Aquaculture environment, key water quality factors, MIMO prediction, long-term multivariate time series forecasting

[3] Ecological Informatics | First Author | Published

Jingzhe Hu, Peixuan Wang, Dashe Li, Shue Liu. A long-term multivariate time series prediction model for dissolved oxygen. *Ecological Informatics*, 2024, 82:102695. DOI: 10.1016/j.ecoinf.2024.102695

- Role: First Author
- Status: Published
- Date: Sep 2024 (ORCID)
- CAS Division: Tier 2
- JCR Division: Q1
- IF: 5.8
- Citations (Scholar): 20
- Research Topic: Dissolved oxygen prediction, multivariate time series, long-term forecasting, smart fishery water quality modeling

[4] Expert Systems with Applications | Corresponding Author | Published

Dashe Li, Jingzhe Hu, Mengdi Li, Siwei Zhao. A long-term dissolved oxygen prediction model in aquaculture using transformer with a dynamic adaptive mechanism. *Expert Systems with Applications*, 2025, 259:125258. DOI: 10.1016/j.eswa.2024.125258

- Role: Corresponding Author (Advisor as First Author)
- Status: Published
- Date: Jan 2025 (ORCID)
- CAS Division: Tier 1 Top
- JCR Division: Q1
- IF: 8.5
- Citations (Scholar): 16
- Research Topic: Dissolved oxygen long-term prediction, Transformer, dynamic adaptive mechanism, intelligent aquaculture prediction

[5] Ecological Indicators | Third Author | Published

Dashe Li, Weijie Zhao, Jingzhe Hu, Siwei Zhao, Shue Liu. A long-term water quality prediction model for marine ranch based on time-graph convolutional neural network. *Ecological Indicators*, 2023, 154:110782. DOI: 10.1016/j.ecolind.2023.110782

- Role: Third Author
- Status: Published
- Date: Oct 2023 (ORCID)
- CAS Division: Tier 2 Top
- JCR Division: Q1
- IF: 7.0
- Citations (Scholar): 27
- Research Topic: Marine ranch, water quality prediction, Time-Graph Convolutional Neural Network, long-term forecasting

[6] Computers and Electronics in Agriculture | Co-Author | Published

Dashe Li, Siwei Zhao, Jingzhe Hu, Yufang Yang, Jinqiang Ding. An underwater image segmentation model for complex scenes in aquaculture using vision Transformer. *Computers and Electronics in Agriculture*, 2025, 238:110764.

- Role: Co-Author
- Status: Published / Listed on Google Scholar Profile
- Citations (Scholar): 6
- Research Topic: Complex aquaculture scenes, underwater image segmentation, Vision Transformer, computer vision, smart fisheries
- Note: This paper was not in the original Chinese resume but was found on the Google Scholar export page, added here as a co-authored publication.

6.2 Conference / Preprint / Abstract

[7] EGU General Assembly 2026 | Conference Abstract / Preprint

Jingzhe Hu, Wei Zhi, Yuru Qin, Dawei Jiang. Spatiotemporal Patterns and Multiscale Drivers of Riverine Water Quality in China: A Continental-Scale Analysis via Physics-Informed Deep Learning. Mar 13, 2026 | preprint. DOI: 10.5194/egusphere-egu26-4161

- Source: Crossref (ORCID)
- Research Topic: National-scale riverine water quality, spatiotemporal patterns, multiscale drivers, physics-informed deep learning, watershed water quality analysis
- Section: Conference Abstracts / Preprints / Academic Exchanges

VII. Peer Review

According to the ORCID profile, the following peer review records are verified:

Journal	Review Count
Information Processing in Agriculture	2
Journal of Environmental Management	7
Water Resources Research	1

Total: 10 verified peer reviews.

VIII. Intellectual Property

8.1 Authorized Invention Patents

[1] A watershed hydrological multivariate forecasting method based on meta-learning TFT architecture

- Type: Invention Patent
- Status: Authorized
- Certificate No.: 7975137
- Patentee: Hohai University; Hydrology Bureau of Changjiang Water Resources Commission
- Inventors: W. Zhi, J. Hu, Y. Wang, B. Zhou, B. Dong, K. Chen, X. Su, X. Xue, Y. Zhou, Y. Li, J. Wang, Y. Qin, X. Liu, C. Lu
- Patent No.: ZL 2025 1 0331446.0
- Publication No.: CN 119848789 B
- Application Date: Mar 20, 2025
- Authorization Date: Jun 03, 2025
- Technical Field: Meta-learning, TFT architecture, watershed hydrological multivariate prediction, intelligent hydrological modeling

[2] A spatial intelligent watershed hydrological and water quality multivariate forecasting method based on quaternion time-frequency multiscale

- Type: Invention Patent
- Status: Authorized
- Certificate No.: 8540041
- Patentee: Hohai University; Guangdong Research Institute of Water Resources and Hydropower
- Inventors: W. Zhi, J. Hu, Z. Li, L. Guo, Y. Liao, Y. Xie, J. Zhang, A. Mi, Y. Wang, X. Su, Y. Zhou, D. Jiang, X. Xue, Z. Peng, Y. Shen, C. Wang, C. Lu
- Patent No.: ZL 2025 1 1334431.6
- Publication No.: CN 120822194 B
- Application Date: Sep 18, 2025
- Authorization Date: Dec 02, 2025
- Technical Field: Quaternion, time-frequency multiscale, spatial intelligence, watershed hydrology and water quality multivariate forecasting

[3] A watershed monitoring network layout optimization method based on mutual information active learning

- Type: Invention Patent
- Status: Authorized
- Certificate No.: 8863959
- Patentee: Hohai University

- Inventors: W. Zhi, X. Ge, Y. Zhou, X. Xue, Y. Wang, X. Su, Z. Li, J. Hu, S. Zhou
- Patent No.: ZL 2026 1 0131858.4
- Publication No.: CN 121638592 B
- Application Date: Jan 30, 2026
- Authorization Date: Apr 14, 2026
- Technical Field: Mutual information, active learning, watershed monitoring network, monitoring station layout optimization

8.2 Software Copyrights

One Software Copyright

- Type: Software Copyright
- Level: National Level
- Date: Nov 2024

IX. Awards & Honors

9.1 Provincial Outstanding Graduate

- Shandong Provincial Outstanding Graduate, 2022
- Shandong Provincial Outstanding Graduate, 2025

9.2 Graduate Awards & Honors

- School-Level Outstanding Student Title, 2023–2024
- National Second Prize, The 21st China Graduate Mathematical Modeling Competition, Team Leader, Dec 2024
- National Third Prize, The 20th China Graduate Mathematical Modeling Competition, Team Leader, Oct 2023

9.3 Undergraduate Awards & Honors

- School-Level Advanced Individual Title, 2018–2019
- School-Level Advanced Individual Title, 2019–2021
- National Undergraduate Innovation and Entrepreneurship Training Program Project (No. 201911688023), National Level, Project Leader, Mar 2019
- Project Title: Intelligent Flower Management System and Device Based on STM32 Microcontroller
- Provincial First Prize, National Undergraduate Electronic Design Contest (Shandong), Team Leader, Aug 2019
- Provincial Second Prize, Shandong IoT Innovation Contest, Project Leader, Oct 2019
- Provincial Third Prize, The 10th Lanqiao Cup C/C++ Programming Contest (Shandong), Nov 2019
- Provincial Third Prize, Chinese Computer Contest - Network Technology Challenge, Aug 2020
- Provincial Third Prize, The 14th International iCAN Innovation and Entrepreneurship Contest, Project Leader, Sep 2020
- Provincial Third Prize, National Undergraduate Electronic Design Contest (Shandong), Team Leader, Oct 2020
- Provincial Third Prize, Shandong IoT Innovation Contest, Project Leader, Oct 2020

- Provincial Third Prize, The 11th Lanqiao Cup Java Programming Contest (Shandong), Oct 2020
- Provincial Third Prize, The 3rd Shandong Undergraduate Network Technology Contest, Nov 2020
- Provincial Second Prize, The 7th Shandong Undergraduate Science and Technology Innovation Contest, Project Leader, Dec 2020

X. Research Projects

10.1 National Natural Science Foundation of China (NSFC)

Project Title: Research on Multi-source Heterogeneous Data-driven Predictive Models for Aquaculture Environments in Equipment-based Marine Ranches Project Category: National Natural Science Foundation of China (NSFC) Time: Nov 2023 – Mar 2024 Role: Core Participant; participated in project proposal drafting and high-dimensional multi-parameter time series prediction model design.

Content: Focused on data decomposition, processing, modeling, and forecasting of multi-source heterogeneous fishery data for equipment-based marine ranches. The goal was to build multi-modal feature extraction and intelligent forecasting services.

Key Contributions: Responsible for time series prediction model design and proposal drafting. Developed deep learning models (such as Transformers) to model open-sea environment fluctuations and water quality parameters, providing data-driven decision support for aquaculture.

10.2 Natural Science Foundation of Shandong Province

Project Title: Research on Intelligent Service Models for Smart Fisheries Based on Multi-factor Feature Fusion Project Category: Natural Science Foundation of Shandong Province Time: Jun 2022 – Oct 2022 Role: Core Participant; responsible for temporal forecasting model construction.

Content: Developed smart fishery decision support models by mining chemical and image data in Shandong marine ranches using deep learning and computer vision.

Key Contributions: Built and trained water quality time series forecasting models to provide precise environmental alerts and predictive services.

10.3 Shandong Graduate Innovation Achievement Program

Project Title: Intelligent Computing Research for Marine Ranches Based on Convolutional Neural Networks Time: Aug 2023 – Nov 2023 Role: Core Developer; responsible for temporal model construction.

Content: Mined numerical and image features from marine ranches to construct CNN and Hidden Markov model decision support platforms.

Key Contributions: Participated in proposal drafting and model designs, implementing high-precision neural networks for open-water monitoring data.

10.4 Quadcopter Flight Control System Research & Development

Project Title: Quadcopter UAV Flight Control and Vision System Time: Sep 2019 – Apr 2022 Phase: Undergraduate Research & Contest Practice Hardware Platforms: MSP432, MSP430, STM32F103ZET6 Core Modules: Flight control, altitude hold, attitude control, visual target tracking

Content: Developed flight control, navigation, altitude-hold, and computer vision systems for quadcopters based on MSP432, MSP430, or STM32 microcontrollers.

Technical Implementation:

- Flight Control: Programmed core controller scheduling and sensor drivers.
- Altitude Hold: Fused barometer (SPL06-001) and laser optical flow data to achieve hover stability.
- Attitude Control: Fused MPU6050 6-axis IMU raw data using Kalman filtering and quaternion estimations, and maintained stability using incremental cascade PID algorithms.
- Vision System: Implemented target tracking and pose optimization using OpenMV vision cameras.
- Stability: Resolved hover drifting issues in textureless solid-color indoor spaces.

Role: Responsible for hardware schematic/PCB layout design, quaternion-based attitude estimation, Kalman filter implementation, cascade PID tuning, and telemetry visualization.

XI. Internships & Engineering

11.1 Qianxun Spatial Intelligence Inc. | Embedded Development Engineer

Institution: Qianxun Spatial Intelligence Inc. (千寻位置) Time: Nov 2022 – Mar 2023 Role: Embedded Development Engineer (Intern) Department: Embedded R&D Center

Content: Participated in Beidou GNSS positioning development, car-grade embedded SDK development, and A-SPICE workflow execution. Focused on Beidou vehicle terminal integration for BMW, Audi, and GAC XJ3 projects.

Skills Demonstrated:

- Beidou GNSS positioning system development.
- Car-grade embedded R&D processes.
- SDK software engineering.
- A-SPICE compliance.
- Collaborative vehicle terminal development for tier-1 OEMs (BMW, Audi, GAC).

11.2 Yantai Science and Technology Museum | Embedded Software Engineer

Institution: Yantai Science and Technology Museum Time: Mar 2021 – Aug 2022 Role: Embedded Software Engineer (Project Collaboration) Project Scope: Indoor quadcopters, smart cars, and AI exhibits

Content: Independently developed indoor quadcopter flight control systems and real-time high-rate video/data telemetry visualization interfaces. Designed stable control algorithms allowing quadcopters to fly stably in solid-color museum halls where traditional optical flow fails.

Skills Demonstrated:

- Indoor drone flight control engineering.
- Real-time telemetry and video transmission.
- Software visualization design.
- Algorithm implementation for complex indoor spaces.

XII. Technical Skills

12.1 Programming & Algorithms

- Deep Learning Model Design & Implementation
- Multivariate Time Series Forecasting
- Transformer-based Time Series Models
- Graph Convolutional Networks (GCN)
- Multiscale Signal Decomposition & Feature Extraction
- Machine Learning Modeling & Validation
- Active Learning & Information Theory
- Environmental Data Cleaning & Anomaly Detection

12.2 Hydrology & Environmental Sensing

- Watershed Hydrology & Water Quality Multivariate Prediction
- Critical Water Quality Parameters Forecasting
- Long-term Dissolved Oxygen Forecasting
- Marine Ranch Sensor Fusion
- Smart Fisheries Intelligent Decision Systems
- Multi-source Heterogeneous Environmental Data Modeling
- Watershed Monitoring Network Optimization
- Cross-basin Transfer Learning Frameworks

12.3 Embedded & Hardware Systems

- STM32 / MSP432 / MSP430 Firmware Development
- Beidou GNSS Positioning Software Integration
- SDK Development
- PCB Design & Schematic Layout
- Quadcopter Flight Control Systems
- Sensor Fusion & Attitude Estimation (IMU, Barometer, Optical Flow)
- Kalman Filtering, Quaternion Math, Cascade PID Tuning
- Telemetry & Data Transmission Systems

12.4 Computer Vision & Multi-modal Analytics

- Underwater Image Segmentation
- Vision Transformer (ViT)
- Convolutional Neural Networks (CNN)
- Image-Numerical Multimodal Data Fusion
- Marine Ranch Sensing & Analytics