Guanwen Xie

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Education

Tsinghua University, Beijing, China 2024/09 – present

M.S. in Electronics Information

Zhejiang University, Hangzhou, China 2020/09 - 2024/06

B.S. in Ocean technology

- GPA: 92.7/100, Ranking 1st of 143
- Relative courses: Calculus(94), Linear Algebra(88), Probability Theory and Statictics(96), Pratial Differential Equation(99), Foundamental of Ocean Engineering Modeling(AI-relative, 94), Software Development and Applications(95), Introduction to Computer Systems(93), Embedded Systems(96), Signals and Systems(97), Digital Signal Processing(98), Automatic Control Theory(95), Underwater robot design(96)

Publications and manuscripts

[1] Jingzehua Xu*, Yimian Ding*, **Guanwen Xie***, Ziyuan Wang, Yongming Zeng, and Gang Li. Multi-AUV Target Location and Cooperative Tracking for Internet of Underwater Things. In *IEEE World Congress on Computational Intelligence (WCCI)*. **IEEE**, 2024.

[2] Zekai* Zhang, Jingzehua Xu*, **Guanwen Xie**, Jingjing Wang, Zhu Han, and Yong Ren. Environment Energy-Aware AUV-Assisted Data Collection for IoUT Relying on Reinforcement Learning. *Internet of Things Journal*, 2024. Early access.

[3] Ziyuan Wang, Jingzehua Xu, Yuanzhe Feng, Yijing Wang, **Guanwen Xie**, Xiangwang Hou, Wei Men, and Yong Ren. Fisher-Information-Matrix-Based USBL Cooperative Location in USV–AUV Networks. *Sensors*, 23(17):7429, 2023.

[4] **Guanwen Xie***, Jingzehua Xu*, Yimian Ding, Yongming Zeng, Dongfang Ma, and Jingjing Wang. FISHER: An Efficient Sim2Sim Training Framework Dedicated in Multi-AUV Target Tracking via Learning from Demonstrations. In submission.

Experiences

Zhejiang University & Tsinghua University 2023/11 - now

Graduation thesis *Advisor: Prof. Dongfang Ma*

- **AUV Target Tracking via Leaning from Demonstration**: Visit the **project website** of the FISHER framework to learn more.

Zhejiang University, Ocean College 2023/02 - 2023/06

Undergraduate Researcher *Advisor: Prof. Yulin Si*

- **Underwater Robot Design**: Developed a compact, energy-save and control-easy underwater robot via Raspberry Pi, STM32 and computer vision algorithms, with the functions of navigation, obstacle avoidance, letter and color recognition. Specifically, we utilize BAGAN for data augmentation for letter recognition, which significantly improves the accuracy of the recognition task. We participated in the underwater robot competition of Zhejiang Province and won the first prize.

Zhejiang University, Intelligent Underwater Optical Laboratory 2022/12 - 2023/08

Research Practice *Advisor: Prof. Hong Song*

- **Underwater Image Enhancement Based on Polarization Imaging**: Analyze the stoke vector image and parameterize the enhanced image, then maximize the proposed enhanced EME(measure of enhancement by entropy), and finally utilize haze removal algorithm to make underwater image enhancement. I've also

participated in applying this algorithm to a project concerning underwater 3D reconstruction. For this, I've studied the basic knowledge about SLAM.

Zhejiang University, Ocean College 2022/11 - 2023/07

SRTP *Advisor: Prof. Huarong Zheng*

- **Cooperative Location in USV-AUV Network**: Analyze the positioning accuracy of AUVs and design a USV-AUV cooperative network based on the derivation of the fisher information matrix. Besides, a USV path planning scheme based on Dubins path planning functions was proposed to assist in AUV formation. Simulation results verify that the proposed scheme can ensure the accuracy of the AUV formation and help the underwater research missions.

♡ Honors and Awards

Scholarship:

- (2023) **Runhe Scholarship** *(1% in Zhejiang University)*
- (2022) **Zhejiang Provincal Government Scholarship** *(3% in Zhejiang University)*

Competition:

- (2023) **First Prize of Zhejiang Province Underwater Robot Competition** *(Top 5%)*
- (2022) **First Prize of Zhejiang Province Student Physics Innovation** (Theory)

Skills

- **Programming (Especially debugging):** Pytorch, C/C++, ROS, Linux
- **Languages:** English (CET6 600)