QIXIANG NIU

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Institution: Northwest Polytechnic University| Department: School of Marine Science and Technology

PROFILE

- My research focuses on **the integration of detection communication in underwater multi-base conditions**.
- I am practical and willing to work and can use scientific research tools such as **MATLAB**.
- I am interested in direct wave noise suppression from **underwater sensors and fusion of target localization information**, as well as some research on **underwater detection, navigation and communication**.
- At Universidad Carlos III de Madrid, I did my research under the supervision of Prof Ramirez, David. At the Northwestern Polytechnical University, I did my research under the supervision of Profs. Wentao Shi and Qunfei Zhang. They are both industry experts in the field of underwater sensors.
- **I have assisted in reviewing manuscripts for the journals** DIGITAL SIGNAL PROCESSING(DSP), IEEE SENSORS JOURNAL, IET RADAR SENSORS AND NAVIGATION(IET RSN), SIGNAL PROCESSING(SP) and Journal of Marine Science and Engineering (JMSE), etc.

EDUCATION

2015.09-2019.06 **Northwestern Polytechnical University (Bachelor's Degree)**
Weighted average score (Percentage system): 82.34
Major: digital signal processing, array signal processing, communication principle, underwater target detection, target detection and estimation, principle of underwater acoustics, information theory, Fundamentals of signal processing

2019.09-2021.03 **Northwestern Polytechnical University (Master's Degree)**
Weighted average score (Percentage system): 88.15
Major: Array signal processing, digital signal processing, matrix theory, linear algebra, target tracking and positioning technology, DSP system experiment, weak signal detection technology and system, adaptive filtering theory and implementation

2023.09-2025.09 **Universidad Carlos III de Madrid (Visiting Doctor)**
Major: Underwater sensors, optimization method, Passive sensors, underwater signal and information processing, new progress of underwater technology, convex optimization

2021.03-now **Northwestern Polytechnical University (Doctoral Degree)**
Weighted average score (Percentage system): 86.14
Major: Target feature recognition and classification, optimization method, underwater signal and information processing, new progress of underwater technology, convex optimization

PAPERS PATENTS AND PROJECTS

Papers:

- Title: An Improved CLEAN Direct Wave Suppression Algorithm in Integrated System of Underwater Detection and Communication
  Published in: IEEE Sensors Journal
  DOI: 10.1109/JSEN.2024.3360274
- Title: Waveform design and signal processing method for integrated underwater detection and communication system
  Published in: IET Radar, Sonar & Navigation
  DOI: https://doi.org/10.1049/rsn2.12365
- Title: Integrated Waveform Design Scheme Based on Underwater Detection and Communication
  Published in: 2022 IEEE International Conference on Signal Processing, Communications and Computing (ICSPCC)
  DOI: 10.1109/ICSPCC55723.2022.9984531

Patents:

- Title: 一种水下探测通信一体化发射信号设计与处理方法(An integrated transmit signal design and processing method for underwater detection and communication)
  China patent number: CN202211360836.3
- Title: 一种水下探测通信一体化系统(An integrated system for underwater detection and communication)
  China patent number: CN202310799519.X
- Title: 一种基于 ZC 序列的 OFDM 水下探测通信一体化发射信号设计方法(A ZC sequence-based OFDM integrated transmit signal design method for underwater probe communication)
  China patent number: CN202410746624.1

Projects:

- 2019.9-2020.12, participate in the "underwater multi node cooperative detection" and "underwater multi base cooperative detection" projects as a major member. The project uses MATLAB software simulation and makes GUI programs.
- 2019-2021, participate in the "communication detection based on UUV side chord array" project as an auxiliary member.
- 2020.12-2021.12, As a member, I participated in the test of "R & D of integrated detection and communication system", assisted in the development of GUI interface, and participated in lake test and anechoic pool test for many times.
- 2022.3- now, as a major member, I mainly participated in the project of "integrated design of underwater detection and communication".
- 2022.12-now, Core member and main participant of the project "Underwater multi-base target detection and localization".