Yiyuan Zhang

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OBJECTIVE

To obtain a Ph.D. in the ME, with the aim of advancing my knowledge and skills in the field of ***optimization of intelligent systems***, contributing to scientific research, and pursuing a career as a researcher in academia or industry.

EDUCATION

Zhejiang University *Hangzhou, China*

MPhil. In Mechanical Engineering, Ocean College *Sep. 2021 - Mar. 2024 (Expected)*

- Marine Artificial Systems Laboratory, Advisor: Prof. Wei Fan
- Current Research Interests: Applied Ocean Technology & Intelligent Algorithms

Dalian Maritime University *Dalian, China*

B.Eng. in Marine engineering college (GPA: 4.00/5.00, **rank Top 2%**) *Sep. 2017 - Jun. 2021*

- Honors: Outstanding graduates (2021)
- Relevant Coursework: Probability Theory and Mathematical Statistics, Automatic Control Theory, Electrical Engineering, Automatic control system of ship power station

PROJECTS & RESEARCH EXPERIENCE

Dalian Maritime University *Dalian, China*

Path Planning of Multiple Autonomous Underwater Vehicles (AUVs) *2020-2021*

- Developed a two-layer coordination system for combining global path planning and local path coordination of AUVs.
- Adopted the Glasius Bio-inspired Neural Networks (GBNN) model to generate AUVs' global paths.
- Coordinated local paths between AUVs using Dynamic Window Method for collision avoidance.

Project on Efficiency Optimization of Artificial Upwelling System, Zhejiang University *Hangzhou, China*

Layout Optimization for Underwater Nozzle Array of Artificial Upwelling System *2022-2023*

- Modeling artificial upwelling efficiency under crossflow to assess system performance under different layouts.
- Optimized nozzle layout using Discrete Particle Swarm Optimization (DPSO) algorithm.
- Provided insightful analytical results for system design.

Deep Reinforcement Learning (DRL) for Artificial Upwelling Energy Management *2023-*

- Developed system models and formulated the energy management problem as Markov Decision Process problem.
- Combined deep quantile networks with deep dueling network architectures to improve convergence speed and robustness of the DRL method.
- Conducted extensive simulation experiments to demonstrate the effectiveness of the proposed solution.
- Demonstrated proficiency in programming languages commonly used in DRL, such as Python and Pytorch.

Note: this project was financially founded by the *National Natural Science Funds of China* (No. 41976199) and the *Strategic Priority Research Program of the Chinese Academy of Sciences* (XDA23050303).

PUBLICATIONS

Yiyuan Zhang (2023), Layout Optimization for Underwater Nozzle Array of Air-lifted Artificial Upwelling System Based on Discrete Particle Swarm Algorithm, Applied Ocean Research, JCR Q1. (Accepted in Aug 30, https://doi.org/10.1016/j.apor.2023.103724)

Yiyuan Zhang (2023), Deep Reinforcement Learning for Artificial Upwelling Energy Management, Preprinted, https://doi.org/10.48550/arXiv.2308.10199

PERSONAL SKILLS

- Language ability: IELTS: 6.0.
- Programming ability: Python (3 years experience, Solved 700 algorithm problems in LeetCode), Deep learning libraries such as TensorFlow and PyTorch (1 years experience).